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**Contribution of the local and home-food environments
to the food practices of white adults
in the Eastern suburbs of Tshwane**

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Dissertation

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Supervisor: Dr AT Viljoen

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**Contribution of the local and home-food environments
to the food practices of white adults
in the Eastern suburbs of Tshwane**

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DEDICATION

This study is dedicated to:

My mom in heaven, Adri de Kock (née Winterboer) who has inspired me to follow in her footsteps and also complete my master's degree.

This study is dedicated to you.

I love you.

DECLARATION

I, **Jeandelene de Kock** declare that this dissertation for the master's degree of Consumer Science Food Management as submitted to the University of Pretoria is my own work that has not previously done and submitted by anyone else neither at the University of Pretoria nor any other tertiary institution.

Jeandelene de Kock

January 2019

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- To my friends and family who stand behind me and support me in all my many journeys in life.

ABSTRACT

Title: **Contribution of the local and home-food environments to the food practices of white adults in the Eastern suburbs of Tshwane**

by

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The local urban and home-food environments of white adults living in the Eastern suburbs of the Tshwane Metropole is explored and described. The study focused on the contribution of these environments to the food practices of the study group. The South African population, similar to those of other developing and sub-Saharan countries, is undergoing rapid urbanisation that is closely associated with a number of social structural changes such as migration, modernisation, globalisation, economic advancement and acculturation. As a result food systems and environments simultaneously undergo major changes due to technological advancements, food policies and lifestyle changes of consumers. The urban environment further seems to negatively influence the food patterns of the urban South African population as the majority follow a pattern associated with high intakes of energy, salt, saturated fat and refined sugars with a low intake of fruit, vegetables and fibre. Currently much attention focuses on how the urban food environment influences and shapes consumers' food intake and subsequent health. As there is limited information on the eating patterns and food-related behaviour of white South African adults, this study fills a gap in the literature. A quantitative research approach is followed in this cross-sectional study to achieve the objectives of the research. An electronic survey questionnaire, consisting of closed and open-ended questions was developed. Information gathered concerned

the current eating patterns of the respondents, including aspects related to the local urban food and home-food environments. A total of 230 white adults in Regions 3, 4 and 6 of the Tshwane Metropolis completed the questionnaire.

The white adults in Tshwane follow a typical Western eating pattern. The meal patterns consisted of 3 meals a day with in-between snacking. Most respondents eat all their meals at home and the majority consistently eat breakfast every day. Some eat meals away from home daily, either at the workplace or at restaurants. Although the majority consumed a variety of food daily as reflected in the Dietary Diversity Score of 6.20, a low consumption of legumes, fruit and vegetables by some respondents, raises concerns.

Urban consumers in Tshwane have easy, adequate access and transport to most food stores. Supermarkets are frequently visited for food purchases and the majority do so at least once a week. The respondents were satisfied with the range of food outlets; including the quality and variety of foods, they have access to in their neighbourhoods. This study group eats family meals together on a daily basis and regarded their homes as places where healthy family meals were prepared and enjoyed. Positive attitudes towards healthy eating and family meals confirmed these findings.

This study is significant and valuable and can assist in the development of intervention strategies to promote healthier food choices and further improve the food practices of urban consumers. Recommendations from the results of this study suggest that consumer educators and facilitators should thus target consumer education towards those Food-based Dietary Guidelines for South Africans that do not seem to be followed in the daily food practices of the study group.

KEY WORDS: *food practices, white adults, urban food environment, home-food environment, food frequency, eating patterns, family meals*

ABSTRAK

Titel: Bydrae van die plaaslike en tuisomgewings tot die voedselpraktyke van blanke volwassenes in die Oostelike voorstede van Tshwane

deur

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Hierdie studie verken en beskryf die bydrae van die stedelike en tuisomgewings tot die voedselpraktyke van blanke volwassenes woonagtig in die Oostelike voorstede van die Tshwane Metropolis. Soortgelyk aan ander ontwikkelende lande, is die Suid-Afrikaanse bevolking besig om vining te verstedelik as gevolg van ontwikkeling wat nou geassosieer word met sekere sosiale veranderinge soos byvoorbeeld migrasie, modernisering, globalisering, ekonomiese vooruitgang en akkulturasie. Hierdie veroorsaak tegelykertyd dat voedselsisteme en -omgewings verander as gevolg van tegnologiese vooruitgang, verandering in die lewenstyl van verbruikers en voedselbeleid wat verander. Dit blyk dat die stedelike omgewing 'n negatiewe invloed op die eetpatrone van die stedelike Suid-Afrikaanse bevolking het. Die meerderheid volg 'n eetpatroon wat assosieer word met 'n verhoogde inname van energie, sout, versadige vette en verfynde suikers, en wat andersyds 'n lae inname van vrugte, groente en vesel aandui. Navorsing fokus huidiglik op hoe die stedelike voedselomgewing die voedselinname en gesondheid van verbruikers beïnvloed en vorm. Daar is tans beperkte inligting oor die eetpatrone en voedselverwante gedrag van blanke Suid-Afrikaanse volwassenes, en hierdie studie vul hierdie leemte in die

literatuur. 'n Kwantitatiewe navorsingsbenadering is gevolg ten einde die gestelde doelwitte van die studie te bereik. 'n Elektroniese vraelys, is ontwikkel om inligting in te samel oor die huidige eetpatrone van die respondente asook aspekte met betrekking tot die plaaslike stedelike en tuisomgewings. Die vraelys is voltooi deur 230 blanke volwassenes woonagtig in streke 3, 4 en 6 van die Tshwane Metropolis.

Blanke volwassenes in Tshwane volg 'n tipiese Westerse eetpatroon. Die maaltydpatrone bestaan uit drie maaltye per dag met versnaperinge tussen maaltye. Die meerderheid van die respondente eet daaglik ontbyt, en alhoewel die meeste al hul maaltye tuis geniet, is daar diegene wat daaglik van hul maaltye weg van die huis nuttig, by hul werkplekke of by restaurante. 'n Dieetverskeidenheidstelling van 6.20 dui daarop dat die meerderheid van die respondente daaglik 'n verskeidenheid van voedselsoorte eet, alhoewel die lae inname van peulgroente, vrugte en groente van sommige respondente kommer wek.

Stedelike verbruikers in Tshwane het gerieflike en voldoende toegang tot die meeste voedselwinkels. Supermarkte word gereeld besoek en die meerderheid besoek supermarkte wekeliks of meer as een keer per week. Die respondente was tevrede met die verskeidenheid van voedselwinkels in hul woongebiede, asook die kwaliteit en verskeidenheid van voedselprodukte wat aangebied word. Gesinsmaaltye is belangrik vir die studiegroep en word daaglik in die tuisomgewing geniet, waar gesonde maaltye voorberei en bedien word. Hierdie is bevestig deur die studiegroep se positiewe houding teenoor gesonde eetgewoontes en gesinsmaaltye.

Die studie is betekenisvol en van waarde en kan 'n bydrae lewer tot die ontwikkeling van intervensie strategieë ten einde gesonder voedselkeuses aan te moedig en sodoende die voedselpraktyke van stedelike verbruikers te verbeter. Uit die resultate van die studie word daar aanbeveel dat verbruikersonderrig en -fasilitering gerig behoort te word op die spesifieke Voedselgebaseerde Dieetriglyne vir Suid-Afrikaners wat nie tans daaglik deur almal nagevolg word nie.

SLEUTELWOORDE: *voedselpraktyke, blanke volwassenes, stedelike voedselomgewing, tuis voedselomgewing, voedselrekwensie, eetpatrone, gesinsmaaltye*

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Chapter 1

THE STUDY IN PERSPECTIVE

1.1 INTRODUCTION AND BACKGROUND

In 2008, for the first time in history, more than half of the world's population lived in urban areas and this percentage is expected to increase to 75% by the year 2050 (Watson, 2009:160). Urban growth will continue to rapidly increase, specifically in Africa and Asia, as 70% of the world's population currently lives in developing countries and this number is expected to increase to 83% by the year 2050 (Watson, 2009:160). In 2015, Africa had a population of 1.2 billion inhabitants of whom 40% lived in urban areas (Silva, 2016:1). Urbanisation is a global reality. Urbanisation refers to the growth in the proportion of a population that lives in urban areas (Chen, 2007:1). The South African population, similar to those of other developing and sub-Saharan countries, is also undergoing rapid urbanisation (Steyn, Nel, Parker, Ayah and Mbithe 2012; Ziraba, Fotso & Ochako 2009; Malan, Malan, Wising and Seedat, 2008). In the 2016, South African Demographic and Health Survey, it was reported that the majority of people in South Africa live in urban areas (67% of women and 69% of men) and by province, the majority of men and women in South Africa live in Gauteng (SADHS, 2016:10).

The process of urbanisation is closely associated with a number of overlapping social structural changes such as migration, modernisation, globalisation, economic advancement and acculturation (Kittler & Sucher, 2011:1). This resulted in the food system and food environments having simultaneously undergone major changes in the recent past due to technological advancements, food policies and lifestyle changes of families (Cannuscio, Tapper, Hillier, Bittenheim, Karpyn & Glanz, 2013; Story, Kaphingst, Robinson-O'Brien & Glanz, 2008). Technological advancements do not only include processes used to produce, store and preserve food (Bryant, Dewalt, Courtney & Schwartz, 2003:12), but it also includes the use of mass media, social media and advertising of food products to the public, and the use of these media by the public to obtain food (Vereecken, Todd, Roberts, Mulvihill & Maes, 2009). Food

policy changes include alcohol restrictions that prohibits drinking and driving for people's own safety (Deliens, Clarys, De Bourdeaudhuij & Deforche, 2014), and there is also legislation that require restaurants to have a liquor licence to allow them to sell alcohol products by law. Through legislation, the South African National Department of Health requires that the food and beverage industry list the ingredients of their products on the product label in an attempt to improve public health and protect consumers (Ronquest-Ross, Vink & Sigge, 2015).

Changing family lifestyles and demographics over the past decades has contributed to food-related behaviour changes in families and households. More women for example follow careers, get married later and are choosing to be childless (Shiffman & Kanuk, 2010:322), which means they don't necessarily fulfil the traditional female role in the household regarding food procurement and preparation. The changing lifestyles resulted in families leading busier lives and being more stressed in a fast-paced environment. The rising urban population has simultaneously increased the demand for products and services associated with the fast-paced urban living, and particularly food products that are convenient and time-saving are high in demand (Osman, Osman, Mokhtar, Setapa, Mohd Shukor, & Temyati, 2014).

Technological advancements in the food industry also increased the availability of ready-prepared and convenience foods and in turn, this saves consumers time on food preparation and they can just grab food while they are on the go. These social structural changes further induce a food culture change that is associated with changes in the lifestyles and dietary habits of populations undergoing the process of urbanisation. This in turn is closely associated with a nutrition transition (Steyn, Nel, Parker, Ayah & Mbithe, 2012). The nutrition transition describes a shift in food patterns and lifestyles that are often associated with urban living and this is attributed to consumers becoming overweight and obese (Ginsburg, Griffiths, Richter & Norris, 2013). Lifestyle changes that are most frequently observed in urban populations are a change in food and meal patterns together with a more sedentary lifestyle (Pretorius & Silwa, 2011). Large shifts in diet and physical activity have occurred in the last two decades and modern societies are undergoing a nutrition transition by converging on a diet high in refined, processed foods and lifestyles that are characterised by lower levels of activity (Sishana, Labadarios & Rehle, 2014; Pretorius & Sliwa, 2011; Popkin

& Gordon-Larsen, 2004). Globally, there is thus an increased intake of high-fat, energy-dense foods together with a low intake of fruits and vegetables and a decrease in physical activity due to the sedentary lifestyle of consumers and technological advancements associated with urbanisation (WHO, 2015).

On the other hand, technological advancements associated with the modern urban lifestyle and food context include easy transport by car to and from food outlets and more refrigeration space for food storage and display in food stores that allows for the adaption of purchasing patterns, as more food can be stored for purchasing in food stores (Strobel & Van Schalkwyk, 2012). Urban consumers thus have easier and more frequent access to food stores. The urban environment also seems to negatively influence the food patterns of the urban South African population as the majority seem to follow a more Western-oriented food pattern that is associated with a high intake in energy, salt, saturated fat and refined sugars and a low intake of fruit, vegetables and fibre (Sishana *et al.*, 2014; Pretorius & Silwa, 2011). Urban populations have thus become totally reliant on commercially produced and processed foods (Popkin, 2012), as most urban consumers are not in a position to produce their own food, due to lack of land, time and/or knowledge and skills.

Closely associated with modernisation and urbanisation is the global occurrence of overweight, obesity and non-communicable diseases. This is beginning to draw attention to how the urban food environment is influencing consumers' health. According to the World Health Organization (WHO 2015), in 2014, more than 1.9 billion adults worldwide were overweight and 600 million obese. Overweight and obesity rates are growing worldwide and the World Health Organization therefore concluded that obesity is a global epidemic (Hauser *et al.*, 2011:336). In the recent Demographic and Health Survey of South Africa, a significant percentage of white adults is reported to be overweight and obese. The results showed that, out of 188 white women, 69.4% were overweight or obese and out of 175 white men, 74.7% were overweight or obese (SADHS, 2016:45).

These statistics concur with the South African Health and Nutrition Examination Survey (SANHANES-1) study, that reported that males and females living in urban formal areas are significantly heavier than males and females living in rural areas. Males living in urban areas were significantly heavier (70.3 kg mean weight) than

males living in rural areas (range 62.8 kg to 64.6 kg mean weight) and females in urban areas were significantly heavier (74.1 kg mean weight) than females in rural areas (68.3kg mean weight) (Sishana *et al.*, 2014). In the late 1990s, 58.5% of black South African women were obese or overweight as compared to 49.2% of white South African women, while 25.4% of black South African men were obese or overweight as compared to 54.4% of white South African men (Averett, Stacey & Wang, 2014). That means that, in the late 1990s, almost half of white women were obese or overweight and more than half of white men were obese or overweight. These percentages are reason for concern regarding the health of the white urban population in South Africa. The statistics from later surveys such as the 2016 South African Demographic and Health Survey links with the statistics from the 2012 SANHANES-1 survey, according to the SADHS (2016:45), 69.4% out of 188 white women, were overweight or obese and 74.7% out of 175 white men, were overweight or obese. It seems as if there is a steady increase in the occurrence of overweight and obese people in South Africa. It can be assumed that white urban adults in South Africa's overweight and obesity rates are high, because of the influences that the urban environment has on their food habits (SADHS, 2016:45).

The rise of overweight and obesity contributes to the increase in the number of people suffering from non-communicable diseases (NCD's) such as cardio-vascular disease, hypertension and Diabetes Mellitus and certain cancers. Adequate consumption of fruits and vegetables is known to reduce the risk of developing obesity, cancer and cardio-vascular diseases, but sadly around 1.7 million (2.8%) of deaths worldwide are associated with a low fruit and vegetable consumption (Naudé, 2013; Vasileska & Rechkoska, 2012). Schneider, Norman, Steyn & Bradshaw (2007:720) reported that 11.1 million males and 12.5 million females over the age of 15 years in South Africa had a low intake of fruit and vegetables in 2000. These results have also been confirmed in the SANHANES-1 survey (Sishana *et al.*, 2014:176). An increased fruit and vegetable consumption could thus potentially contribute to improve the nutrient intakes and reduce the disease risks in adults (Wagner, Rhee, Honrath & Blodgett Salafia, 2016; Naudé, 2013). Effective intervention strategies are needed to improve the food intake of urban adults.

Before intervention strategies can be developed, it is essential to determine and describe the food practices of the South African urban population. Food practices imply how the chosen food is used and has embedded food-related behaviour that is typical of an individual or group (Viljoen, 2009:15). However, in order to understand food practices, it is required that the influences that contribute to it, be firstly investigated. Food choice is multidimensional, complex and influenced by numerous factors. When investigating consumers' food practices in the urban food environment, influences regarding the food retail environment, food accessibility and urban lifestyles also need to be explored. The food choices of an urban population are not only driven by the access to food in the local urban environment, but also by their social and individual environments that includes their home-food environment.

Food choices are not only driven by an individual's own needs, but are also influenced by the social context of the family, therefore the home-food environment is an important determinant of food consumption patterns (Lv & Brown, 2010; Ricciuto, Tarasuk, & Yatchew, 2006; Swinburn, Caterson, Seidell, & James, 2004). Household socio-demographic characteristics such as the gender, education, age and occupation of the main breadwinner including the household's income all contribute to consumers' food practices (Ricciuto *et al.*, 2006; Nesbitt, Majowicz, Finley, Pollari, Pintar, Marshall, Cook, Sargeant, Wilson, Ribble & Knowles 2008). Hence, research is needed to better understand the local urban and home-food environments and their influence on the food practices, food choice and food-related behaviour of adults. Research investigating the food environment has considerably increased since 1990 and this relatively new field of interest reflects the acknowledgement and increased interest in the influence of environmental factors on the food and energy intake and its implications on the food practices and health of consumers (Claasen, van der Hoeven & Covic, 2016; McKinnon *et al.*, 2009; Sishana *et al.*, 2014).

1.2 PROBLEM STATEMENT AND JUSTIFICATION

The food practices of an urban population are not only driven by the availability and accessibility of food in the local food environment, but also by the situation in the home-food environment. What is chosen and consumed at home determines the quality of the diet and ultimately the nutritional, health status and well-being of the individual. Although recent international studies give more attention to the home and family food

environments (Cannuscio, Hillier, Karpyn & Glanz, 2014; Cannuscio *et al.*, 2013; Larson & Story, 2009; Story, Kaphingst, Robinson-O'Brien & Glanz 2008), research in South Africa is still limited on this topic. Although there is a growing body of international research that examines the contribution of food environments on health and nutrition, these dynamics have not received much attention in South Africa (Claasen, Van Der Hoeven & Covic, 2016).

Families and households have a major influence on consumer food decision making (Cannuscio *et al.*, 2013; Larson & Story, 2009). Food choices of the individual are influenced by the family and therefore the home-food environment is an important determinant of food consumption patterns (Van Ansem, 2012; Ricciuto *et al.*, 2006). Influences of members in the immediate family or household might in some cases lead to joint decision-making where household members support and influence each other when making food choices (Rousseau, 2007:261). The home-food environment therefore creates an important context where interpersonal relationships often drive and influence food choice (Lv & Brown, 2010; Furst Connors, Bisogni, Sobal & Falk, 1996:255).

Literature states that, in a household, there is usually a gatekeeper who is responsible for household food purchases and how the food is prepared and served (Burton, Reid, Worsley & Mavondo, 2017; McLeod, Campbell & Hesketh, 2011; Jilcott, Laraia, Evenson & Ammerman, 2009). Females are usually regarded as the household gatekeepers (Sishana *et al.*, 2014:11; Damman & Smith, 2009). As more females are in full-time employment, the traditional family role of the adult female has changed (Kant & Graubard, 2015). Full-time employment therefore led to time constraints and urban females are therefore inclined to make more use of ready-prepared and convenience type of foods. White urban adults have smaller households, are more likely to be married or cohabiting, have higher levels of education, are more likely to be employed and earn higher incomes in comparison to adults of other races in South Africa (Averett *et al.*, 2014). As a result these consumers have more accessibility to fast- and convenient foods which may lead to weight gain, obesity and other diseases. Consequently, in 2014, white adult South African men had the highest obesity rates in the country with 28.1 % which was much higher than the percentage of coloured (11.6%) and of black (8.6%) men (Averett *et al.*, 2014). These rates kept continuing

and white men still proved to have the highest obesity rates in 2016 as 74.7% of white men in South Africa were overweight or obese (SADHS, 2016:45). The results from the Demographic and Health Survey of South Africa also showed that, out of 188 white women, 69.4% were overweight or obese (SADHS, 2016:45).

The current high percentage of overweight and obese white men and women in South Africa also gives further justification to dig deeper and further investigate the food practices of urban white adults. Research on the white population in South Africa have decreased in the past 30 years and no studies have recently been carried out on white adult urban populations regarding their food practices, therefore there is no available data regarding the changes in eating practices that may have occurred in the white population in the last decade (Van Heerden & Schönfeldt, 2011). It is important to conduct studies on the urban adult population, regarding their home and food environments, in order to curb the non-communicable diseases that jeopardise so many lives.

It was confirmed that factors such as living in an urban area and changing household demographics of consumers are major determinants that influence daily food practices (Drimie, Faver, Vearey & Nunez, 2013; Story, 2002). As there have been relatively few home-based interventions to improve dietary intake among consumers, environmental interventions that target the home and family food environment represent a valid area for future research (Story *et al.*, 2008). Research is needed to better understand the influences of the local urban and home-food environments and how these contribute to urban consumers' food practices. Understanding the process of food choice requires that the factors that contribute to it firstly be investigated within the specific context of where people live. Limited studies have focused on both the home and local urban food environment. It can be assumed that the local urban food environment influences the home-food environment (Van Ansem, 2012). In order to improve consumers' food practices and lifestyle patterns to reduce the prevalence of NCD's, a sustained public health effort is required which addresses the environmental context and conditions in which consumers live and make food choices (Story *et al.*, 2008). This study forms part of the second phase of a larger research project that investigated the food environments, food practices and dietary intakes of adults in Tshwane (National Research Foundation grant no 93743).

The purpose of this study was therefore to explore and describe the local urban and home-food environments of white adults (25 years and older) in the Eastern suburbs of the Tshwane Metropole and how the local food environment and demographic profile of the household contributes to the food practices of the study group. To the researcher's knowledge, no such study has been conducted in the Tshwane area. Therefore, by exploring the urban and home-food environment, this study will contribute to the limited knowledge available on this topic in South Africa.

1.3 RESEARCH AIM AND OBJECTIVES

The following aim and objectives were formulated for this study:

Aim

To explore and describe the food practices of white adults (25 years and older) in the Eastern suburbs of Tshwane, and how the local urban and home-food environments contribute to the food practices of the study group.

Objectives

1. To determine and describe the food practices of urban white adults (25 years and older) in the Eastern suburbs of Tshwane (hence forth referred to as the study group).
2. To explore and describe the contribution of the local urban food environment to the food practices of the study group.
3. To determine and describe the contribution of the home-food environment to the food practices of the study group.
4. To identify and explain how the local urban and home-food environments contribute to the food practices of the study group.

1.4 RESEARCH DESIGN AND METHODOLOGY

In this explorative and descriptive study, a quantitative research design was followed. Data for this study was collected by means of an electronic survey questionnaire. This particular study therefore was explorative in nature and according to the researcher's

knowledge, this topic has not been researched in the Tshwane Metropolitan area before.

1.4.1 Data collection

An electronic survey questionnaire was used to gather quantitative data for the study. For the larger project of which this study forms part, the services of a data collection company that specialises in consumer-related research were sought to assist with the data collection procedure. The self-administered electronic survey questionnaires were distributed via the data collection company's respondents on their data base who gave their informed consent to participate in the study. Approximately 230 respondents, aged 25 years and older of both genders, were invited via e-mail to participate in the study.

1.4.2 Data analysis

The data was analysed by using descriptive statistics. Descriptive statistics can be represented by either graphical or numerical data (Pietersen & Maree, 2007a:183). Graphs and tables were used to represent the data in a better understandable way (Salkind, 2013:230). The data was also summarised by using numerical statistics such as frequencies, means and medians (Pietersen & Maree, 2007a:186). Data analysis reveals certain patterns and serves as an application to obtain a better understanding regarding the data collected (Zikmund & Babin, 2007:68).

1.5 DELIMITATIONS OF THE STUDY

The study was restricted to Regions 3, 4 and 6 (in the Eastern and Southern suburbs) of the Tshwane Metropolitan Area. Only white adults of 25 years and older who gave their informed consent, participated in the study.

1.6 OUTLINE OF THE RESEARCH REPORT

Figure 1.1 presents the outline of the research report.

In this first chapter, the introduction and background to the study are stated. The problem statement and justification of the study are described. The formulated

research aim and objectives are given and the research design and methodology briefly explained.

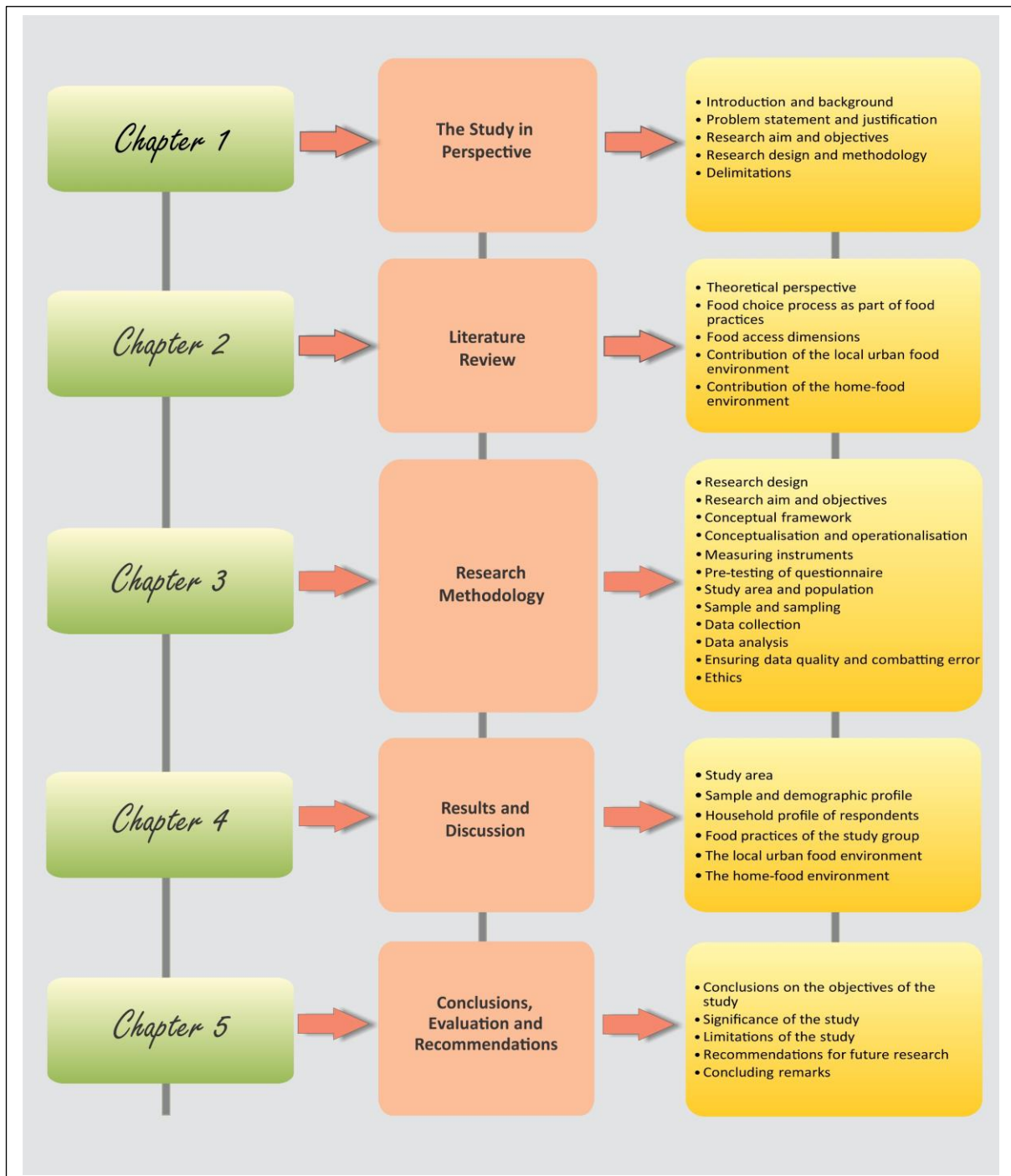


FIGURE 1.1: OUTLINE OF RESEARCH REPORT

In Chapter 2, the theoretical perspective that guided the study is given. A review of the literature on the factors influencing food choice and other main concepts are

presented. The urban food environment as well as the home-food environment are included and discussed in this chapter.

Chapter 3 explains the research design and methodology used in the study. The research objectives are stated and linked to the conceptual framework used for the design of this study. The measuring instruments and the data collection methods are described and discussed. The data analysis methods are described together with methods to combat error during research. The ethical considerations of importance are also addressed.

Chapter 4 presents a detailed outline and discussion of the results of the study. The study area, sample and demographic profile, household profile of respondents, food practices of the study group, the local urban food environment as well as the home-food environment are thoroughly discussed.

In Chapter 5, conclusions are drawn and recommendations for future research are given. The significance of the study, as well as limitations of the study are discussed. Overall concluding remarks on the whole study are also given in order to reach a final conclusion.

1.7 CHAPTER CONCLUSION

In this introductory chapter of the research study, the introduction, background, problem statement and justification for the study were given. This included the research design and methodology followed during the study. A short description regarding the outline of the research report was also given. In the next chapter, the theoretic perspective chosen for the study is given together with a literature review on the main concepts.

Chapter 2

LITERATURE REVIEW

2.1 INTRODUCTION

This chapter provides the theoretical perspective that guided the research and a review of the literature. The chapter includes a review of the factors that influence the food choice process and explains how food choices are formed and developed as part of food practices. The contribution of the local urban- and home-food environments on food choice and food practices are also explored and discussed.

2.2 THEORETICAL PERSPECTIVE

The human ecological perspective was used as a point of departure for this study as it offers a holistic approach to the study of food choice as part of food practices. As human food choice is a complex process that is multi-dimensional and influenced by various external and internal environmental factors that are interrelated and interdependent, a holistic view was therefore helpful to consider the individual in the totality of his/her environments. The human ecological perspective emphasises the interrelatedness and interdependence between people and their environments and views behaviour as influencing and being influenced by multiple levels of interacting influences (Story *et al.*, 2008; Bubolz & Sontag, 1993:421). A number of assumptions were formulated for this perspective (Bubolz & Sontag, 1993:425-426). The following assumptions of the human ecological perspective are applicable and guided the study:

- ***All parts of the environments are interrelated and influence each other***

Each of the environmental levels are interconnected and interrelated with one another (Bryant *et al.*, 2003:11) and influence each other to some extent. The physical, economic and political, socio-cultural as well as the individual and home environments depend on and influence each other. For example, when inflation is experienced in the economic environment, food prices will also increase. Many consumers will thus not be able to afford certain foods due to higher food prices. This could result in

households having to compromise and buy less expensive food items or go without some items. As a result, these households might not be able to invite guests over for dinner or might feel ashamed of the food they are able to afford. The recent drought experienced by the entire South Africa in the summer of 2015 and 2016 had a major influence on the natural food environment. Farmers struggled to produce enough food because there wasn't sufficient rain. Animals died of hunger and thirst. In turn, the price of all food items increased rapidly and people of all economic classes struggled to afford food. The above example illustrates how a single change in the natural and economic environments can result in change in other environments as well.

- ***Humans interact with multiple environments***

Humans do not exist and interact in only one environment but interact with multiple environments (Bubolz & Sontag, 1993:419). For example, members of a household have constant interaction with the various environments that surround them. The primary food purchaser of the household needs to interact with the local urban food environment (i.e. retailers) in order to purchase food. The price of the food is in turn influenced by the economic environment and the primary household food purchaser needs to buy food that will not only satisfy the preference and liking of the other family members in the household, but will also be restricted to choose food that is within the household's food budget.

- ***Humans respond to, change, develop, act on and modify their environment***

Humans and all living beings change the environment simply by existing in it (Bryant *et al.*, 2003:10). In order to survive, humans will do whatever they can to adapt to the changing environment when needed. Urbanisation is a major factor that changes the environment the consumer lives in. Lifestyle changes are frequently observed during urbanisation such as a change in dietary patterns and/or engaging in a less active lifestyle (Pretorius & Silwa, 2011). The increased availability of convenience products and fast food outlets has increased due to urbanisation and changing lifestyles. Many consumers have busy schedules and are employed full-time in order to support themselves or their families and therefore experience time constraints and often don't have enough time to prepare healthy family meals. Therefore, consumers are prone to make more use of convenience food products and fast food outlets that are easily

available and accessible in order to save food preparation time and accommodate their busy schedules. Due to time constraints and work commitments, consumers often have to make changes to their personal environment in terms of the type of food they select.

- ***Environments do not determine human behaviour but provide limitation and constrains as well as possibilities and opportunities for humans***

Environments do not determine human behaviour but rather pose limitations and constraints as well as possibilities and opportunities for humans (Bubolz & Sontag, 1993:427). An example of this can be an urban consumer with health problems who is advised to consume less red meat with a high fat content and refined carbohydrates and more white meat and low fat red meat, fruit and vegetables. This can be a consumer who lives in an urban environment such as Pretoria with numerous food retail possibilities and opportunities to go to the major food retail outlets and purchase a wide variety of white meat and fruit and vegetables of their choice. The environment provides the consumer with the opportunity to improve his lifestyle and lead a healthier life. Many urban consumers are not able to grow their own vegetable gardens in their backyards due to the local urban environment, which serves as a constraint to the consumer.

In the next section, the literature review is presented in three sections. In the first section, the food choice process as an integral part of food practices is explained and discussed, followed by the urban food environment in the second section and lastly, attention is given to the home-food environment. Both the local and home-food environments have an influence on the food practices of urban consumers. It is estimated that consumers make over 220 food choices each day (Wansink & Sobal, 2007) and therefore the food choices that consumers make influence their overall health and quality of life.

2.3 FOOD CHOICE PROCESS AS PART OF FOOD PRACTICES

In order to explain the food practices as it applied to this study, the food choice process as integral part of food practices must first be discussed. Food practices implies how the chosen food is used and has embedded food-related behaviour that is typical of

an individual or group (Viljoen, 2009:15). Food choice is the process in which the individual makes decisions about what food(s) would be consumed out of the available and accessible food for a specific food event (Viljoen, 2009:15; Sobal & Bisogni, 2009). Not only decisions regarding what foods and beverages are to be consumed are made, but consideration is also given to how, when, where and with whom people eat in the process (Sobal *et al.*, 2006:1). The food choice process is guided by two groups of environments, namely the external and internal environments and each is discussed next. In Figure 2.1, the two groups of environments and their embedded environmental levels are displayed.

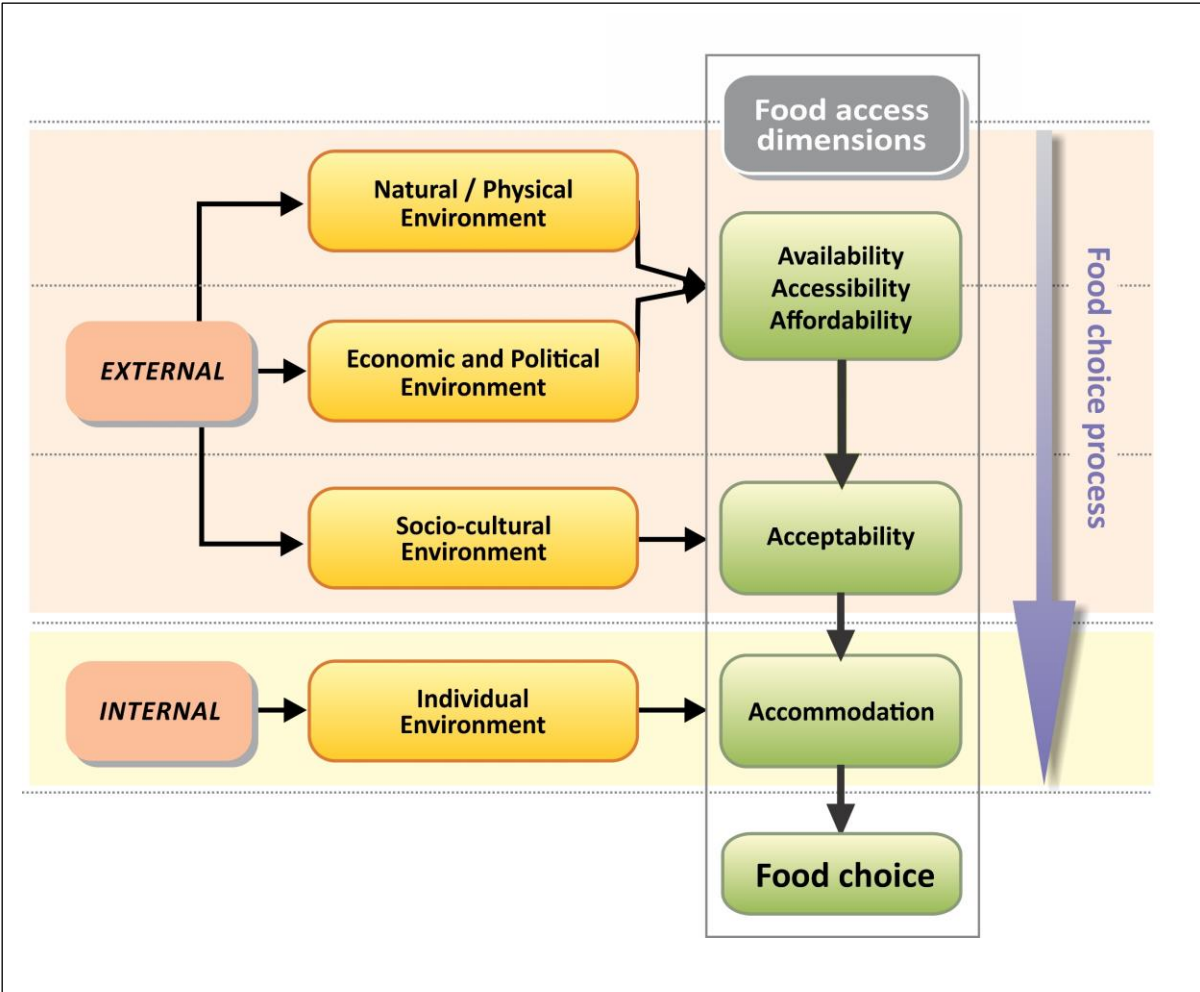


FIGURE 2.1: ENVIRONMENTAL LEVELS CONTRIBUTING TO THE FOOD CHOICE PROCESS (Adapted from Viljoen, 2009:23)

The external environment comprises the natural / physical, economical / political and the socio-cultural environments. The internal environment comprises the individual environment as well as influences and the personal food system.

2.3.1 The external environment

The external environment consists of the following environmental levels: the natural/physical environment, economic and political environment and socio-cultural environment. These are explained and discussed next.

2.3.1.1 The natural / physical environment

The physical environment refers to the natural and structural environment in which humans live and includes the natural-biological features of the environment such as the climate, soil, water resources, plant and animal life (Viljoen, 2009:23; Bryant *et al.*, 2003:11). The physical environment is also described as the location or setting and includes all physical structures within a community in which the choice or consumption of food takes place (Rozin, 2007:67; Story, 2002). This environment thus includes the human-built environment that humans interact with frequently and is the context in which humans make decisions (Hackett *et al.*, 2008). The physical environment of urban consumers thus refers to infrastructures such as roads, shopping centres, neighbourhoods, homes, work sites, restaurants, fast food outlets, supermarkets and convenience stores (Story *et al.*, 2008; Larson & Story, 2009).

2.3.1.2 The economic and political environment

The economic and political environment encompasses the political and economic systems that determine the way in which production, distribution, exchange and consumption of all goods, including food products, are managed (Bryant *et al.*, 2003:13). The economic environment involves both the cost and perceived value of food in a situation (Meiselman, 2007:67) and the political environment refers to aspects such as governmental legislation, policies and controls that impact on production, processing and distribution (Viljoen, 2009:24). People's access to food and other resources and the capacity to exploit these resources, are largely determined by the forces present in the economic and political environment (Bryant *et al.*, 2003:13). Certain food policies and legislations are also part of this environment in order to protect the consumer, for example alcohol purchasing is influenced by governmental regulations and prohibits drinking and driving for the people's own safety (Deliens *et al.*, 2014). In South Africa, alcohol is not allowed to be sold to persons under the age

of 18 years old. There is also legislation that requires that places and restaurants that sell alcohol should have a liquor licence that allows them to sell alcohol products by law. The South African National Department of Health requires the food and beverage industry through legislation to list the ingredients of their products in an attempt to improve public health and protect consumers (Ronquest-Ross *et al.*, 2014). Food product labelling in South Africa is regulated under R 146 of the *Foodstuffs, Cosmetics and Disinfectants Act of 1972*, that came into effect in 2012 (Igumbor *et al.*, 2012). Food companies mostly use Guideline Daily Amounts (GDA) labelling, which requires that the quantity of specific nutrients in the product and the recommended daily allowance be given (Igumbor *et al.*, 2012).

2.3.1.3 The socio-cultural environment

The socio-cultural environment represents the complex interrelationships and interactions that exist among individuals, their culture and society and provides a framework for the behaviour of a society including food-related behaviour (Viljoen, 2009:24). The twin concept "socio-cultural" indicates that there is an interdependency and inseparability of the concepts "social" and "cultural". There can be no culture apart from society and culture describes the patterns of behaviour. Society refers to the people who participate in the culture (Bryant, 2003:190; Viljoen, 2009:24). Cultural values are socially shared and each culture has certain commonly accepted values that differentiate it from other cultures (Rousseau, 2007:48). Culture is dynamic and changes in response to different circumstances and new information (Bryant *et al.*, 2003:12). Food choice and food practices tend to be influenced by both social structures and social relationships that exist in a particular culture and people are often not conscious of the social rules that govern their food behaviour. They accept it as simply how things are done (Viljoen, 2009:25). Culture can be broken down into three components, namely ideology, social organisation and technology and a brief explanation of each follows next (Bryant *et al.*, 2003:12).

- **Ideology**

Ideology refers to values, preferences, meanings, beliefs and knowledge that groups of people share with regard to food (Bryant *et al.*, 2003:13). These are the values that are placed on certain foods and includes norms regarding appropriate meal times and

definitions of what establishes food and meals for individuals (Bryant *et al.*, 2003:13). Cultural ideology also determines what people decide to consume and what not to consume, based on their traditional customs (Adams, 2015:134). Some of these understandings are connected to systems of religious belief, symbolic meanings and associated values that are placed on specific foods (Bryant *et al.*, 2003:13), for example, bread is a food product which is connected to religious beliefs and symbols. In Christianity, bread is symbolic for the body of Christ and bread is eaten during communion to honour this symbol. Bread also has symbolic meaning when using the phrase- “to earn bread and butter”. In this sentence, bread is a symbol of money that is earned to pay for food, housing and survival. Bread can also be used as a collective noun to describe all the food consumed in a day. With ideology, bread has different meanings in different situations and is shared by a group of people.

- **Social organisation**

Bryant *et al.* (2003:12) describe social organisation as the manner in which “social groups organise its members into families, social strata, communities, and other groupings.” The way that food is distributed and exchanged can also serve as a reflection of relationships that are part of the social organisation in a group (Viljoen, 2009:25). Culture-specific cuisines thus dictate not only what foods can be eaten in what form and combinations, but also when. This, together with all the accumulated wisdom about what is edible and appropriate to eat, are transmitted from one generation to the next (Rozin, 2007:12).

- **Technology**

Technology refers to the part of culture that deals with the development of techniques and strategies to obtain food (Bryant *et al.*, 2003:12). It also includes the knowledge, practices, techniques and tools a group uses to produce, store and preserve food (Manana, 2014:14; Bryant *et al.*, 2003:12). Technology could change the nature and availability of foods and influence the opportunity for food choice (Rozin, 2007:12). Technology also contributes to modern changes in food choices of consumers through the use of mass media and advertising (Vereecken *et al.*, 2009). The media, through advertising, often promotes foods that are rich in sugar, fat and/or salt. As

advertisements can be very persuasive, they could make consumers believe that these foods are good or ideal food choices when they often are not.

The individual is however not only influenced by external environmental factors, but also by certain internal environmental influences that have an effect on individual or personal food systems of consumers. These influences of the internal environment are discussed next.

2.3.2 The internal environment

The internal environment is also referred to as the individual or personal environment. Figure 2.2 displays how influences and the personal food system contribute to the food choices of consumers. The figure, adapted from the food choice process model of Sobal and Bisogni (2009), is discussed next. It has to be kept in mind that the internal

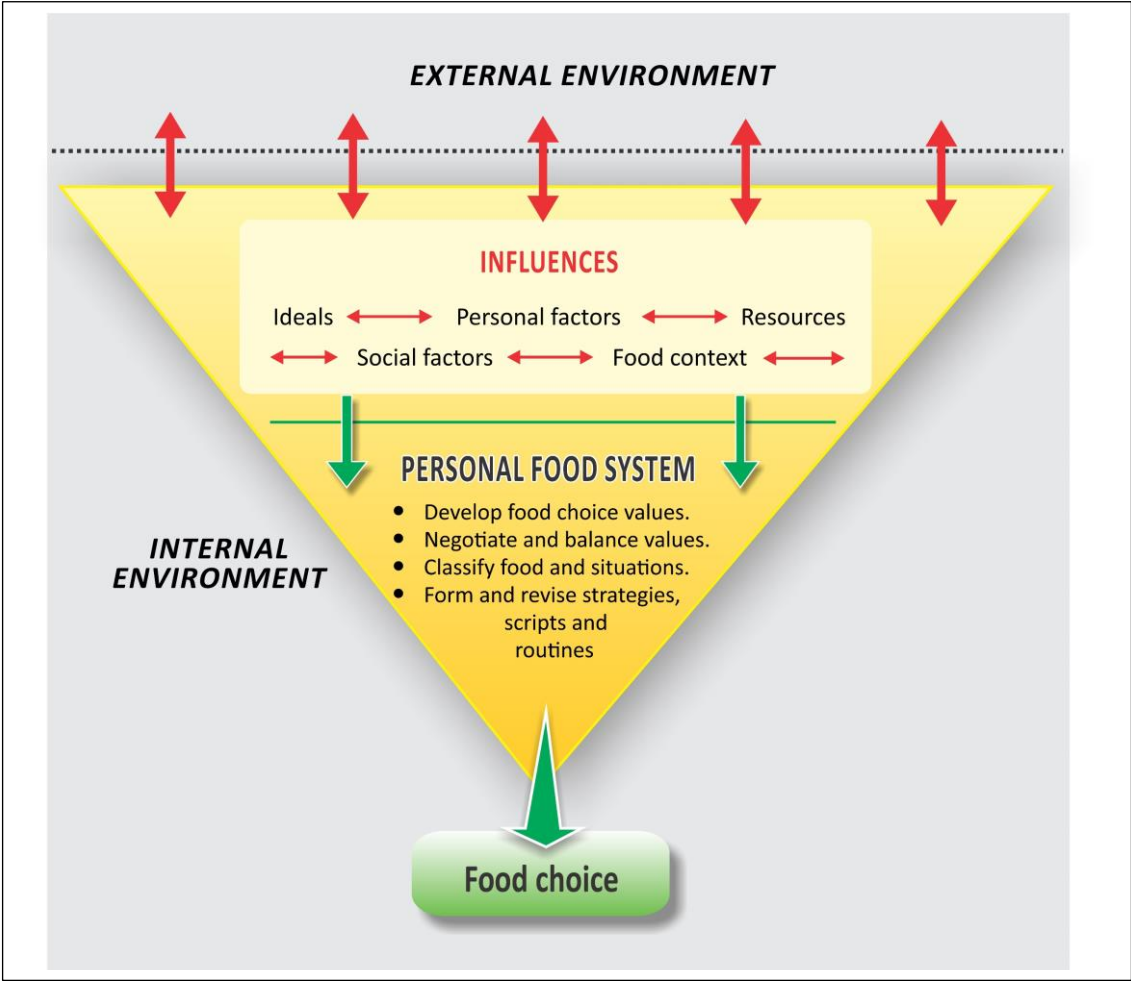


FIGURE 2.2: INTERNAL FACTORS OF THE FOOD CHOICE PROCESS (Adapted from Sobal & Bisogni, 2009)

environment is further strongly influenced by the socio-cultural environment which in turn forms part of the external environment, therefore the internal and external environments are interrelated and influence each other to some extent.

The internal environment comprises of two major components that are interrelated, namely influences and personal food systems (Sobal & Bisogni, 2009; Sobal *et al.*, 2006:5; Furst *et al.*, 1996). The individual level factors related to food choices and eating behaviours include aspects such as cognitions, behaviours as well as biological and physiological factors of the individual (Story *et al.*, 2008). For the purposes of this study, only the two components of influences and personal systems were applicable.

2.3.2.1 Influences

Influences on food choices are numerous, varied and include physical, psychological and social factors that are simultaneously considered in the process of making decisions regarding what, where, when, with whom and how much one should eat in a given food context (Sobal & Bisogni, 2009). Figure 2.2 gives the five major groups of influences related to food choice, namely ideals, personal factors, resources, social factors and the present food context (Sobal & Bisogni, 2009; Furst *et al.*, 1996). Each group of influences is briefly discussed next.

Ideals provide standards as reference points that individuals use to judge certain food behaviours as correct, appropriate or inappropriate for a specific situation or context (Sobal & Bisogni, 2009). Ideals are also the standards people have learned through the process of socialisation and acculturation that they use to make food choices (Sobal *et al.*, 2006:5).

Personal factors are characteristics of the individual that influence food choices and include physiological factors such as sensory sensitivity, genetic predispositions and psychological characteristics (food preferences, personality, mood and phobias). Relational factors of identity and self-concept are also included (Sobal *et al.*, 2006:6). Personal factors change and develop over time and provide opportunities to individuals to be unique in their food decisions (Sobal & Bisogni, 2009). Personal factors shape the boundaries of food choices a person is willing to make and include likes and dislikes, individual food styles, food centeredness and emotions as well as

characteristics such as gender, age, health status, sensory preferences and state of hunger or satiety (Furst *et al.*, 1996).

Resources can be described as the assets that individuals consider when making food decisions (Sobal & Bisogni, 2009). Resources in food decision making can be tangible in the form of money, equipment and space, or intangible in the form of skills, knowledge and time (Furst *et al.*, 1996). Individuals will make food choices by being aware of the resources available to them when making food selections and also by excluding certain food options which would not be possible given the existing resources present or lacking (Sobal *et al.*, 2006:6). Consumers, for example, make many food choice decisions based on their current financial situation and time available to prepare and eat food.

Social factors refer to the relationships which people are engaged in that influence food choices and could for example include roles, families, groups, networks, organisations, communities and other social units that provide opportunities and obligations for constructing eating relationships and food choices (Sobal *et al.*, 2006:6). Social factors can either facilitate or constrain food choice decisions (Sobal & Bisogni, 2009). Most eating occurs in the presence of other people such as family and friends, therefore these relationships form an important part of the food choice process.

Food contexts are the broader environments where people make food choices (Sobal & Bisogni, 2009). Food contexts include physical surroundings and behavioural settings, social institutions and policies, as well as seasonal and the temporal climate (Sobal *et al.*, 2006:6). A given food context can expand or constrain food choice possibilities or establish a certain atmosphere or nature that becomes part of the food choice process (Furst *et al.*, 1996). For example, a cosy restaurant establishes an atmosphere for people to order food, socialise and drink some wine. When people wine and dine in a cosy and relaxed environment, the food choice possibilities are expanded.

2.3.2.2 Personal food system

The second component of the internal environment relates to the personal food system. The personal food system is the way in which individuals construct their food choices while considering values and employing other cognitive processes for selecting foods (Sobal *et al.*, 2006:14). Personal food systems thus represent the way in which people use options, trade-offs and boundaries when they make food choices (Sobal *et al.*, 2006:7). The personal food system includes the process of constructing food choice values, classifying foods and situations according to these values and then negotiating these personally defined values in food choice settings, by balancing competing values and developing strategies for food selection and eating in different situations (Furst *et al.*, 1996:257; Sobal *et al.*, 2006:7; Sobal & Bisogni, 2009).

- **Develop food choice values**

Food choice values are the considerations people make when choosing food. These could for example include the sensory attributes (taste, texture, and flavour), cost, health, convenience and managing social relationships (i.e. considering the preference importance and feelings other people attach to food) (Sobal & Bisogni, 2009).

- **Negotiate and balance food choice values**

Food practices are dynamic and change over time. As life events and experiences shape and alter food choice values, it may result in new or modified food choice values (Sobal *et al.*, 2006:7). Value negotiation is of importance in the food choice process because it only rarely happens that all food choice values can be satisfied in a specific food and eating situation or context (Furst *et al.*, 1996). Therefore, a person often has to weigh certain values against others and, in this process, compromise certain values for others. The priority of food choice values thus varies according to individual traits, personal states and situational contexts (Sobal *et al.*, 2006:11). Value negotiations may provide boundaries that exclude some choices (such as high food prices) and could pose decision dilemmas like trade-offs between taste and health, cost and convenience, or health and interpersonal relationships (Sobal & Bisogni, 2009). Consumers therefore tend to develop cognitive strategies for making food choices and these strategies guide many food choices that tend to recur and become a routine

(Furst *et al.*, 1996:260). When initial conscious and mindful food choices occur repeatedly, strategies emerge to simplify the food choice decisions by using certain guidelines and shortcuts. The consumer thus becomes less mindful about these decisions and therefore resorts to act subconsciously (Sobal *et al.*, 2006:11).

- **Classify food and situations**

Consumers might make use of routinised strategies to standardise or ritualise certain food choice decisions in order to make it easier for themselves when making a food choice (Sobal & Bisogni, 2009). It is a complex world we live in and therefore food classification schemes are helpful to construct food choice decisions (Sobal & Bisogni, 2009). In order to simplify these food choice decisions, consumers classify food and situations according to certain categories that they develop based on the characteristics of the food, the contexts or personal experiences (Sobal & Bisogni, 2009). For example, people might classify and organise food into groups by using context specific categories such as “road food”, “breakfast food” or “kid’s food” (Blake *et al.*, 2008).

- **Form and revise strategies and scripts**

Consumers also tend to form food choice scripts or schemas that are familiar to them when making food choices. Scripts or schemas include consecutively ordered behaviours that can be characterised as strategies which serves as a general guide for behaviour and procedures that include details about how a person will behave within a specific food situation (Blake *et al.*, 2008). These scripts help to visualise certain expectations regarding a situation and also provide a plan of action that will be familiar and comforting to them when making food choices (Sobal & Bisogni, 2009; Blake *et al.*, 2008). This helps individuals to make food choices with more confidence and ease, through reacting in a way that makes them feel secure. Examples of personal food choice schemas could include self-descriptive words such as dieter, health fanatic, picky eater, non-restrictive eater and inconsistent eater which holds different food meanings to different people and will result in unlike script constructions for each (Blake & Bisogni, 2003). Viewing food choice as involving scripts provide useful concepts for understanding and identifying how different cognitive processes work together during food choice (Blake *et al.*, 2008). It is however important to note

that food choice schemas and scripts are not static phenomena and can change over time as individuals transition through different life stages such as marriage, illness or retirement (Blake & Bisogni, 2003). Figure 2.3 gives examples of the different strategies consumers might use in order to simplify their food choices.

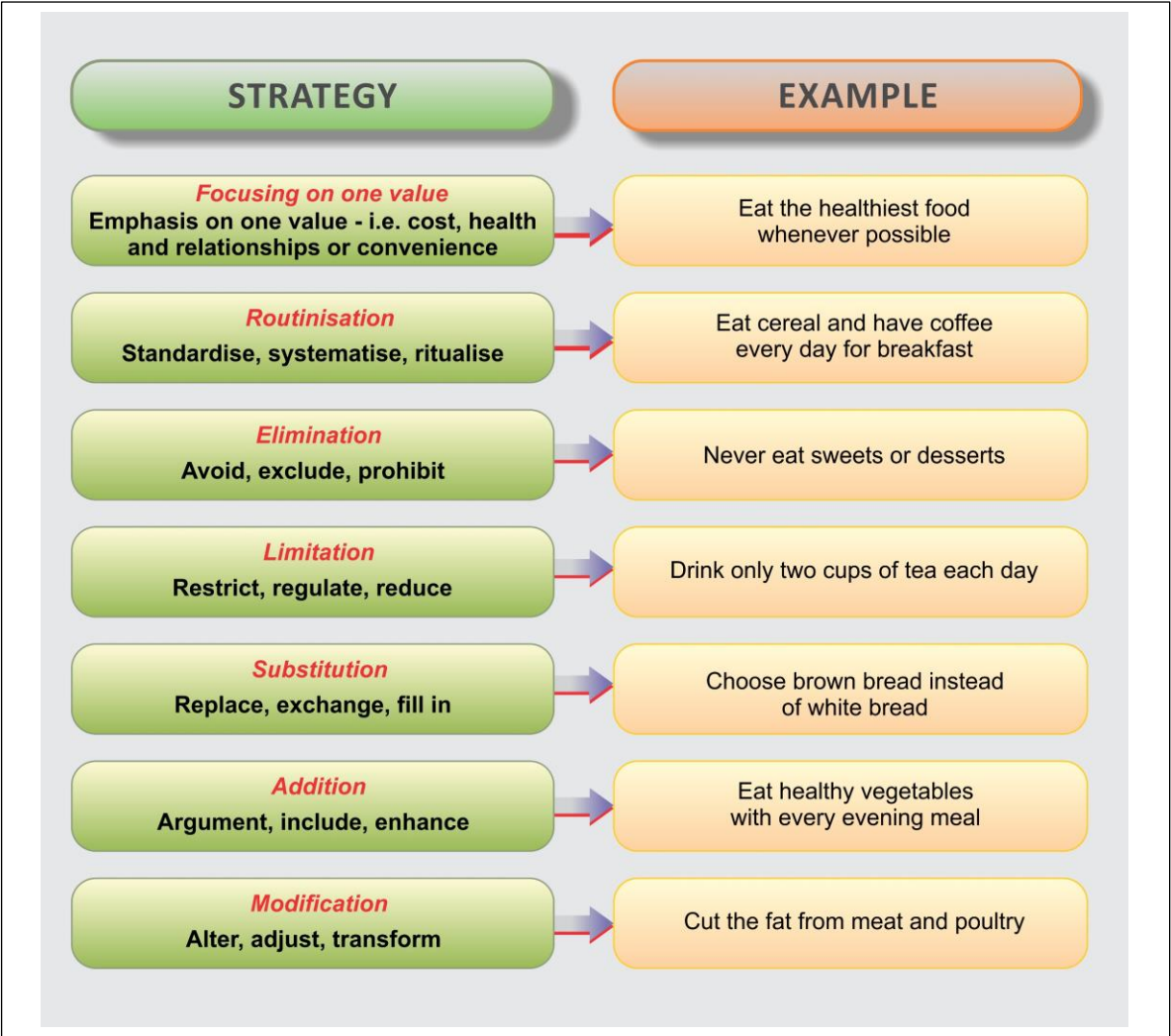


FIGURE 2.3: SELECTED STRATEGIES FOR SIMPLIFYING FOOD CHOICES (Adapted from Sobal et al., 2006:12)

These major strategies and other cognitive processes facilitate food choice decisions by making them more habitual and routinised, so that the process of classification and value negotiations are not necessary in every food choice situation (Sobal & Bisogni, 2009).

Apart from the influencing factors and personal food as discussed above, the importance of access dimensions that are closely associated with both the external and internal environments has in recent times received considerable attention, in order

to gain a more comprehensive understanding of the food choice process (Bryant *et al.*, 2003:11). In the next section, the role and influence of the access dimensions in the human food choice process are explicated.

2.4 FOOD ACCESS DIMENSIONS

The five access dimensions of availability, accessibility, affordability, acceptability and accommodation are considered as associated influencing dimensions to the food choice process and are given in Figure 2.1 on the right. Food availability, accessibility, affordability, accommodation and acceptability could further either enhance or restrict the food choices of consumers (Larson & Story, 2009; Bryant *et al.*, 2003:11; Story *et al.*; 2002). People only choose foods from what is available, accessible, affordable and acceptable to them.

2.4.1 Availability and Accessibility

A major determinant of what consumers eat is the availability of the food and therefore they will only purchase and eat what is present in the stores, restaurants or homes (Rozin, 2006:19). Food availability is also dependant on the adequacy of supply and therefore food stores will only have food products available that are sufficiently supplied by farmers and manufacturers. Accessibility refers to foods that are in plain view or that are easily obtainable such as fresh vegetables in the refrigerator or fresh fruit on the shelves in a food store (Story *et al.*, 2002). The accessibility of food is also influenced by the geographic location. In South Africa, for example, there is a more adequate supply of strawberries in the summer months than in winter. Strawberries will also be more accessible in the geographic areas close to the strawberry farms. Strawberries are farmed in Stellenbosch and other Western Cape regions and therefore it needs to be transported to other areas of the country such as Gauteng, in order to be accessible to consumers in other geographic locations.

Research suggests that access to various types of retail food stores and the physical availability of food products in the local stores influence food choices (Cannuscio *et al.*, 2014; Larson & Story, 2009). Studies have also shown that easy access to supermarket shopping, home availability and accessibility of fruits and vegetables are

positively related to an adequate macro- and micronutrient intake (Larson & Story, 2009; Story *et al.*, 2002).

2.4.2 Affordability

The affordability of food also influences the food choices that consumers make daily. The price and perceived worth (value for money) of food products often dominate food choices and will determine if a product will be bought or not (Furst *et al.*, 1996).

2.4.3 Acceptability

The access dimensions of availability, accessibility and affordability of food will ultimately contribute to the overall acceptability thereof. The consumer will finally decide if the food product is acceptable to purchase and consume only after carefully evaluating all the different access factors. Acceptability is also determined by an individual's attitudes, personal values and standards (Caspi *et al.*, 2012). Although product acceptability is a personal decision, it can also be guided by quality and price of the product.

2.4.4 Accommodation

Another access dimension of importance is the level of accommodation that the food store offers to the consumer. The retailer needs to make provision for different consumer groups that reside in an area. For example, a food store in a well-developed urban area usually has credit card facilities and longer retailing hours, whereas a food store in a small countryside town will probably not offer this. Food stores also accommodate consumers living in the area. A food store in an area where many families reside, will cater for them by for example supplying family meals and family size packaging. On the other hand, a food store close to a university where students live nearby, will provide single serving packaging, smaller quantities and more discounted prices in order to accommodate the needs of students.

As the study concerned the food practices of urban consumers, attention to the local urban food environment was of importance. The local urban food environment is a major determinant that influences the food practices of consumers.

2.5 CONTRIBUTION OF THE LOCAL URBAN FOOD ENVIRONMENT

The urban food environment consists of the human-built environment which represents the infrastructure and physical structures such as homes, work sites, schools, neighbourhoods, shopping malls with restaurants, fast food outlets, supermarkets, hypermarkets as well as convenience stores (Story *et al.*, 2008). Urban areas and cities such as the Tshwane metropole are the fundamental building blocks of the everyday, modern life and serve as centres of advancement, innovation, civilisation and facilitators necessary for the progress of humankind (Aoun, 2013). Cities are known to be society's engine of innovation and wealth creation (Bettencourt *et al.*, 2007), and provide people with endless opportunities. Electric grids, water distribution systems, public and private roads and other distribution systems, commercial buildings, hospitals and homes are critical systems in urban areas that form part of the cornerstones of a city's efficiency, liveability and sustainability (Aoun, 2013).

2.5.1 The food retail environment in urban South Africa

In urban South Africa, the formal food retail sector includes a wide range of neighbourhood convenience stores, speciality stores, boutique stores, chain supermarkets, department stores and large wholesale and retail outlets (Claasen *et al.*, 2016). The value of the South African food retail market is estimated at R460 – R470 billion and includes, amongst others, groceries, perishables, baked goods, meat, fruits and vegetables, but excludes food services (Trade Intelligence, 2016). It is reported that most consumers do their primary food shopping at local supermarkets (Cannuscio *et al.*, 2014; Cannuscio *et al.*, 2013; Freedman & Bell, 2009) which are also regarded the most popular, as they give the most diverse and healthy food options to consumers in comparison to convenience and smaller food stores and local markets (Cannuscio *et al.*, 2014; D'Haese & Van Huylenbroeck, 2005). Supermarkets are large stores with lower prices in comparison to other food stores and offer a full-line of a variety of high quality products including the services of a deli, bakery and butchery (Larson & Story, 2009). Supermarkets have been reported to be the stores that offer the highest access to healthy foods in comparison to convenience stores and local markets that offer limited access (Freedman & Bell, 2009; D'Haese & Van Huylenbroeck, 2005). Corporate food retail in South Africa is largely concentrated and dominated by a few major players whose growth over the past ten years has been

driven by an accelerated increase in new store openings across the country (Trade Intelligence, 2016). The South African supermarket industry is dominated by four large chains, namely Pick n Pay, Shoprite-Checkers, Spar and Woolworths (Stroebele & Van Schalkwyk, 2012).

On the other hand, convenience stores usually offer a limited selection of staple groceries, ready-to-eat foods and non-food items such as cigarettes and magazines, due to limited shelf space (Larson & Story, 2009; D'Haese & Van Huylbroeck, 2005). Examples of convenience stores in South Africa are small express shops as well as tuck shops at petrol stations. The products in convenience stores usually have higher prices and a smaller selection of healthy food is offered in comparison to supermarkets (Cannuscio *et al.*, 2014). The South African food retail is set apart from other African countries, mainly because of the highly developed and competitive formal retail market (major chains), which makes up 70% of total food sales and smaller local supermarkets and convenience stores which make up 30% of food retail sales (Trade Intelligence, 2016).

2.5.2 Accessibility of the local urban food environment

The rising urban population has increased the demand for products and services associated with fast-paced urban living and in particular food products that are convenient and time-saving (Osman *et al.*, 2014). The local urban food environment includes features such as distance to food stores, density of food outlets, as well as availability, accessibility, quality and the price of food in stores (Van Ansem *et al.*, 2012). Literature on food consumption and food environments mainly focuses on two measurement concepts. The first deals with the distance to food stores, as a major driver which determines where consumers will purchase food and the second concept deals with where consumers will frequently shop for food within their local neighbourhood (Cannuscio *et al.*, 2014). The local food environment can be measured objectively by means of the geographic information systems (GIS) or subjectively by measuring consumers' perceptions regarding the characteristics of the local environment (Van Ansem *et al.*, 2012).

2.5.3 Barriers of the local urban food environment

An infrastructural aspect of the urban food environment is the spatial accessibility to food retail stores in relation to where consumers live or reside (Dean & Sharkey, 2011). Nesbitt *et al.* (2008) found that most consumers travel and shop for groceries 1.3 times in an average week. Some consumers will even travel more than a kilometre beyond their closest supermarket in order to reach their preferred shopping destinations (Cannuscio *et al.*, 2013). Instead of automatically shopping at stores closest to home, consumers prefer to shop at another store that will accommodate their needs better than those in their immediate urban environment (Cannuscio *et al.*, 2014). Consumers are willing to shop in stores outside their local neighbourhood in order to obtain better quality and lower cost food (Williams *et al.*, 2011:7). Consumers are only more likely to shop near their home if the local supermarket has more diverse and healthy food offerings (Cannuscio *et al.*, 2013). The urban food environment thus is a dynamic social landscape and not just a collection of retail outlets (Cannuscio *et al.*, 2014). Urban consumers therefore find it convenient to shop at stores that have easy access to parking and that accommodate persons with physical disabilities or special needs, in order to integrate food shopping more easily into their daily activities such as meeting children after school (Cannuscio *et al.*, 2014).

Consumers who have access to supermarkets near their homes are more likely to follow a healthy eating pattern and the presence of a supermarket near the consumer's home can be used as a key measure in the local food environment (Larson & Story, 2009; Moore *et al.*, 2008). Studies have shown that easy access to supermarkets is associated with an increased consumption of fruit, vegetables and grains that could contribute to eating more healthy (Larson & Story, 2009). Another aspect to take note of is the unequal distribution of healthy foods in urban communities. Studies have shown that differences in access to food stores and restaurants exist in accordance to the socio-economic status associated with an area (Andress & Fitch, 2016; Larson *et al.*, 2009). There is evidence that low-income communities are more disadvantaged than affluent communities by experiencing poor access to supermarkets and healthful foods (Andress & Fitch, 2016; Larson & Story, 2009). However, there is contradiction in research findings as this is not always the case with all consumers (Minaker *et al.*, 2013; Krikpatrick *et al.*, 2014). Although health and nutrition inequalities can be

explained by factors such as economic barriers to purchasing food, differences in the local food environment, time constraints and limited resources for food preparation are also contributing factors (Larson & Story, 2009). An important issue for low-income communities is the availability and access to healthy food options in the immediate local food environment together with the provision of transportation to stores that offer healthy food options (Cannuscio *et al.*, 2013). The most accessible items in an American study were alcohol and tobacco products which is a reason for concern regarding the availability of healthy food options in the local urban environment (Freedman & Bell, 2009). The food environment in South Africa is influenced by 'Big Food' companies which are large commercial entities that dominate the food and beverage environment with adverse health implications (Igumbor *et al.*, 2012). The South African food environment consists of over 1 800 food manufacturers where the ten largest packaged food companies account for a disproportionately large share of sales, at 51.8% of the total packaged food sales (Claasen *et al.*, 2016). These Big Food companies developed different strategies to make their products, which are often processed foods, more available, affordable and acceptable to consumers (Claasen *et al.*, 2016). This could negatively influence the health of South Africans.

2.5.4 The urban consumer

The number of women in formal employment is increasing and individual health consciousness and food safety concerns are growing due to better education and access to valuable information regarding food (Claasen *et al.*, 2016). Urban consumers actively engage with their local urban food environments by choosing to shop at stores that meet a wide range of social needs (Cannuscio *et al.*, 2014). These social needs are met through food retailers that offer opportunities for social connection and positive social encounters (Cannuscio, *et al.*, 2014). For example, individuals often go to food stores not only to buy food, but also to socially interact with other human beings by talking to employees and other shoppers in the food store.

The modern urban lifestyle has a big influence on family or home-food environments. The diverse pressures experienced by females from both the work and home environments, have for example reduced the time that female consumers have for household chores and as a result created a market for convenience food products and fast food restaurants (Schiffman & Kanuk, 2010:328; Story *et al.*, 2002). The modern

female consumer is overwhelmed by balancing work and family demands together with providing healthy meals to their families (Johnson *et al.*, 2011). Therefore, they will most likely resort to coping strategies and convenience and fast food options and in the process make trade-offs between their own and their children's nutrition in order to save time and energy (Johnson *et al.*, 2011).

Living in a South African urban area increases the probability of being obese for both men and women (Averett *et al.*, 2014; Sishana *et al.*, 2013). Lifestyle changes that are most frequently observed with urban living are a change in food patterns and a less active lifestyle (Pretorius & Silwa, 2011). Most urban consumers live a fast-paced life and the changing consumer demographics have led to less time for cooking, a higher demand for convenience foods and new food products with high taste profiles (Claasen *et al.*, 2016; Osman *et al.*, 2014). The average incomes of urban consumers in South Africa are rising. This rise in income is associated with a shift to more sedentary office-related jobs, therefore decreasing the individuals' need to exert energy and increasing the opportunity to purchase energy dense food (Averett *et al.*, 2014). The frequent consumption of fast food, snacks and convenience food among urban consumers is reason for concern. The hectic lifestyle of urban consumers has resulted in the habit of frequent snacking as well as opting for convenient and fast foods. (Abdullah *et al.*, 2015; Van Zyl *et al.*, 2010). Most fast food franchises in urban areas have home delivery services available and this has increased the access to fast food for the urban community (Abdullah *et al.*, 2015). Because of urban living and rapid lifestyles, snack foods are described as a major part of the urban consumer's food habits, which also forms part of the habit that motivates more frequently planned as well as unplanned shopping trips (Cannuscio, *et al.*, 2014). On the other hand, there is also a tendency amongst some consumers to aim for the consumption of lower priced food, because of the high costs associated with living in urban areas (Abdullah *et al.*, 2015).

Not only the local urban food environment influences the food practices of the modern urban household, but the home-food environment is another important determinant as well. The home-food environment forms part of the individual environment and is therefore more personal or closer to the consumer. In the following section, the home-food environment, including aspects of the household socio-demographics, their food

practices, methods of food procurement and preparation, as well as the importance of family meals are highlighted.

2.6 CONTRIBUTION OF THE HOME-FOOD ENVIRONMENT

The home-food environment forms part of both the individual and socio-cultural environments due to the intertwined and overlapping nature of these two environments. Food choices are not merely the domain of the individual, but are influenced by the family and therefore the home-food environment is also an important determinant of food consumption patterns that needs exploration (Ricciuto *et al.*, 2006). The home-food environment and other family members are important socio-demographic influences on individual food intake (Larson & Story, 2009:57). The home-food environment is a broad concept that thus refers not only to the food available and accessible in the household, but also includes role modelling, eating styles and family food rules (Van Ansem, 2012). Although many consumers eat most of their food at home, many eat some meals away from home on any given day (Daniels & Glorieux, 2015; Van Zyl *et al.*, 2010; Meiselman, 2007:77). There are several factors within the home-food environment that are associated with healthy eating behaviours and among the strongest of these factors are the availability and accessibility of healthy food, the frequency of family meals and parental food practices (Story *et al.*, 2008). The accessibility and availability of food in the home are largely determined by family food rules, parental role modelling and eating styles (Van Ansem *et al.*, 2012).

2.6.1 Household socio-demographics

Society has changed over the past decades as more females are being employed outside the home to follow a career and marry and have children at a later age than previous generations. This contributed to change in the family life-stages and demographics have spilled over to food-related behaviour changes in families and households.

2.6.1.1 Family life-stages

Families naturally advance through the following life-stages: bachelorhood, honeymooners (marriage), parenthood, post parenthood and solitary survivor (Schiffman & Kanuk, 2010:332). However, in the United States, approximately 55% of career women of 35-years old are childless, almost half of 40-year old career women are childless and the number of childless women between 40- and 44-years old has doubled over the past 20 years (Schiffman & Kanuk, 2010:321). In South Africa, the number of educated women without children also increased, as statistics show that 41.7% of women aged 25 to 29 years and 19.4% of women aged 30 to 34 were childless in 2001, in comparison to 50.8% of women aged 25 to 29 years and 29.1% of women aged 30 to 34 who were childless in 2011 (Masebe & Ramosebudi, 2015). Young people get married at a later age and children don't always get raised by both parents and might live in a single parent household. Households consisting of married couples with children under 18 years old have thus decreased from 40.3% in 1970 to only 22.7% in 2006. Households with members not being married and not having children rose from 19% in 1970 to 32% in 2006 (Schiffman & Kanuk, 2010:321). Schiffman and Kanuk (2010:332) provide a suitable classification of the different family life-stages that individuals might experience through their lives. Table 2.1 presents this classification.

TABLE 2.1: FAMILY LIFE-STAGE CONCEPTUALISATION (Schiffman & Kanuk, 2010:332)

Stage	Name	Description	Household
Stage I	Bachelorhood	Young single person living without their parents	Single Person Household
Stage II	Honeymooners	Young married couple	Nuclear Household (variation)
Stage III	Parenthood	Married couple with at least one child living at home	Nuclear Household
Stage IV	Post parenthood	Older married couple/single person with no children living at home (Empty-nesters)	Nuclear Household Variation
Stage V	Solitary Survivor (Dissolution)	Widow or widower (only one spouse remains)	Single Person Household

2.6.1.2 Food consumption patterns

It can be assumed that the food consumption patterns of families with children and families without children will be different. Parents often underestimate the influence their children have on their purchasing patterns when both parents are occupied in full-time employment, children often influence purchasing decisions in order to compensate for the adults' absence from the home environment (Rousseau, 2007:77). Consumers belonging to different family life-stages will have different food-related behaviours. For example, a person in the life-stage of bachelorhood will buy smaller quantities of food and prepare smaller meals as they only have to cater for one, whereas those in the parenthood life-stage will buy more food and prepare bigger meals for the whole family. It would also take longer to purchase and prepare food for families.

The food practices of consumers will most likely differ during each life-stage that they experience. During bachelorhood, the single person usually lives on their own and will therefore prepare smaller quantities of food daily for meals and they only have to buy foods that they themselves like and prefer. More food will be bought for special occasions when friends come over or family is invited. During stage two, the honeymoon phase, the household consists of a young married couple. The couple will make and prepare food according to their combined tastes and preferences. In stage three, the parenthood stage, the married couple now has one or more children living in the household. The mother usually provides food for everyone in the home and more time for food preparation is often needed. Young children of different ages will also have unique nutritional needs. A baby's needs differ from those of a toddler or teenager.

In stage four, during post parenthood, the couple will live on their own again and only needs to provide food for themselves. Older people also need healthy nutrition and sound food practices to combat the effects of aging. In the last stage, there is often only one solitary survivor that needs to provide food for themselves. The person will either live on their own and prepare single meals. or live in a retirement village or home for the elderly where food will be provided. The size of the household will also influence the food practices of the members. It can be assumed that larger families will acquire and consume more food than smaller households containing only one or two people.

Other household socio-demographic characteristics such as gender, education, age of household members and household income have a strong influence on consumers' food practices (Nesbitt *et al.*, 2008; Ricciuto *et al.*, 2006).

2.6.1.3 Occupation, income and education of breadwinner

The occupation of the main breadwinner in the household will determine the family's total household income and also the amount of money available to spend on certain types of food. Families with a limited food budget will most likely select energy-dense foods that are higher in refined grains, sugar and fat in order to get more energy from these food (Story *et al.*, 2008). Families with high annual food expenditures spend a considerably higher percentage of their food budget on away-from-home meals for example restaurants, take-away, convenience food and pre-prepared store-bought food (Daniels & Glorieux, 2015). Household income is thus a strong determinant of food selection, for example households with a higher income are often more inclined to increase their fruit and vegetable purchases (Ricciuto *et al.*, 2008). Some studies found that higher levels of education are also associated with purchasing more better-quality foods and more fruits, vegetables and milk. For example, households where the person responsible for food purchases received tertiary education purchased 6% more fruits and vegetables than others with less education (Ricciuto *et al.*, 2008), and more educated persons also tend to purchase better quality foods (Averett *et al.*, 2014).

2.6.1.4 Age of household members

The ages of household members influence food selections and consumers from specific life-stages (for example childhood or older adulthood) have different food needs and preferences (Ricciuto *et al.*, 2008). Older individuals are more likely to consume more fruits, vegetables and other healthy foods in comparison to children and adolescents who are more likely to consume dairy products such as ice cream and cheese (Nesbitt *et al.*, 2008).

2.6.1.5 Gender roles in modern households

The senior female in a household is regarded as the gatekeeper responsible for food purchasing in the household (Cannuscio *et al.*, 2013; Liese *et al.*, 2013; Botonaki & Mattas, 2010; Dibsall *et al.*, 2002). Females enact their health identity in the family by making food-related decisions such as deciding what foods to purchase and make available for their families at home and also by providing verbal information about food (Johnson *et al.*, 2011; Deliens *et al.*, 2014). In 2011, 35.8% of households in Tshwane were female headed (Ganief & Thorpe, 2013). Mothers and female guardians are often the household heads or gatekeepers and their educational background and upbringing, parental attitudes, nutritional knowledge and cooking skills directly influence their family members' meal patterns and food intake (Dammann & Smith, 2009). The nutrition knowledge of the primary food purchaser and preparer therefore plays an important role in the quality of the family and household members' food choices (Dammann & Smith, 2009).

Males are more likely to consume more meat products in comparison to females who are more likely to consume foods such as fruits, vegetables, salads and dairy products (Nesbitt *et al.*, 2008). Although females may be the primary food shoppers, their food selections are driven to a large extent by their spouse or male partners' food preferences (Ricciuto *et al.*, 2006) and therefore the wife will buy food she knows her husband prefers. With women being the primary food shoppers and preparers in most households, Dammann and Smith (2014) are of opinion that future research focusing on the important role of the female in the household could give better insight on household dynamics that surround food-related decisions and issues.

It is thus clear that the socio-demographic characteristics of households contribute and influence family food consumption patterns and this area needs to be investigated and studied further, also in the Tshwane metropolis area.

2.6.2 Food procurement and preparation in the home

Most modern families in North America are known to do their primary food purchasing at supermarkets (Cannuscio *et al.*, 2013) and thus consumers are more likely to shop near their homes if the local supermarket has a more diverse, healthy food offerings

(Cannuscio *et al.*, 2014). It is important to note that the type, amount and available storage facilities for food in the home may influence the food-related behaviours of the family members in a positive or negative way (Larson & Story, 2009). For example, if families have limited storage space for fresh food in their homes, they might have to drive many times to a store in order to purchase milk, fruits and vegetables.

Family eating habits are also influenced by the geographic location of the home, including the size of the home, the size of the kitchen and space allocated for food preparation and storage (Hackett *et al.*, 2008). Less desirable eating habits among consumers are linked to circumstances such as living in a small house with a small kitchen with limited space for preparation and storage of food (Hackett *et al.*, 2008).

Food preparation is also an important factor that forms part of the food practices of the modern urban household. Home cooking is not only used to prepare meals that meet the family's nutritional requirements, but it is also used as a way to relax or impress friends and family coming over for a meal (Daniels *et al.*, 2012). Research shows that cooking skills of members in the home correlates positively with weekly vegetable consumption, but correlates negatively with weekly convenience food consumption (Hartmann *et al.*, 2013). Convenience food also forms an important role regarding food preparations in the home-food environment. Because of the time-constraints that modern urban consumers experience, they often make use of convenience food to save preparation time. Convenience has become a major trend in food consumption in the past decades, as consumers consume more convenience food products and make more use of fast food services (Daniels & Glorieux, 2015; Meiselman, 2007:75). The living cost in urban areas has escalated and therefore the tendency for consumers to consume lower priced food exists (Abdullah *et al.*, 2015). As societies have become more urbanised, the available income of households has increased as more women are employed outside the home. Therefore, ready-to-eat meals and fast foods have become attractive and convenient choices in these urban households (Monteiro *et al.*, 2013). Convenience foods which include partially prepared ingredients and meals, account for nearly 30% of households' total food expenditure and this confirms that convenience foods are indeed an important part of today's food consumption patterns (Daniels & Glorieux, 2015). An example of partially prepared foods is pre-cut and pre-

washed vegetables. Another example is cake ingredients sold in a box, where only eggs and milk need to be added to the mixture and then baked in the oven.

Families with a limited food budget usually select energy-dense foods that are high in refined grains, fats and added-sugars in order to get more energy from these foods and to save money (Larson & Story, 2009; Story *et al.*, 2008). According to Temple and Steyn (2011), only the people in the top 20% income level in South Africa can afford a healthier diet. Fresh fruits and vegetables are more expensive than fats and sugars on a per kilojoule basis, but nevertheless, reducing the price of healthy food might improve their consumption (Story *et al.*, 2008). Larson and Story (2009) suggest that fruits, vegetables and other healthy foods should be kept accessible and visible at home and purchased regularly in order to increase their intake among family members. Household food accessibility refers to whether the available foods are in a form or location that facilitates their consumption (Story *et al.*, 2008). Consumers that live in a household where fruit and vegetables are not always available are less likely to consume the recommended daily amount thereof (Van Ansem *et al.*, 2012).

The increased consumption of convenience food is greatly influenced by the easy accessibility, frequent availability and affordability of the products (Abdullah *et al.*, 2015). If foods are carefully selected, it is possible for families to consume a diet that is affordable and has an overall low energy density, but many South Africans do not have the required knowledge to select lower energy nutrient dense food (Temple & Steyn, 2009). Therefore, it is important not only to educate consumers on the importance of healthy eating but also to provide advice on how to choose and use healthy food in a more affordable manner (Temple & Steyn, 2009).

2.6.3 The role and importance of family meals

Research has consistently shown that frequent family meals are associated with a healthier food intake, higher levels of emotional well-being and fewer obsessive weight control behaviours and weight issues during youth (Berge *et al.*, 2012). Advantages of family meals are identified as providing structure, opportunities for communication between family members and strengthening of interpersonal relationships (Scaglioni *et al.*, 2018; Berge *et al.*, 2013). Frequent family meals during adolescence have proven to be protective against the development of overweight and obesity in young

adulthood (Berge *et al.*, 2015). Seven or more family meals per week are associated with increased fruit and vegetable intake of all family members (Berge *et al.*, 2012). Food can either play a role in developing unity within the family or it can highlight and enhance already existent divisive elements within the household (Hunt *et al.*, 2011). Taking fast-paced urban lifestyles into consideration, the value of the family meal has decreased. In previous generations, family mealtime was seen as an opportunity for parents to spend quality time with children, but lately, the importance of the family mealtime has decreased mostly due to both parents working and the busy schedules of family members (Hunt *et al.*, 2011; Schiffman & Kanuk, 2010:322).

Mothers who work longer hours and spend more time at work are more likely to rely on convenience and fast food at dinner time and their children are more likely to perceive family dinners as less important (McIntosh *et al.*, 2010). However, mothers who view family meals as important do more planning and scheduling associated with family dinner time and this in turn enhances the children's participation in those meals (McIntosh *et al.*, 2010). A study by Woodruff & Kirby (2013) reported that 87% of food planning or preparation is done by the senior female versus only 30% by the senior male in the household. Parental employment status is also a factor that influences the meal consumption of families (Andaya *et al.*, 2011). In a recent study by Sobal and Hanson (2014), respondents who were employed full-time-year-round reported to have fewer family dinners than those who were not employed full-time and men were less likely to state that they had family dinners of home cooked foods at home. However, respondents who ate family dinners at fast food restaurants had a significantly higher Body Mass Index (BMI) (Sobal & Hanson, 2014).

Chan and Sobal (2011) reported that fathers who ate more meals away from home were more likely to be overweight than fathers who ate less meals outside the home. Families with fathers who worked long hours and had irregular working hours and schedules were associated with eating take-out meals, missing family meals and eating while working or when at work (Osman *et al.*, 2014). Parents from single-headed households reported that the cost of family meals was a major barrier to having family meals that included healthy foods, whereas parents from dual-headed households identified busy schedules and a lack of time as major barriers to having frequent family meals (Berge *et al.*, 2013). Research has shown that more frequent family meals are

a protective factor against overweight and obesity. There are several potential factors that contribute to the protective associations between family meal frequency and young adults being overweight and obese (Berge *et al.*, 2015). More fruits and vegetables are served during family meals and therefore it is healthier than other meals (Neumark-Sztainer *et al.*, 2012). Family meals also create a supportive environment and sense of security that help family members connect with each other and regulate their eating behaviours (Videon & Manning, 2003).

Parental modelling of healthy eating habits and the recognition of satiety usually occur during family meals (Berge *et al.*, 2009), which give children a good example to follow into adulthood. It is also important for family meals not to be eaten in front of the television, as this has shown to have a negative impact on consumers' eating habits (Scaglioni *et al.*, 2018; Andaya *et al.*, 2011). Food preferences of members in the family, internal family functioning and the internal and external environments of the family all influence family food practices and ultimately the dietary intake of family members (Lv & Brown, 2010).

2.7 CHAPTER CONCLUSION

In this chapter, a review of the literature that guided the research was provided. The human ecological perspective was chosen as theoretical perspective to guide the study and presented first. This was followed by a review of the factors that influence food choice. The literature review also indicated the importance of understanding the internal and external food environments of urban consumers and how these influence their food practices. The access dimensions of food were considered as associated influencing dimensions to food choice. Both the local urban and home-food environments influence food choices and practices. Lastly, factors such as living in an urban environment and changing household demographics of modern urban consumers as major determinants that influence food practices were discussed. In the next chapter, the research methodology followed during the study is given.

Chapter 3

RESEARCH METHODOLOGY

3.1 INTRODUCTION

This chapter outlines the research methodology that was followed in this study. It provides the plan followed in order to answer the research question posed. The research design, sample and sampling procedures, the development of the measuring instruments, the actual data collection and analyses are described. Measures to ensure quality data and appropriate ethical conduct during the research procedure are also pointed out.

3.2 RESEARCH DESIGN

The aim of this study was to explore and describe the home-food environment of adults in the Eastern suburbs of Tshwane, including how the local urban food environment and demographic profile of the household contributed to the study group's food practices. A quantitative research approach was followed in this cross-sectional study to achieve the objectives of the research. Exploratory research is often done in order to gain information on a new area of interest (Fouché & De Vos, 2011:95). This particular study therefore was explorative in nature as the topic of studying the contribution of the local and home-food to the food practices of urban South Africans, as far as the researcher could establish, has not been researched in the Tshwane area before. The study was descriptive as new insights gave a clear understanding and picture (Salkind, 2013:230), regarding the contribution of the urban food environment to the food practices of white adults in Tshwane, as it focussed on the "how" and "why" questions (Fouché & De Vos, 2011:96).

The study was cross-sectional in nature as individuals were not studied over-time but rather at a single time interval. Cross-sectional studies are typically descriptive and explorative, such as this study.

3.3 RESEARCH AIM AND OBJECTIVES

The following aim and objectives were formulated for this study:

The aim of the study was to explore and describe the food practices of white adults (25 years and older) in the Eastern suburbs of Tshwane and how the local urban and home-food environments contribute to the food practices of the study group.

The following objectives and sub-objectives were derived from the aim:

Objectives:

1. To determine and describe the food practices of urban white adults (25 years and older) in the Eastern suburbs of Tshwane (hence forth referred to as the study group) in terms of:
 - 1.1 the eating patterns of the study group;
 - 1.2 the dietary diversity of the study group's food intake;
 - 1.3 the number of servings of food consumed per day of selected groups of food, by the study group; and
 - 1.4 the frequency of consumption of selected groups of food by the study group;
 - 1.5 attitudes of the study group towards healthy eating.

2. To explore and describe the contribution of the local urban food environment to the food practices of the study group in terms of:
 - 2.1 the location and frequency of food purchased from selected food outlets by the study group; and
 - 2.2 the accessibility of food in the local urban environment, of the study group.

3. To determine and describe the contribution of the home-food environment to the food practices of the study group in terms of:
 - 3.1 the person mainly responsible for food purchasing and preparation;
 - 3.2 the availability of selected food types in the home of the study group;
 - 3.3 the frequency of family meals eaten at home by the study group;
 - 3.4 the attitudes of the study group towards family meals at home; and

- To identify and explain how the local urban and home-food environments contribute to the food practices of the study group.

3.4 CONCEPTUAL FRAMEWORK

The conceptual framework given in Figure 3.1 is a graphic representation of the concepts to be studied and indicates the relationships between them. A conceptual

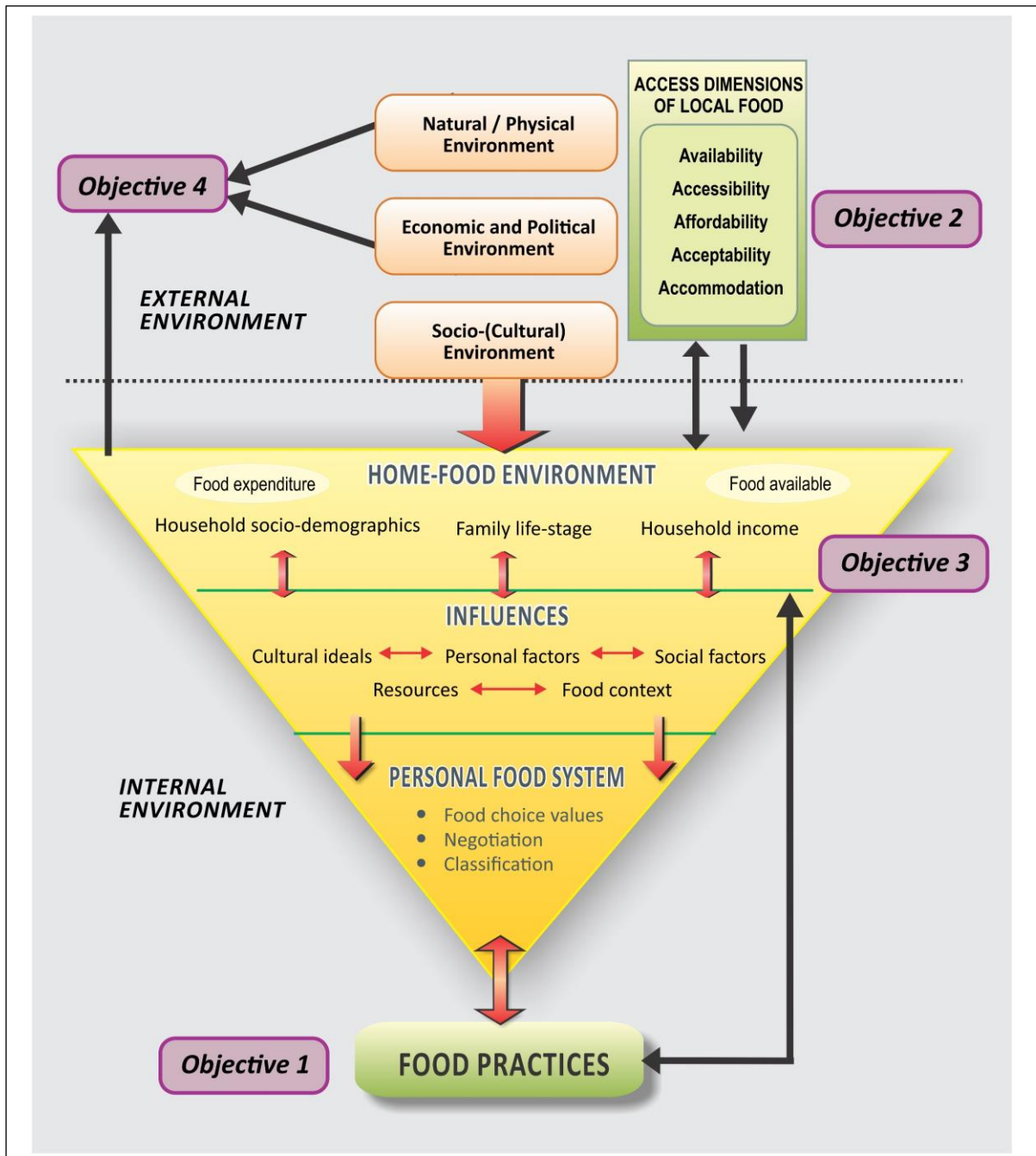


FIGURE 3.1: CONCEPTUAL FRAMEWORK (Adapted from Bisogni & Sobal, 2009:41; Viljoen, 2009:23)

framework gives structure and direction to a study by linking the various concepts applicable to the study in a systematic way to achieve the aim and objectives of the study.

In the upper half of the figure, the external environment as described in Chapter 2 (see 2.3.1), consists of the natural/physical environment, economic environment and the socio-cultural environment and is depicted. The contribution of each of these environmental levels together with the access dimensions (availability, accessibility, affordability, accommodation and acceptability) of food in turn contribute to food consumption practices. The individual or internal environment is depicted in the lower half of the figure and includes the home-food environment, other related influences and the personal food system. The home-food environment forms part of both the internal and socio-cultural environments and comprises of factors such as food expenditure, food availability, household socio-demographics, family life-stage and household income (see Chapter 2:2.6). Five major groups of influences related to food choice are included namely ideals, personal factors, resources, social factors and the present food context (see Chapter 2:2.3.2). The interdependent and interrelatedness of the various influences are indicated by the double-sided arrows in the figure. Lastly the personal food system that relates to the way in which individuals make food choices while considering food choice values and other cognitive processes. This includes the development of food choice values, negotiations and classifications of food and situations as well as the formation of revision of strategies and scripts (see Chapter 2.3.2.2). Influences from both the external and internal food environments determine food practices.

The main concepts of the study are addressed in the following section. Each of the objectives and sub-objectives of the study is shown in the operationalisation table and an indication is given of the relevance of each objective in the study.

3.5 CONCEPTUALISATION OF THE MAIN CONCEPTS

Home-food environment refers to the food available and accessible in the household and includes role-modelling, family eating styles and food rules (Van Ansem, 2012).

Food choice involves the selection and consumption of food and beverages including the consideration of what, how, when, where and with whom people eat (Sobal *et al.*, 2006:1).

Food expenditure foods relates to the amount of money spent to acquire food (Statistics South Africa, 2011:31).

Household is a social unit made up of a certain number of people living within a particular structure, who may or may not be related (Schiffman & Kanuk, 2010:318). It can also be described as the number of individuals living together or alone and who function as a socio-economic unit (Du Plessis & Rousseau, 2007:373).

Family life-stage refers to the traditional family life cycle, as it progresses through different family stages based primarily on demographics such as marital status, age and the absence or presence of children. (Schiffman & Kanuk, 2010:332).

Household income is all the income generated by members of a household, in cash and in kind, in exchange for employment, or in return for capital investment, or receipts obtained from other resources such as social grants and pensions. (Statistics South Africa, 2011).

Food available (in the home) is food that is present in the household and available for consumption (Story *et al.*, 2008). Food availability also implies the adequacy of the supply of food.

Food practices imply how the chosen food is used and has embedded all food-related behaviour that is typical of an individual or a group (Viljoen, 2009:15).

Local food environment is a connected system that allows access to food and includes the distribution of food stores, food services and other physical entities where food can be obtained for consumption (i.e. home, workplace, schools, restaurants) (Centers of Disease Control and Prevention, 2014).

Dietary Diversity is the number of different food groups eaten during a specified time period, without regarding the frequency of consumption (United Nations World Food Program, 2008). Dietary diversity is a qualitative measure of food consumption that

reflects household access to a variety of foods, and also serves as a proxy for nutrient adequacy.

Frequency of consumption is how often a food item or food group is consumed during a specified period of time (United Nations World Food Program, 2008).

3.6 OPERATIONALISATION

Operationalisation deals with how the researcher measured the concepts or variables used in the study (Babbie & Mouton, 2001:98). Table 3.1 indicates how the concepts applicable to this study were measured. It also indicates the main concepts of the study, with their dimensions and indicators related to each objective. The relevant sections and question numbers of the survey questionnaire that were applicable to the measurement of each concept were also given.

TABLE 3.1: OPERATIONALISATION

OBJECTIVES	CONCEPTS	DIMENSION	INDICATORS	MEASURING INSTRUMENT (SURVEY QUESTIONNAIRE)
1. To determine and describe the food practices of urban white adults (25 years and older) in the Eastern suburbs of Tshwane (hence forth referred to as the study group) in terms of:				
1.1 The eating patterns of the study group	Meal patterns Meal composition	Number of meals a day Content of meals	Breakfast Lunch Supper Snacks Meals away from home (<i>where and when</i>) Food groups	C1 -C5, C7 -C8
1.2 The dietary diversity of the study group's food intake	Dietary diversity	Food group variety	Number of food groups consumed per day	C16
1.3 The number of servings of food consumed per day of selected groups of food, by the study group	Number of food servings	-	-	C17
1.4 The frequency of consumption of food by the study group	Frequency of food consumed	Frequency	<ul style="list-style-type: none"> • Daily • 3-4 times / week • 1-2 times / week • Seldom • Never 	C18
2. To explore and describe the contribution of the local urban food environment to the food practices of the study group in terms of:				
2.1 The location and frequency of food purchased from selected outlets by the study group.	Location of food purchasing	Location	<ul style="list-style-type: none"> • Supermarket • Fresh fruit & vegetable food market • Butcher • Convenience store • Fast food outlet • Street vendor • Internet shopping 	B1 B4, B5
	Frequency of food purchased	Frequency	<ul style="list-style-type: none"> • Daily • 3-4 times per week • 1-2 times per week • More than 3 times p/month • Special occasions • Never 	B1

Table 3.1 continues on next page ...

OBJECTIVES	CONCEPTS	DIMENSION	INDICATORS	MEASURING INSTRUMENT (SURVEY QUESTIONNAIRE)
2. (continued) To explore and describe the contribution of the local urban food environment to the food practices of the study group in terms of:				
2.2 The accessibility of food in the local urban environment, of the study group	Accessibility of food	Access dimension	<ul style="list-style-type: none"> • Availability • Accessibility • Affordability • Acceptability • Accommodation 	B3.1, B3.2, B3.3, B3.1, B3.4, B3.5, B3.8 B3.9, A5, A6 B3.1, B3.6, B3.2, B3.8 B3.5, B3.9
2.3 To explore and describe how the purchased food is transported home by the study group	Food transportation	-	<ul style="list-style-type: none"> • Bus /Taxi • Car • Walk (carry self) • Someone helps to carry 	B5
3. To determine and describe the contribution of the home-food environment to the food practices of the study group in terms of:				
3.1 The person mainly responsible for food purchasing and preparation		Responsible person	<ul style="list-style-type: none"> • Food purchasing • Food preparation 	A13, A14
3.2 The availability of selected types of food in the home environment of the study group	Availability of food	Food type	<ul style="list-style-type: none"> • Healthy options • Snack foods • Beverages 	C15 (1-4 +9) C15 (5+6) +8 C7
3.3 The frequency of family meals eaten at home by the study group	Frequency of family meals	Frequency	<ul style="list-style-type: none"> • Daily • 3-4 times per week • 1-2 times per week 	C6, C9, C10
3.4 The attitudes of the study group towards family meals at home	Attitudes towards family meals	Attitudes	-	C10- C13
4. To identify and explain how the local urban and home-food environments contribute to the food practices of the study group:				
	Socio-demographics		<ul style="list-style-type: none"> • Household income • Educational level • Generation group • Gender • Age 	A1 - A12
	Local urban environment	Access dimensions	<ul style="list-style-type: none"> • Availability • Accessibility • Affordability • Acceptability • Accommodation 	B3.1, B3.2, B3.3, B3.1, B3.4, B3.5, B3.8 B3.9, A5, A6 B3.1, B3.6, B3.2, B3.8 B3.5, B3.9

3.7 MEASURING INSTRUMENTS

An electronic survey questionnaire was compiled to measure aspects related to the local food and home-food environments including the food practices of the respondents (see Addendum B). Apart from questions relating to the socio-demographic profile of the respondents, a section on their usual eating patterns (meal patterns and meal composition), the frequency of consumption of various food groups and food purchasing practices were included. Questions used to measure aspects on the food environment were included and adapted for the South African circumstances (Caspi *et al.*, 2012; Freedman & Bell, 2009; McKinnon *et al.*, 2009). Both open- and closed-ended questions were used to measure the identified variables. The questionnaire consisted of three sections:

Section A: Socio-demographic information

Section B: Usual food purchasing practices

Section C: Usual eating patterns and family meals

Section A: Socio-demographic information

Closed and open-ended questions were used to collect information on the socio-demographic profile of the respondents. Information included aspects such as the respondents' gender, age, occupation, optional questions on monthly household income and amount of money spent on food, area of residence, education and number of people living in the household.

Section B: Usual food purchasing practices

In this section, the accessibility of food in the local urban environment was measured in terms of the access dimensions of availability, accessibility, affordability, acceptability and accommodation. Questions regarding the frequency of food purchased from selected outlets, as well as how these foods are transported home, were asked. This gave information on the local food environment of the study group, their food purchasing practices, preferences and frequency of purchasing.

Section C: Usual eating patterns

Both open- and closed-ended questions were included in this section. This section included questions on the number of meals eaten per day including which meals (breakfast, lunch, dinner and snacks) were consumed. Questions on where most meals are eaten, as well as statements on family meals and their attitudes toward family meals were posed. Respondents also had to indicate their previous day's food intake by marking if they included food items from specific food groups as meals or snacks in order to calculate the respondents' Dietary Diversity Score (Kennedy 2011). Questions regarding the availability and frequency of consumption of certain food types in the household as well as the number of servings consumed were included.

3.8 PRE-TESTING OF QUESTIONNAIRE

The questionnaire was pre-tested before the data collection commenced. The questionnaire was given to a group of 10 adults with similar characteristics to the study group. The electronic survey questionnaire was tested for comprehension and readability as recommended by Delport and Roestenburg (2011:195) and to determine the time to complete the questionnaire. Based on the feedback received, corrections and improvements were made to the questionnaire, therefore subject specialists also scrutinised the questionnaire to ensure that the wording of questions were factual. The questionnaire was pre-tested to assess the level of difficulty. Questions that proved to be difficult were rephrased and simplified according to the recommendations received from the pre-test participants. Pre-testing of the questionnaire gave the researcher the opportunity to make the necessary changes and avoid possible problems during the research process (Strydom, 2011a:246).

3.9 STUDY AREA AND POPULATION

The study area mainly comprised of Regions 3, 4 and 6 (of the Eastern suburbs) of the Tshwane Metropolis (See map of Tshwane, Figure 3.2).

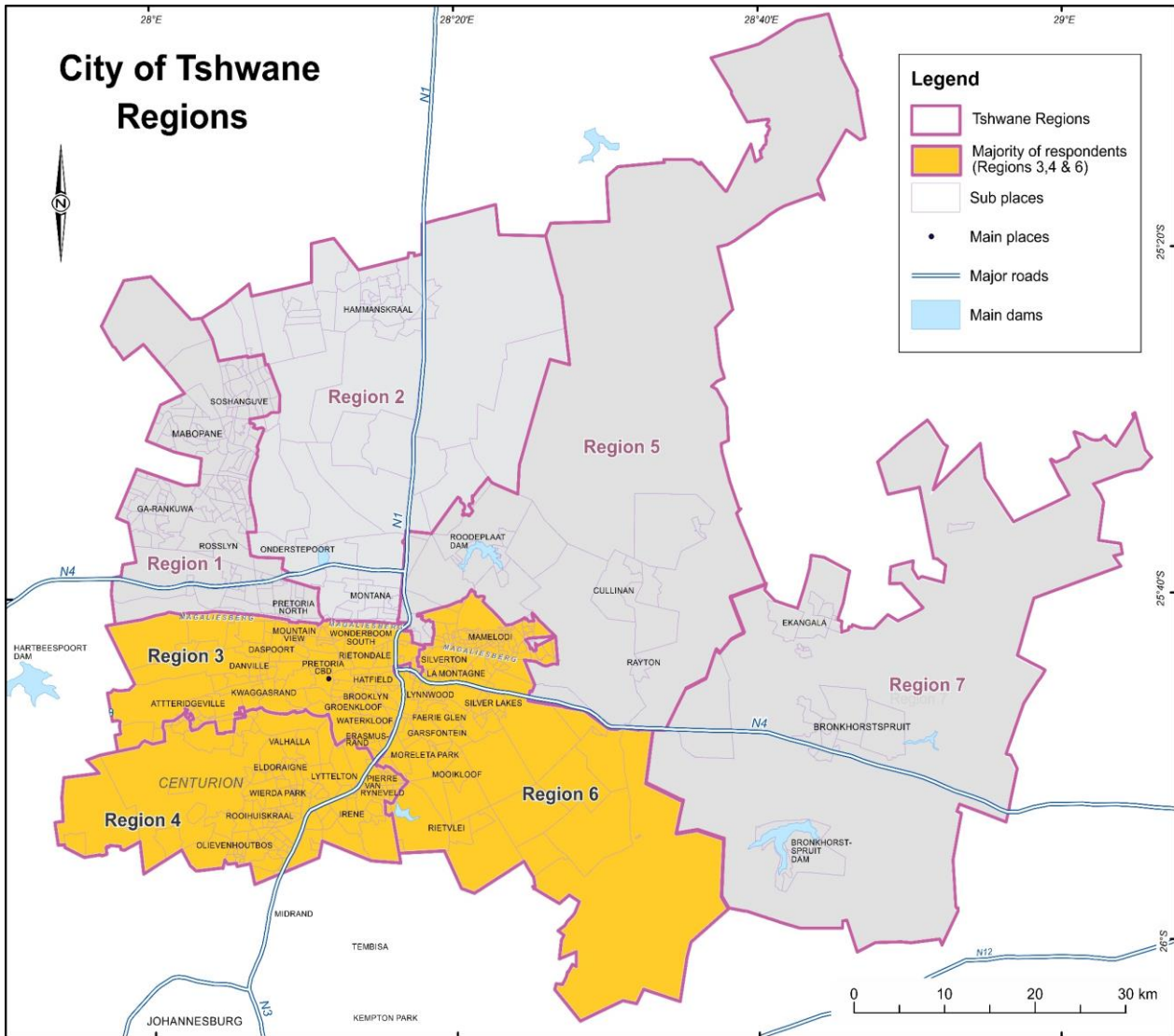


FIGURE 3.2: A MAP INDICATING THE REGIONS IN THE EASTERN AND SOUTHERN SUBURBS OF THE CITY OF TSHWANE MUNICIPAL AREA

Region 3 (Central) is centrally located within the Tshwane metropolitan area and approximately 20.03% of the Tshwane population live in Region 3. This makes up the third highest population of residents. It contains the CBD (Central Business District) which is the largest job opportunity zone in the metro and also contains two large suburbs namely Brooklyn and Hatfield. The demographics, income status and quality of the built environment vary all across Region 3, with the more affluent areas located east of the CBD (Ganief & Thorpe, 2013).

Region 4 (South West) is situated in the South-Western portion of the City of Tshwane Metropolitan Municipality (CTMM) area and includes Centurion, Irene and

Olievenhoutbosch. Region 4 falls within the Triangular Economic Core which has been identified by the South African Government for Gauteng as the economic growth focus (Ganief & Thorpe, 2013).

Region 6 (South East) contains approximately 20.73% of Tshwane's population and makes up the second highest concentration of residents. This region has the highest income per capita of all seven regions in Tshwane and contains suburbs such as Silver Lakes, Lynnwood, Moreletapark and Faerie Glen. There is a high number of businesses and retailers in the area and it also contains the second most important industrialised area in Tshwane (Ganief & Thorpe, 2013).

3.10 SAMPLE AND SAMPLING

The larger project of which this study forms part included all of Gauteng (see 1.2), however this study only reports on the sample of 230 white respondents aged 25 years and older, of both genders, residing in the Eastern suburbs of Tshwane. Convenience sampling as a non-probability sampling technique was used in the larger study. This method is used in situations where the population elements are conveniently available and is useful in exploratory research where the researchers need to get inexpensive results for a study in the most cost-effective manner (Maree & Pietersen, 2007a:177). Researchers make use of convenience sampling to collect a large number of completed survey questionnaires in a quick, easy and economical way (Zikmund & Babbitt, 2007:412). This method was helpful and beneficial to obtain the required number of questionnaires to reach the goals of this study (Maree & Pietersen, 2007a:178).

3.11 DATA COLLECTION

For the larger project of which this study forms part, the services of a data collection company Consulta Research Pty (Ltd), who specialises in consumer-related research was contracted to assist with the data collection. Consulta has a large database with registered consumers on their panel. Data was collected from May to June in 2016. The self-administered electronic survey questionnaire was distributed via e-mail, by the Consulta Research to respondents on their data base who gave their

informed consent to participate in the study. Respondents had the option to either participate or not and they could withdraw at any given time.

3.12 DATA ANALYSIS

The collected data was checked, cleaned and entered into an Excel spread sheet. The data was then reviewed to ensure that there were no coding errors present. Data errors due to incorrect coding and reading errors were rectified through contingency cleaning. A Statistical Analysis Software package (SAS), version 9.3 was used to process the data. The statistical analysis processes then started by using descriptive statistics. Descriptive statistics can be divided in two ways of representing or describing data, either graphical or numerical (Pietersen & Maree, 2007a:183). Graphs and tables were used to represent the data in a better understandable way (Salkind, 2013:230) by using descriptive statistics such as frequencies, means, medians and modes (Pietersen & Maree, 2007a:186). The appropriate statistical methods for this study were employed in consultation with the appointed statistician.

3.13 ENSURING DATA QUALITY AND COMBATting ERROR

In order to eliminate error during research, careful steps need to be taken during data collection and data analyses. The measuring instruments used needs to be reliable and valid in order to avoid error during research (Pietersen & Maree, 2007b: 215). During the research process, the researcher made an effort to ensure that the research was valid and reliable, by giving attention to the following measures:

3.13.1 Reliability

Reliability occurs when a technique is repeatedly applied to an object and the same results appear (Delpont & Roestenburg, 2011:177; Salkind, 2013:165; Babbie, 2013:188). In other words, reliability is the extent to which a measuring instrument is repeatable and consistent (Pietersen & Maree, 2007b:215). Reliability is primarily not concerned about what is being measured, but with how well variables are measured (Delpont & Roestenburg, 2011:178). Existing standardised measuring instruments were used to ensure data quality. These included selected measuring scales and a

24-hour recall of food groups eaten the previous day in order to calculate the Dietary Diversity Score.

3.13.2 Validity

Validity refers to the degree to which the measuring instrument measures what it intended to measure (Pietersen & Maree, 2007b:216) and in this way, errors can be excluded from the study. Furthermore, it refers to the level to which the observed measurement effectively reveals the real meaning of the concept (Babbie, 2013:191). Validity is a synonym for the terms truthfulness, accuracy, authenticity, genuineness and soundness (Salkind, 2013:173). Three different types of validity apply in this study, namely content, face and construct validity.

Face validity refers to the extent to which an instrument “looks” valid (Pietersen & Maree, 2007b:217). For the purpose of avoiding error during the data collection, extra care was taken during the design of the questionnaire (Maree & Pietersen, 2007:158b). The appearance of the questionnaire, format of the questions, question sequence and the wording of questions were important factors that were taken into consideration in compiling the questionnaire (Delpont & Roestenburg, 2011:192-193).

Content validity refers to the degree to which a measure represents all facets of the concept being measured (Babbie, 2013:192). A valid measure will provide an adequate, representation of all content, elements or instances of the phenomenon being measured (Delpont & Roestenburg, 2011:173). In order to ensure content validity, the measuring instrument was also assessed by the subject specialist before finalising the instrument (Maree & Pietersen, 2007a:217). As the questionnaire was developed from reviewing and adapting questions from other questionnaires used in similar studies and made applicable to the South African situation. Content validity was ensured in this study by engaging experienced consumer scientists in the development of the questionnaire. This followed after a doing a thorough review of literature and assessing previously used questionnaires.

Construct validity ensures standardisation of the instrument (Pietersen & Maree, 2007:217), and determines the extent to which an instrument successfully measures the concept under consideration (Delpont & Roestenburg, 2011:174). Construct

validity is concerned with what the instrument is measuring and how and why it operates the specific way it does (Delpont & Roestenburg, 2011:175). The instrument should be examined and shown to be present before the instrument can be standardised (Pietersen & Maree, 2007b:217). Construct validity was ensured by doing thorough research of the topic and constructing the information into a literature review. The objectives of the study were conceptualised and operationalised and presented as an operationalisations table (Table 3.1) to further prove construct validity.

3.14 ETHICS

When human beings and their interactions are involved in the research process, it is a reality that unique ethical issues may occur (Zikmund & Babbin, 2007:85). The choice of the respondents to participate in the study was completely voluntarily (Strydom, 2011b:116) and the researcher did everything possible to ensure that respondents were not harmed by partaking in the study (Zikmund & Babbin, 2007:90). In order to participate, respondents were required to sign a written consent form before participating, which clearly states that they gave their permission to participate in the study and that they understood the possible risks and benefits. Only respondents, who gave written consent, were allowed to participate in the study. The data gathered in the study was handled in a confidential manner and the anonymity of the respondents was assured at all times (Strydom, 2011b:120; Zikmund & Babbin, 2007:96). The research proposal of the larger project was submitted to the Ethics Committee of the Faculty of Natural and Agricultural Sciences of the University of Pretoria for approval before the study commenced. Ethics approval was granted with reference number EC 160318-009 (see Addendum C).

3.15 CHAPTER CONCLUSION

This chapter explained the research design and methodology followed in the study in order to achieve the aim and objectives of the research project. The conceptual framework was presented, and all the main concepts were explained. The operationalisation of the main concepts was summarised in a table and instruments were indicated to measure each concept. The sampling procedure for the selection of the respondents and the specific techniques used in data collection and analysis were

given. Measures used to ensure quality data such as reliability and validity were also explained. In the next chapter, the results of the study with their detailed discussions are provided.

Chapter 4

RESULTS AND DISCUSSION

4.1 INTRODUCTION

This chapter presents the results and the discussion of the results of the study. The results are presented according to the formulated objectives and sub-objectives presented in the previous chapter. In order to contextualise the study, first a description of the study area is given followed by a description of the sample and demographic profile of the study group, and thirdly the socio-demographics of the households of the study group is discussed. The usual eating patterns, dietary diversity, number of food servings and frequency of food groups consumed by the study group is also presented and discussed.

4.2 STUDY AREA

The research study took place in the Tshwane Metropolitan Area. The Province of Gauteng has a large, highly urbanised population with the largest portion of white people, compared to other provinces in the country (PROVIDE, 2005). The Tshwane Metropolitan Area forms part of the Gauteng Province and it is the single largest metropolitan municipality in South Africa and the third largest city in the world in terms of land mass, after New York and Yokohama, Tokyo (City of Tshwane, 2015). The city's wealth is primarily concentrated in the eastern and southern part of the city and access to basic services are up to standard (Ganief & Thorpe, 2013). The number of households in Tshwane living in formal dwellings increased by 207% between 1996 and 2011 (Ganief & Thorpe, 2013), which gives evidence that the city of Tshwane has undergone rapid development in recent times.

The average household income of consumers living in the city of Tshwane was R182 822 per year in 2011 which was above the average household income of Gauteng which was R156 222 (Ganief & Thorpe, 2013). The larger project of which this study forms part included all of Gauteng, but this study only included the sample that

consisted of white adults residing in the Eastern suburbs of Tshwane. A map showing the Tshwane Metropolitan Area in relation to Gauteng province is portrayed in Figure 4.1.



FIGURE 4.1: A MAP INDICATING TSHWANE’S STUDY AREA IN RELATION TO GAUTENG

4.3 SAMPLE AND DEMOGRAPHIC PROFILE

Sample The sample of the study consisted of 230 white respondents of both genders, residing in the Eastern suburbs of the Tshwane Metropolitan Area.

Socio-demographic profile The demographic information of the respondents was obtained through both closed-ended and open-ended questions in the survey questionnaire. The survey questionnaire was used to measure the socio-demographic information of the respondents, relating to their age, gender, educational level, monthly household income and food budget, as well as home language. The results are portrayed in Table 4.1.

TABLE 4.1: SOCIO-ECONOMIC/DEMOGRAPHIC INFORMATION OF RESPONDENTS
(N = 230)

Socio-economic information	Frequency (n)	Percentage (%)
Age		
Generation Y (21-39 years)	41	17.90
Generation X (40-51 years)	56	24.40
Baby Boomers (52-70 years)	108	47.20
Matures (71 years or older)	24	10.50
Gender		
Male	141	61.3
Female	89	38.7
Educational level		
Grade 12	30	13.0
Grade 12 plus a Degree/ Diploma	104	45.2
Postgraduate Degree	95	41.3
Monthly household income		
R0- R16000	28	12.2
R16001- R25000	25	10.9
R25001- R40000	42	18.3
R40001- R60000	35	15.2
R600001- R100000	45	19.6
R100000+	19.6	8.3
Prefer not to answer	36	15.7
Home language		
Afrikaans	174	75.7
English	50	21.7
Other (Dutch, French, German)	5	2.2

Age The ages of the respondents ranged between 24 to 83 years and represented the following four generation groups according to the generational grouping of Schiffman & Kanuk (2010:410), namely Generation X, Generation Y, Baby Boomers and Matures. Generation Y respondents were born between 1977-1995 and were those between the ages of 21-39 years old at the time of the study. Generation X

respondents were born between 1965-1976 and were those between the ages of 40-51 years at the time of the study. Baby Boomer respondents were born between 1946-1964 and were those between the ages of 52-70 years at the time of the study. The Matures were born in 1945 and those earlier were of the age of 71 years and older at the time of the study.

The respondents were grouped into the different generation groups. Most of the respondents (47.2%, n=108) were between the ages of 52 and 70 years and represent the baby boomer generation. A further 24.4% (n=56) of respondents were between the ages of 40 and 51 representing generation X, with 17.9% (n=41) that were between the ages of 21 and 39 grouped as generation Y and 10.5% (n=24) were 71 years or older and were regarded as the mature or senior group.

Gender Both gender groups were well-represented as 61.3% (n=141) were males and 38.7% (n=89) were females. There were more males than females that participated in the study which is quite interesting. Females are usually regarded as the household gatekeepers who make most of the decisions regarding food purchases and preparation (Sishana *et al.*, 2014:11; Damman & Smith, 2009), which is why it was interesting that more males had interest in this topic. Females are also more inclined than males to participate in survey research (Keusch, 2015).

Educational level The respondents can be described as highly educated as the majority indicated that they completed a tertiary education, with 42.2% (n=97) who only had a first degree or diploma, followed by 20% (n=46) with an honour's degree and 14.3% (n=33) with a Master's degree and 7% (n= 16) with a doctoral degree.

Household income Nearly 20% of the respondents (n=45) had a monthly household income between R60001-R100000, followed by 18.3% (n=42) who had a monthly household income of R25001- R40000. Although 15.7% (n=36) of the respondents preferred not to answer the question regarding their monthly household income, as this was an optional question, the majority of the respondents who answered this question had a household income of R25000 a month or more.

Home language The majority of respondents (75.7%, n=174) indicated Afrikaans as their home language, followed by 21.7% (n=50) who had English as their home

language. Only 2.2% (n=5) of the respondents spoke other home languages, that included Dutch (0.4%, n=1), French (0.4%, n=1) and German (1.1%, n=3). It is as expected that Afrikaans is the most common language among the white urban population in Tshwane.

In the next section, the household demographics of the respondents is given. The respondents had to answer questions regarding the number of people living in their households, their family structure, the number of children and adults living in the household as well as who is responsible for food purchases and preparation.

4.4 HOUSEHOLD PROFILE OF RESPONDENTS

Table 4.2 reveals the frequencies and percentages regarding the household demographics of the respondents.

Number of people living in the household More than a third of the households consisted of only two people (34.8%, n=80). The explanation for this can most likely be that most of the respondents could be regarded as from the Baby Boomer generation (52 -70 years old). They are thus in the post parenthood stage where children got married and / or left the house and are now living on their own. This was followed by households that consist mostly of three and four members (21.7%, n=50) respectively. Only 7.0% (n=16) of households had five members and 5.9% (n=14) consisted of 6-9 family members in a household.

Family structure A third of the respondents revealed that they were a nuclear family (33.5%, n=77). A nuclear family structure consists of both parents and children living in the household (Schiffman & Kanuk, 2010:320). The family structure that occurred the second most were married couples without children (31.3%, n=72). An explanation could be that most of the respondents indicated to be baby boomers that were between the ages of 52-70 years (47.20%, n=108), therefore their children were most likely old enough to have moved out of the home to start their own household. This was followed by 13.9% (n=32) who indicated that they were an extended family. Extended families can be described as parents, children and other family members living in the home (Schiffman & Kanuk, 2010:320).

TABLE 4.2: HOUSEHOLD DEMOGRAPHICS OF RESPONDENTS (N = 230)

Household socio-economic information	Frequency (n)	Percentage (%)
Total number of people living in the household		
1 member	20	8.7
2 members	80	34.8
3 members	50	21.7
4 members	50	21.7
5 and more than 5 members	30	12.9
Family structure		
Single (living on his/her own)	23	10.0
Married couple (without children)	72	31.3
Nuclear family (both parents and children)	77	33.5
Extended family (parents, children and other family members)	32	13.9
Single parent family (father/mother and children)	10	4.3
Living with other family members (not parents or children)	1	0.4
Living with partner/ friends/ others	15	6.5
Dependent children under 18 years		
No children	161	70.0
1 child	33	14.3
2 children	31	13.5
3 children	3	1.3
4 children	2	0.9
Age groups of children		
<u>Infants (0-2 years)</u>		
No infants	220	95.7
1 infant	10	4.3
<u>Toddlers and pre-schoolers (3-6 years)</u>		
No toddlers and pre-schoolers	207	90.0
1 toddler or pre-schooler	20	8.7
2 toddlers or pre-schoolers	3	1.3
<u>Primary schoolers (7-12 years)</u>		
No primary schoolers	197	85.7
1 primary schooler	22	9.6
2 primary schoolers	10	4.3
3 primary schoolers	1	0.4
<u>Secondary schoolers (13-18 years)</u>		
No secondary schoolers	200	87.0
1 secondary schooler	21	9.1
2 secondary schoolers	8	3.5
3 secondary schoolers	1	0.4
Number of other adults (older than 18 years) currently part of household		
No other adults	11	4.8
1 other adult	33	14.3
2 other adults	107	46.5
3 other adults	45	19.6
4 other adults	20	8.7
5-8 other adults	14	6.0
Monthly household food budget		
R0- R1000	10	7.9
R1200- R2000	20	8.6
R2500- R3500	41	17.8
R4000- R4500	42	18.3
R5000- R6000	34	14.7
R6500- R15000	27	11.6
R18000- R20000	6	2.5
Did not answer	50	21.7

Number of dependent children under 18 years old As is understandable, the majority of respondents (70%, n=161) did not have any dependent children under the age of 18 years living with them. Nearly a third revealed to consist of nuclear families and most respondents indicated that they had one to two children. Families with one child under the age of 18 were represented by 14.3% (n=33), and families with two children 13.5% (n=31) respectively. Three respondents (n=3) reported to have three children under the age of 18 years (1.3%) and two respondents (n=2) reported to have four children under the age of 18 years.

Age groups of children Only ten respondents (4.3%, n=10) reported that they had an infant under two years of age. Twenty respondents (8.7%, n=20) reported to have one toddler or pre-schooler between the ages of 3-6 years. Only three respondents (1.3%, n=3) had two toddlers or pre-schoolers between the ages of 3-6 years. The other 207 respondents (90%, n=207) reported that they did not have any toddlers or pre-schoolers. Twenty-two respondents (9.6%, n=22) indicated that they had one primary schooler between the ages of 7-12 years. Ten respondents (4.3%, n=10) indicated that they had two primary schoolers between the ages of 7-12 years living in their home.

Only one respondent (0.4%, n=1) indicated that they had three primary school children living in the home. The other 197 respondents (85.7%, n=197) indicated that they did not have any preschool children living in their home. Twenty-one respondents (9.1%, n=21) indicated that they had one secondary schooler between the ages of 13-18 years, living in the household. Eight respondents (3.5%, n=8) indicated to have two secondary schoolers living in the household and only one respondent (0.4%, n=1) indicated to have three secondary schoolers living in the household. The other 87% of respondents (n=200) indicated that they did not have any secondary schoolers between the ages of 13-18 years living in their household. The majority of the respondents are in the post parenthood life-stage and therefore they do not have any young children living in the home as their children are assumedly older and older moved out of the house.

Number of adults (over 18 years) currently part of the household Thirty-three respondents (13.3%, n=33) indicated that there was only one adult part of the

household. Almost half the respondents (n=107, 46.5%) indicated that there were two adults currently part of the household. Forty-five respondents (19.6%, n=45) indicated that there were three adults part of the household and forty-three respondents (14.7%, n=43) indicated that there were four or more adults living in their household. Once again, these results prove that the majority of respondents are in the post parenthood life-stage as there are only two adults left in the home as the children are older and moved out to start their own families.

Monthly food budget of the household Most of the respondents (18.3%, n=42) indicated to have a monthly food budget of R4000 - R4500, followed by 17.8% (n=41) who indicated to have a monthly food budget of R2500 - R3500 and 14.7% (n=34) who indicated their monthly food budget was R5000 - R6000. Only 10 of the respondents (7.9%) indicated to have a monthly budget of R0 - R1000, while 20 respondents (8.6%) indicated a monthly food budget of R1200 - R2000. There were 27 respondents (11.6%) who indicated to have a monthly food budget as high as R6500 - R15000 and 6 respondents (2.5%) indicated a monthly food budget of R18000 - R20000. There were 50 respondents (21.7%) who did not answer the question regarding their household's monthly food budget.

The next section presents the results on the formulated objectives of the study. This is given in the order of the formulated objectives together with the relevant sub-objectives.

4.5 FOOD PRACTICES OF THE STUDY GROUP

The first objective was to determine and describe the food practices of the study group. To achieve this objective, the first sub-objective was to determine and describe the eating patterns as part of food practices.

4.5.1 Eating patterns

The eating patterns of respondents refer to the meal patterns and meal composition during the week.

4.5.1.1 Meal patterns

Respondents were asked to indicate the number of meals eaten a day, as well as how often breakfast, lunch, dinner and snacks were eaten during the week. Respondents were also required to indicate how often they eat meals away from home and where they eat most often when meals were eaten away from home. The results are depicted in Figure 4.2 below.

Number of meals eaten a day The majority of the respondents (n=143, 62.2%) indicated that they eat three meals a day, followed by 26.1% (n=60) who indicated that they eat two meals a day and 4.3% (n=10) who indicated that they only eat one meal a day.

Breakfast The majority (n=158, 68.7%) of the respondents indicated that they eat breakfast every day of the week. Only 12.2% of the respondents (n=28) indicated that they eat breakfast 5-6 days a week. However, 5.7% (n=13) of respondents indicated that they never eat breakfast.

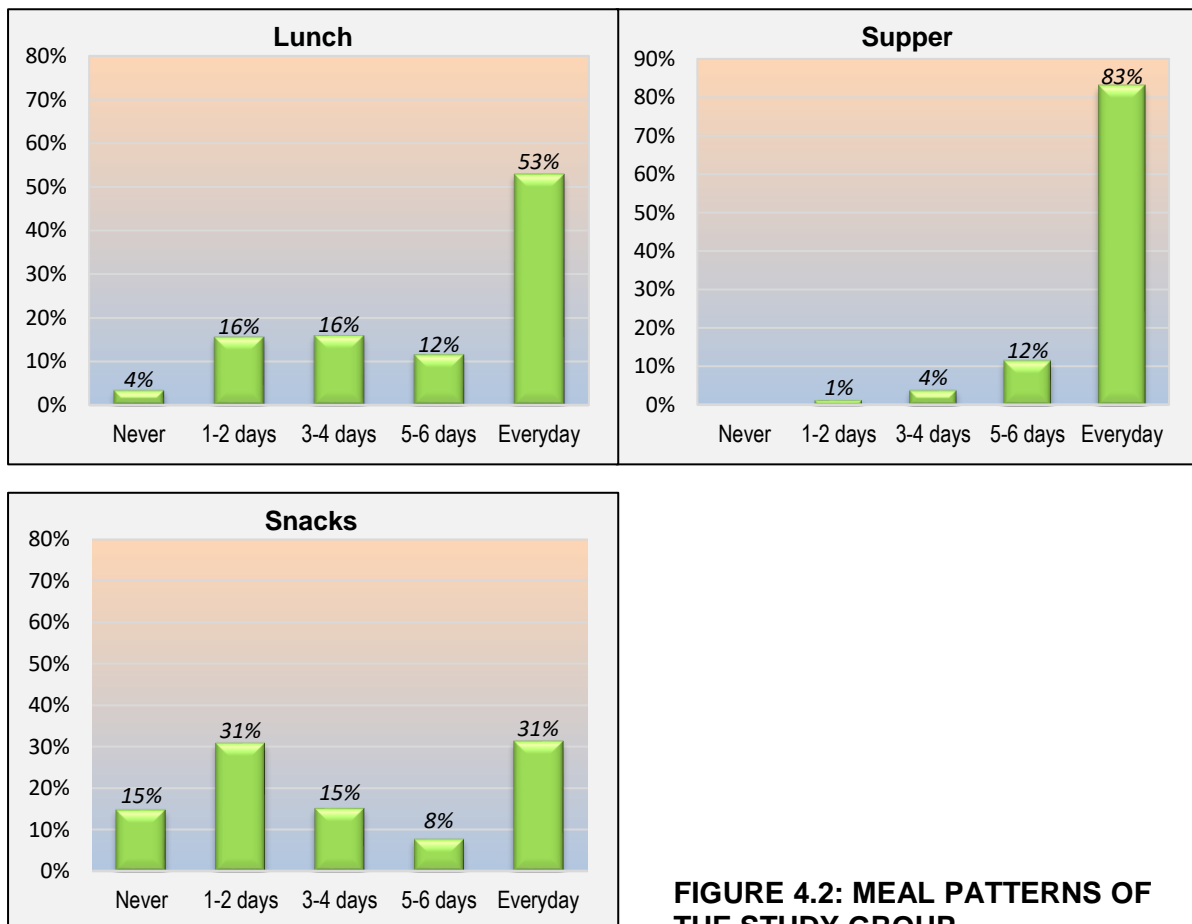


FIGURE 4.2: MEAL PATTERNS OF THE STUDY GROUP

Lunch More than half of the respondents (n=122, 53%) indicated that they eat lunch every day of the week. The other 16.1% (n=37) of the respondents indicated they have lunch 3-4 days a week, and another 15.7% (n=36) only have lunch 1-2 days a week.

Supper The majority of the respondents (n=191, 83%) indicated that they eat supper every day of the week. This was followed by 11.7% of the respondents (n=27) who indicated that they eat supper 5-6 days a week, and 3.9% (n=9) who indicated that they eat supper 3-4 days a week.

Snacks Nearly a third of the respondents (31.3%, n=72) indicated that they snack every day in between meals. Another 30.9% (n=71) indicated that they only snack 1-2 days a week, whereas 14.8% (n=34) of the respondents indicated that they never snack between meals.

Figure 4.3 depicts the frequency and location of meals eaten away from home.

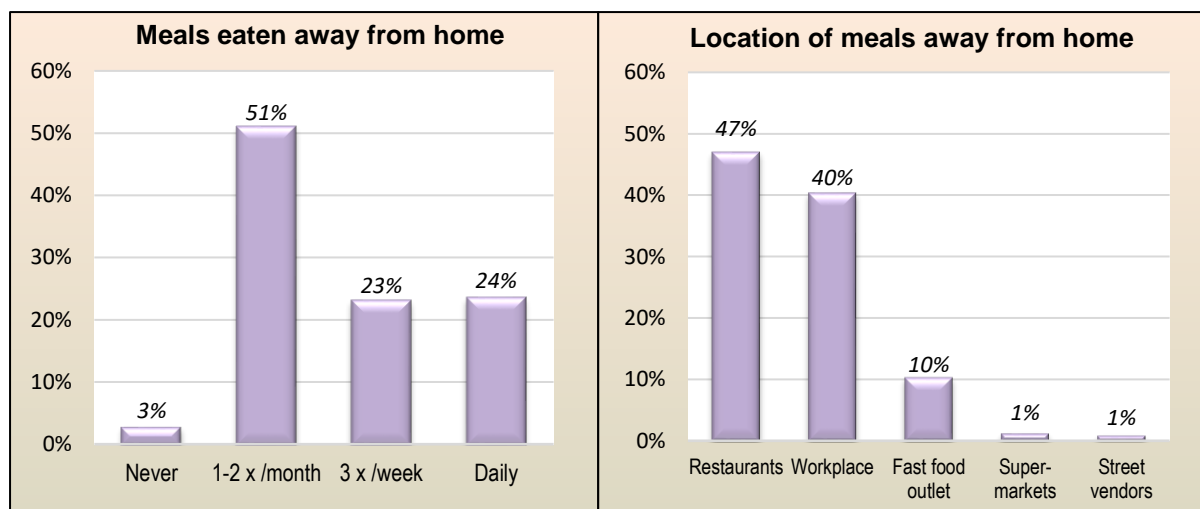


FIGURE 4.3: FREQUENCY AND LOCATION OF MEALS EATEN AWAY FROM HOME

Meals eaten away from home Just over half of the respondents (50.9%, n=117) indicated that they only eat meals away from home one to two times a month, while 23.5% (n=54) of the respondents indicated that they eat meals away from home on a daily basis and 23% (n=53) reported that they eat meals away from home at least three times a week. From these results, it was revealed that the majority respondents only eat meals away from home on special occasions. Although, there was 23% (n=54)

who indicated that they ate meals away from home on a daily basis. These are most likely persons who work full-time and eat lunch at the workplace.

Locations where meals were eaten most often Most of the respondents indicated that meals away-from-home were eaten mostly at restaurants (47%, n=108), followed by 40.4% (n=93) who indicated the workplace and fast food outlets (10.4%, n=24). Only 1.3% of the respondents (n=3) indicated that they eat at supermarkets, followed by only 0.9% (n=2) who indicated they eat at street vendors when not eating at home.

4.5.1.2 Meal composition

Apart from the meal patterns of the study group, the type of food consumed is also of importance to determine and describe the eating patterns of the study group. In order to determine the meal composition and what foods are eaten on a daily basis, the respondents had to indicate if they included foods from specified food groups as part of their meals or snacks the previous day. (See Addendum B, question C16). This question then also provided information on how diverse or varied the food intake of the respondents were, which in turn gives a proxy for the nutrient adequacy of their food intake.

4.5.2 Dietary diversity of food intake

Dietary diversity is an indication for food adequacy and also gives a good indication of the access to food. In this section, the respondents had to indicate all the foods they included as meals or snacks the previous day. Foods were categorised into nine different food groups:

1. **Starchy staples** Maize, rice, wheat, sorghum, and any other foods made from cereals such as porridge, bread, pasta and noodles, potatoes and white sweet potatoes.
2. **Orange-fleshed vegetables and fruit** Pumpkin, carrots, butternut, orange-fleshed sweet potatoes, yellow peaches, paw-paw, mangoes, plums, spanspek, apricots
3. **Dark leafy green vegetables** Spinach, kale, indigenous green leafy vegetables

4. **Other vegetables and fruit** Tomatoes, onion, green beans, lettuce, cabbage, broccoli, cauliflower, eggplant, gem squash, beetroot, apples, bananas, grapes, pears, litchis, oranges, naartjies
5. **Legumes and nuts** Dried beans, dried peas, lentils, nuts or foods made from these (i.e. peanut butter, hummus)
6. **Fats and oils** Oils, fats or butter added to food or used in cooking
7. **Meat, poultry and fish** Beef, pork, mutton/lamb, goat, chicken, duck, fresh, froze, tinned, dried fish or shell fish
8. **Milk and dairy products** Milk, maas, cheese, yogurt or any other milk products
9. **Eggs** Eggs from chicken, duck or any other egg

The respondents had to answer by marking yes or no to each of the nine groups of food. In the questionnaire 16 different food groups were listed, but in order to gain data that can be compared to other South African studies an aggregation of 16 groups into 9 were done (Kennedy *et al.*, 2011:24). The information further assisted to determine the dietary diversity score of the study group. The dietary diversity score is a helpful tool to give an indication of the ability of a household to access a variety of food (Kennedy *et al.*, 2011:5).

Starchy staples The majority of respondents (86.5%, n=199) indicated that they included food from the starchy staple food group as part of their meals or snacks the previous day. Only 13.5% of respondents (n=31) indicated that they did not consume food from the starchy staples group the previous day (See Table 4.3).

Orange-fleshed vegetables and fruit The majority of respondents (60.4%, n=139) indicated that they consumed orange-fleshed vegetables and fruit as part of their meals or snacks the previous day.

Dark leafy green vegetables More than half of the respondents (56.5%, n=130) indicated that they did not consume dark leafy green vegetables the previous day. However, 43.5% of the respondents (n=100) indicated that they included dark leafy green vegetables as part of their meals or snacks the previous day.

TABLE 4.3: FOOD GROUPS CONSUMED THE PREVIOUS DAY (N = 230)

Food Group	Yes		No	
	n	%	n	%
1. Starchy staples: maize, rice, wheat, sorghum, and any other foods made from cereals such as porridge, bread, pasta and noodles, potatoes and white sweet potatoes	199	86.5	31	13.5
2. Orange-fleshed vegetables and fruit: pumpkin, carrots, butternut, orange-fleshed sweet potatoes, yellow peaches, paw-paw, mangoes, plums, spanspek, apricots	139	60.4	91	39.6
3. Dark leafy green vegetables: spinach, kale, indigenous green leafy vegetables	100	43.5	130	56.5
4. Other vegetables and fruit: tomatoes, onion, green beans, lettuce, cabbage, broccoli, cauliflower, eggplant, gem squash, beetroot, apples, bananas, grapes, pears, litchis, oranges, naartjies	210	91.3	20	8.7
5. Legumes and nuts: dried beans, dried peas, lentils, nuts or foods made from these (i.e. peanut butter, hummus)	68	29.6	162	70.4
6. Fats and oils: oils, fats or butter added to food or used in cooking	178	77.4	52	22.6
7. Meat, poultry or fish: beef, pork, mutton/lamb, goat, chicken, duck, fresh, froze, tinned, dried fish or shell fish	213	92.6	17	7.4
8. Milk and dairy products: milk, maas, cheese, yogurt or any other milk products	206	89.6	24	10.4
9. Eggs: eggs from chicken, duck or any other egg	114	49.6	116	50.4

Other vegetables and fruit The majority of the respondents (91.3%, n=210) indicated that they included other vegetables and fruit as part of their meals or snacks the previous day. The other 8.7% of the respondents (n=20) indicated that they did not consume any other vegetables and fruit the previous day.

Legumes and nuts Only 29.6% of the respondents (n=68) indicated that they had legumes and nuts as part of their meals or snacks the previous day. The majority of the respondents (70.4%, n=162) indicated that they did not consumer any legumes or nuts the previous day.

Fats and oils The majority of respondents (77.4%, n=178) indicated that they included fats and oils as part of their meals or as snacks the previous day. The other 22.6% of the respondents (n=52) indicated that they did not consume fats and oils the previous day.

Meat, poultry or fish Nearly all respondents (92.6%, n=213) indicated that they consumed meat, poultry or fish as part of a meal or as a snack the previous day. Only 7.4% of the respondents (n=17) indicated that they did not consume any meat, poultry or fish the previous day.

Milk and dairy products The majority of the respondents (89.6%, n=206) indicated that they had milk and dairy products as a meal or as a snack the previous day. The other 10.4% of the respondents (n=24) indicated that they did not consume any milk or dairy products the previous day.

Eggs The results are almost equally divided as 50.4% of the respondents (n=116) indicated that they did not consume any eggs the previous day, whereas 49.6% of the respondents (n=114) indicated that they did have eggs as a meal or as a snack the previous day.

In the below table, the Dietary Diversity Score (DDS) was calculated by summing the average number of each of the nine food groups consumed the previous day. A DDS of 9 indicates a very varied diet while a DDS of 4 or less indicates poor dietary diversity and can be used as an indicator for food insecurity (Claasen *et al.*, 2016; Steyn & Ochse, 2013). Each food group was only counted once when calculating the DDS (Steyn & Ochse, 2013). See Table 4.4 below for the distribution of the dietary diversity score amongst respondents.

Table 4.4 shows that the majority of the respondents (68.3%, n=157) included at least six of the nine food groups as part of their meals or snacks the previous day. Therefore their Dietary Diversity Score indicates a varied diet. There were only 17.8% (n=41) who included five food groups and only 14% (n=32) who include four groups or less.

TABLE 4.4: DISTRIBUTION OF THE DIETARY DIVERSITY SCORE AMONGST RESPONDENTS (N = 230)

NUMBER OF FOOD GROUPS CONSUMED	FREQUENCY (n)	PERCENTAGE (%)
2	2	0.9
3	8	3.5
4	22	9.6
5	41	17.8
6	54	23.5
7	53	23.0
8	39	17.0
9	11	4.8

The mean frequency was calculated at a DDS of 6.20 which indicates a medium varied diet. The standard deviation was 1.523 which indicated that the majority of respondents also had a high DD (dietary diversity) of either five or seven. Results from another South African studies show similar results and reported whites had a mean Dietary Diversity Score of 4 (Steyn & Ochse, 2013). In the SANHANES-1 study (Shisana *et al.*, 2014) the national Dietary Diversity Score of South Africans was 4.2 and 39.7% of the population had a Dietary Diversity Score of less than 4. The Dietary Diversity Score of the white population of Tshwane was therefore higher than the national populations' Dietary Diversity Score.

Apart from the nine food groups that serve as proxy for nutrient adequacy, there were also four other food groups (in Table 4.5) that the respondents had to indicate if they were consumed the previous day. These food groups included sweets (such as sugar, honey, sugary foods such as chocolates, candies, cookies, cakes or sugar sweetened beverages such as fizzy drinks and cordials), spices and condiments (such as spices, salt and pepper, condiments i.e. tomato sauce, soy sauce, salad dressing), beverages (such as coffee, tea and herbal teas) and alcoholic beverages (such as beer, wine, whiskey, brandy, vodka). Although these food groups are not essential to an adequate nutrient intake, it provided information on what was consumed by the study group.

TABLE 4.5: OTHER FOOD GROUPS (N = 230)

FOOD GROUP	Yes		No	
	n	%	n	%
Sweets: sugar, honey, sugary foods such as chocolates, candies, cookies, cakes or sugar sweetened beverages such as fizzy drinks and cordials	130	56.5	100	43.5
Spices and condiments: spices, salt and pepper, condiments (i.e. tomato sauce, soy sauce, salad dressing)	208	90.4	22	9.6
Beverages: coffee, tea, herbal teas	220	95.7	10	4.3
Alcoholic beverages: beer, wine, whiskey, brandy, vodka	77	33.5	153	66.5

Sweets More than half of the respondents (56.5%, n=130) indicated that they had sweets at a meal or as a snack the previous day. However, 43.5% of the respondents (n=100) indicated that they did not consume any sweets the previous day.

Spices and condiments The majority of the respondents (90.4%, n=208) indicated that they used spices and condiments as part of a meal or snack the previous day. The other 9.6% of respondents (n=22) indicated that they did not consume any spices or condiments the previous day.

Beverages Most of the respondents (95.7%, n=220) indicated that they included beverages as part of a meal or snack the previous day. Only 4.3% of the respondents (n=10) indicated that they did not consume any beverages the previous day.

Alcoholic beverages The majority of respondents (66.5%, n=153) indicated that they did not consume any alcoholic beverages as part of a meal or snack the previous day. The other 33.5% of the respondents (n=77) indicated that they consumed alcoholic beverages as part of a meal or snack the previous day.

In the next sub-objective, the number of servings that the respondents consumed of selected food groups were also measured. This was done in order to determine the consumption of the number of servings of different food groups in conformity with the dietary guidelines (Ruel, 2003).

4.5.3 Number of servings consumed of selected food groups

Respondents had to indicate the number of servings that they usually consume each day from selected foods and beverages. A serving guide to help respondents determine a serving size was included with each food group in the questionnaire (See Addendum B Question C17). The results on the number of servings consumed from selected food and beverages is graphically presented in Figure 4.4.

Starchy food Starchy food includes grains such as rice, maize meal, bread, pasta and breakfast cereals. Serving sizes are 1 slice of bread, ½ cup of rice, pasta or porridge. The Food-Based Dietary Guidelines for South Africa (FBDGs) advises “Make starchy foods part of most meals”. However, only 7% (n=16) of the respondents indicated that they consumed three servings of starchy food a day, while 25.7% (n=59) of the respondents, indicated that they usually consumed two servings of starchy food a day. The majority of respondents (53.0%, n=122) revealed that they only had one serving of starchy food a day.

Vegetables and fruit Vegetables include fresh, frozen, or salad vegetables. The serving size for vegetables are given as ½ cup cooked and 1 cup for raw leafy vegetables. Fruits included all fresh fruits. The serving size for fruits are ½ cup of chopped fruit, one medium apple or banana, 2 medium sized apricots or plums, ½ cup fruit juice, two tablespoons raisins. The WHO recommends an intake of 400 grams of vegetables and fruit a day for adults, the equivalent of five servings of 80 grams each (Naudé, 2013). Only 10.9% of the respondents (n=25) indicated that they eat three servings of vegetables each day. The majority of respondents (54.8%, n=126) indicated that they only eat one serving of vegetables each day, followed by 26.5% (n=61) who ate two servings each day. Just over half of the respondents (50.9%, n=117) indicated that they only eat one serving of fruit a day. Only 20% of the respondents (n=46) indicated to eat two servings of fruit a day.

Milk and dairy products This include yoghurt, cheese, cottage cheese and maas. Serving sizes for milk and dairy products are 1 cup (250 ml) of milk, yoghurt or maas and 1 cube of 30mm cheese. It is recommended that adults consume 400-500 ml of milk a day (Vorster *et al.*, 2013). The majority of respondents (60.9%, n=140) indicated

that they usually consumed at least one serving of milk and dairy products each day, followed by 18.7% (n=43) of the respondents who consumed two servings a day and 10.0% (n=23) of respondents who did not consume any milk or dairy products.

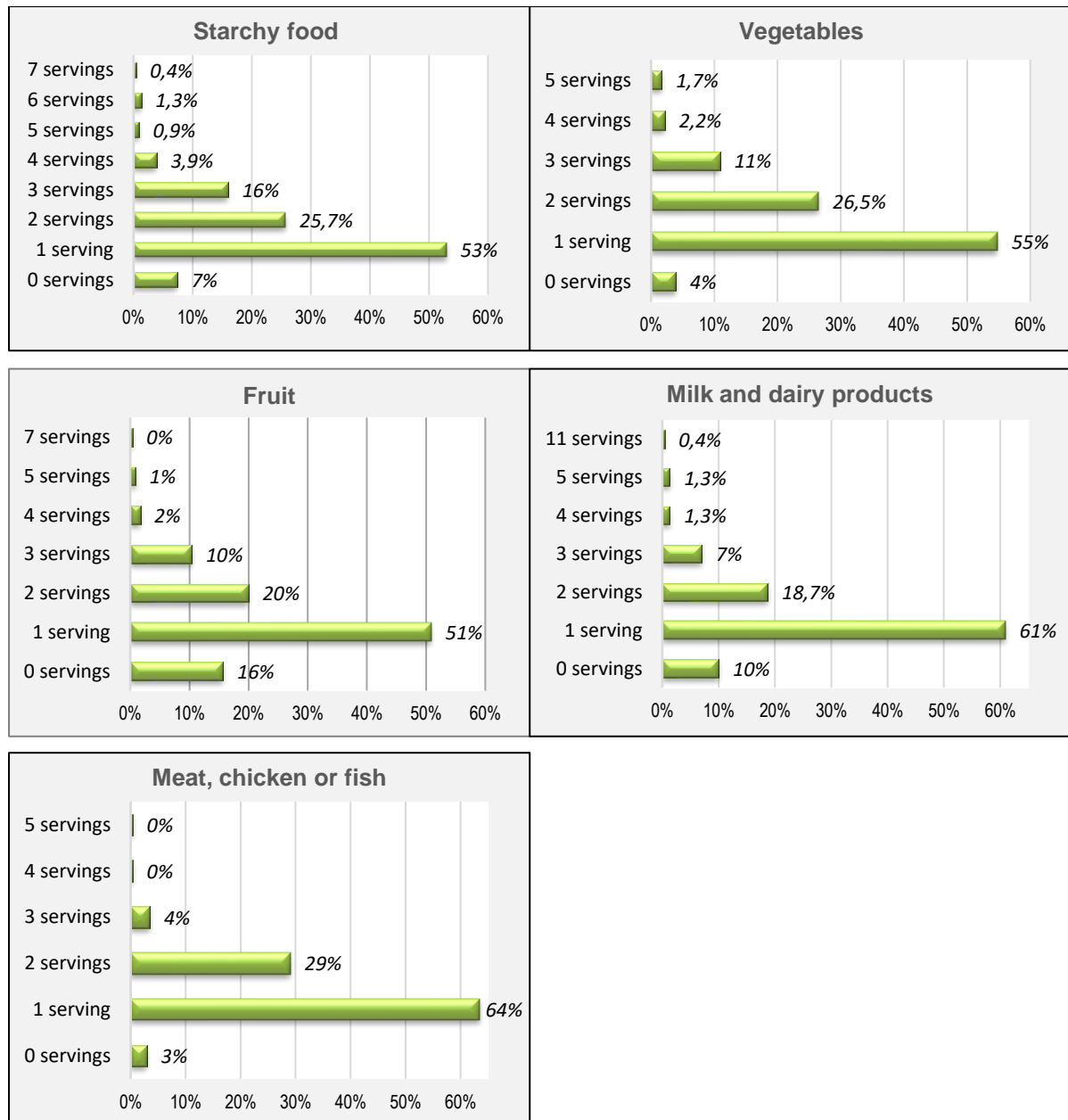


FIGURE 4.4: NUMBER OF DAILY SERVINGS OF ESSENTIAL FOODS

Meat, chicken or fish The serving size for meat is a palm sized slice of 10mm, while the serving size for chicken is one medium breast and white fish is one large piece. It is recommended that a serving of lean meat or chicken should be eaten daily, but should be limited to 90 grams a day, and two to three fish portions may be consumed

weekly at 80-90 grams of fish a day (Schönfeldt *et al.*, 2013). Most respondents (63.5%, n=146) indicated to consume one serving of meat, chicken or fish a day, followed by 29.1% (n=67) of the respondents who reported that they consumed two servings of meat, chicken or fish a day.

The quantity of servings of water and beverages (in Table 4.5) such as coffee, tea and soft drinks, as well as the quantity of sugar in tea and coffee was also determined. These beverages were included in the food consumption patterns of most respondents.

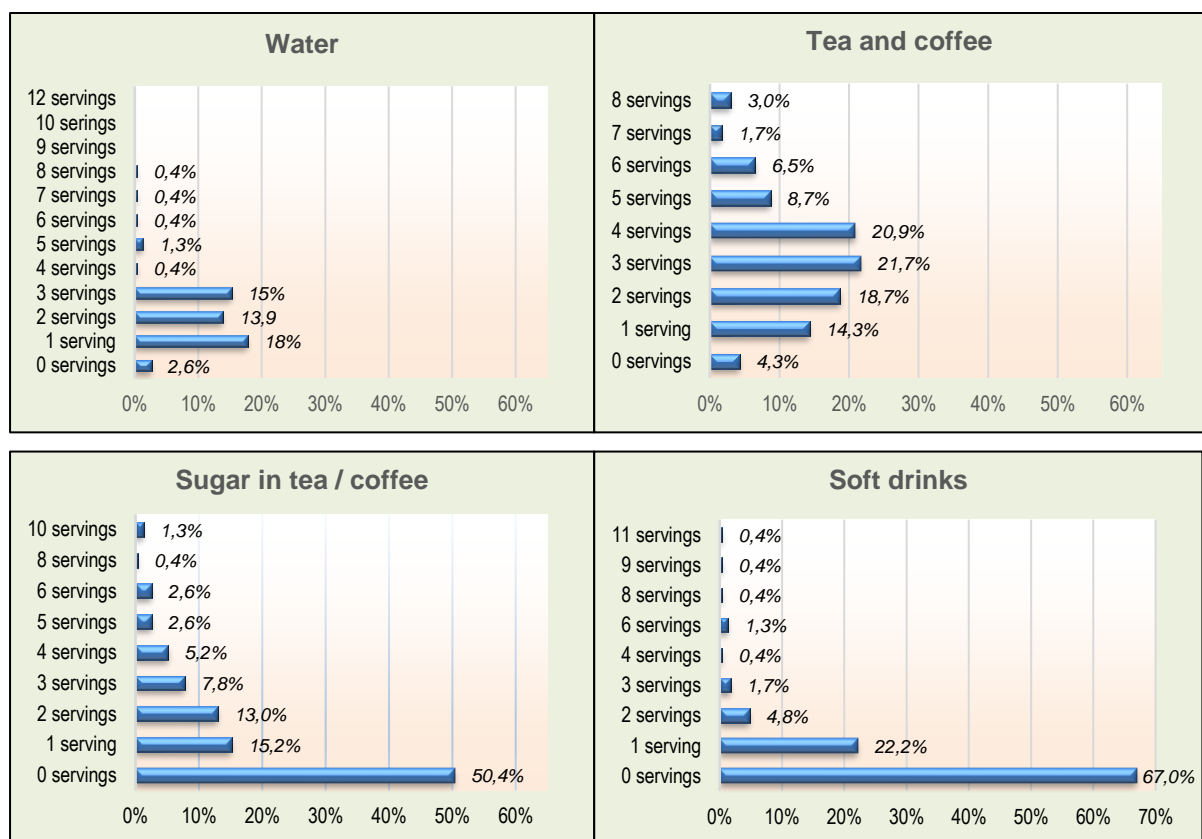


FIGURE 4.5: NUMBER OF DAILY SERVINGS OF BEVERAGES AND SUGAR IN TEA / COFFEE

Water The serving size for water is one cup (250 ml). The WHO advises a total water intake of 2.2 litres (8.8 servings) of water a day for women and 2.9 litres (11.6 servings) of water a day for men (Van Graan *et al.*, 2013). Only 8.3% of the respondents (n=19) indicated that they consumed eight servings of water a day. Most of the respondents

(17.8%, n=41) indicated to only consume one serving water a day, followed by 15.2% (n=35) who indicated that they consumed three servings of water a day.

Tea and coffee The serving size for tea and coffee is one cup. The respondents indicated to drink at least between one to six cups of tea or coffee a day. Most respondents (21.7%, n=50) indicated that they drank three cups of tea or coffee a day, 18.7% of respondents (n=43) indicated that they drank two cups a day, and 20.9% of respondents (n=48) indicated that they drank four cups a day and 8.7% (n=20) drank five cups a day.

Sugar in tea and coffee The serving size for sugar is one teaspoon (4 grams). The American Heart Association proposes a limit of 25 grams of added sugar a day for women and 37.5 grams of added sugar for men (Temple & Steyn, 2013). The majority of the respondents (50.4%, n=116) indicated to add no sugar in their tea and coffee. However, 15.2% of respondents (n=35) indicated that they add one serving of sugar in their tea or coffee, and 13.0% of the respondents (n=30) indicated that they add two servings of sugar in their tea or coffee.

Soft drinks Soft drinks included sugar-sweetened beverages such as Sprite, Coke and Fanta. The serving size for soft drinks is a 340 ml can. One can contains approximately 40 grams of sugar (Temple & Steyn, 2013). The majority of respondents (67%, n=154) did not consume any soft drinks. However, 22.2% of the respondents (n=51) indicated that they usually consumed one soft drink every day, followed by 4.8% (n=11) who consumed two soft drinks a day.

The amount of servings of chocolate bars and potato crisps that were consumed daily were also determined (Figure 4.6). These foods were included in the food consumption patterns of some respondents.

Chocolate bars The serving size for chocolate was given as one bar. The majority of the respondents (74.3%, n=171) indicated that they never ate chocolate bars. However, 25.7% of the respondents (n=59), indicated that they usually eat one chocolate bar a day. None of the respondents indicated to eat more than one chocolate bar a day. A chocolate bar of 100 grams can contain up to 48 grams of

sugar. The American Heart Association recommends a limit of 25 grams of added sugar a day for women and 37.5 grams of added sugar for men (Temple & Steyn, 2013).

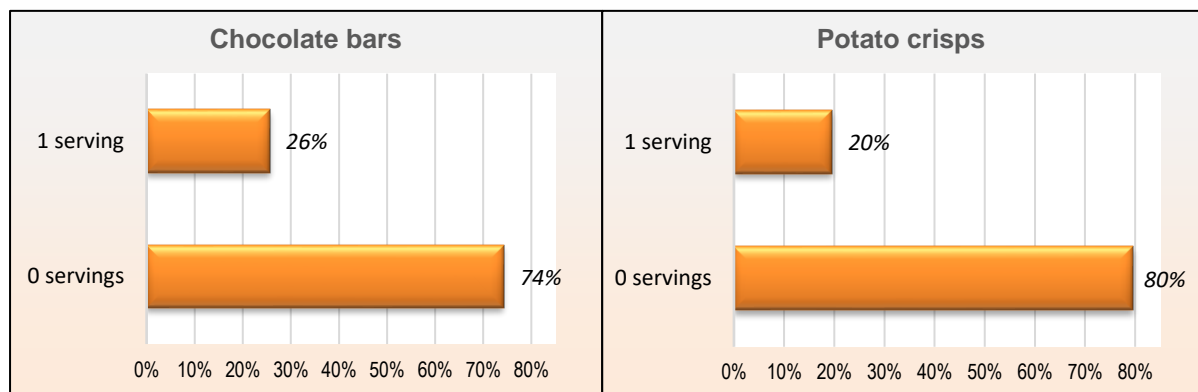


FIGURE 4.6: NUMBER OF DAILY CHOCOLATE BARS AND POTATO CRISPS

Potato crisps or other savoury snacks The serving size is one small packet of 35 grams. The current South African Hypertension Guidelines recommends a maximum intake of 6 grams of salt a day (Wentzel-Viljoen *et al.*, 2013). A small packet of 36 grams Lays salt and vinegar flavoured potato crisps contains 190 milligrams of salt. Some crisps flavours might contain more, and some flavours might contain less. The majority of the respondents (79.6%, n=183) indicated that they usually consumed no potato crisps. However, 19.6% of the respondents (n=45), indicated that they usually consume only one serving of potato crisps a day, followed by one respondent (0.4%), who indicated to consume two servings of potato crisps a day.

The next sub-objective related to the first objective deals with the frequency of consumption of foods and beverages.

4.5.4 Frequency of consumption of selected groups of foods

As cross-check of the type of food consumed, a list of the typical foods and beverages consumed by the South African population was included in the questionnaire where respondents had to indicate how frequently they consumed the listed foods and beverages. In the non-quantitative food frequency questionnaire food items were grouped into eight sub-groups. The sub-groups were protein-rich foods, milk and dairy products, fruit, vegetables and salads, fats and oils, starchy foods, legumes and nuts, beverages, fast- and snack foods. Respondents had to indicate how often they

consumed each food item according to the following scale; daily, 3-4 times a week, 1-2 times a week, seldom and never. Table 4.6 gives the results on the frequency ratings of the listed food and beverages.

Protein-rich foods The majority of the respondents (51.7%, n=119) indicated that they consumed red meat three to four times a week, followed by chicken (55.7%, n=128) that was consumed one to two times a week. Most of the respondents (49.6%, n=114) consumed boerewors one to two times a week and processed meat (54.8%, n=126) was marked seldom by the majority of respondents. Ten percent of the respondents (10%, n=23) revealed that they consumed red meat daily. Most of the respondents (47%, n=108) consumed fish one to two times a week, followed by 40.4% (n=93) who consumed fish seldom. Most of the respondents (43.5%, n=100) reported that they consumed eggs one to two times a week, followed by 22.2% (n=51) who consumed eggs three to four times a week and 20% (n=46) who seldom consumed eggs. Only 13% (n=30) of the respondents indicated that they consumed eggs on a daily basis.

Milk and dairy products Most of the respondents (40.9%, n=94) reported that they consumed full cream milk on a daily basis, while 25.7% of the respondents (n=59) revealed that they never consumed full cream milk and although most respondents (40%, n=92) never consumed low fat milk, 29.6% (n=68) indicated that they consumed low fat milk on a daily basis. In total, 70% of the respondents thus reported that they consumed either full cream- or low-fat milk the previous day. More than a third of the respondents (35.7%, n=82) indicated that they consumed cheese one to two times a week, followed by 30.4% (n=70) who revealed that they consumed cheese three to four times a week. Nearly a third of the respondents (31.7%, n=73) revealed that they seldom consumed yogurt, while 21.3% (n=49) marked that they consumed yogurt one to two times a week.

Fruit, vegetables and salads Although many of the respondents (41.3%, n=95) consumed fruit daily, some of the respondents (26.5%, n=61) consumed fruit only three to four times a week, followed by 19.1% (n=44) who consumed fruit one to two times a week. The majority of the respondents (52.2%, n=120) reported that they consumed vegetables daily, followed by a third (33%, n=76) who reported that they

TABLE 4.6: FREQUENCY OF CONSUMPTION OF SELECTED FOOD GROUPS (N = 230)

SELECTED FOOD GROUPS	Daily		3-4 x /week		1-2 x /week		Seldom		Never	
	n	%	n	%	n	%	n	%	n	%
PROTEIN-RICH FOODS										
Red meat	23	10.0	119	51.7	69	30.0	17	7.4	2	0.9
Chicken	8	3.5	82	35.7	128	55.7	10	4.3	2	0.9
Boerewors	6	2.6	100	43.5	114	49.6	10	4.3	2	0.9
Processed meat	4	1.7	6	2.6	41	17.8	126	54.8	53	23.0
Fish	0	0	20	8.7	108	47	93	40.4	9	3.9
Eggs	30	13	51	22.2	100	43.5	46	20.0	3	1.3
MILK AND DAIRY PRODUCTS										
Full cream milk	94	40.9	14	6.1	20	8.7	43	18.7	59	25.7
Low fat milk	68	29.6	17	7.4	15	6.5	38	16.5	92	40.0
Cheese	40	17.4	70	30.4	82	35.7	32	13.9	6	2.6
Yogurt	43	18.7	41	17.8	49	21.3	73	31.7	24	10.4
FRUIT, VEGETABLES AND SALADS										
Fruit	95	41.3	61	26.5	44	19.1	28	12.2	2	0.9
Vegetables	120	52.2	76	33.0	31	13.5	3	1.3	0	0
Salads	60	26.1	71	30.9	58	25.2	37	16.1	4	1.7
FATS AND OIL										
Butter	55	23.9	32	13.9	35	15.2	66	28.7	42	18.3
Margarine (tub)	50	21.7	36	15.7	23	10.0	38	16.5	83	36.1
Margarine (brick)	5	2.2	8	3.5	9	3.9	52	22.6	156	67.8
Vegetable oil	33	14.3	53	23.0	44	19.1	70	30.4	30	13.0
STARCHY FOODS										
White bread, bread rolls and buns	23	10.0	30	13.0	31	13.5	93	40.4	53	23.0
Brown or whole wheat bread	33	14.3	44	19.1	61	26.5	68	29.6	24	10.4
Breakfast cereals	63	27.4	24	10.4	39	17.0	69	30.0	35	15.2
Maize meal porridge	2	0.9	17	7.4	44	19.1	102	44.3	65	28.3
Rice	4	1.7	42	18.3	103	44.8	68	29.6	13	5.7
Pasta	0	0	20	8.7	123	53.5	74	32.3	13	5.7
Potatoes	6	2.6	49	21.3	114	49.6	51	22.2	10	4.3
LEGUMES AND NUTS										
Legumes	0	0	13	5.7	44	19.1	133	57.8	40	17.4
Nuts	12	5.2	29	12.6	55	23.9	115	50	19	8.3
BEVERAGES										
Fruit juice	17	7.4	21	9.1	47	20.4	111	48.3	34	14.8
Soft drinks	24	10.4	16	7.0	32	13.9	92	40.0	66	28.7
Sport or energy drinks	1	0.4	3	1.3	13	5.7	73	31.7	140	60.9
Water	200	87.0	20	8.7	4	1.7	4	1.7	2	0.9
FAST- AND SNACK FOODS										
Pizza	0	0	0	0	34	14.8	186	80.9	10	4.3
Potato chips	2	0.9	11	4.8	44	19.1	145	63.0	28	12.2
Fried chips	0	0	3	1.3	51	22.2	152	66.1	24	10.4
Cake, tart, cupcakes or muffins	0	0	4	1.7	46	20.0	149	64.8	31	13.5
Meat pie	0	0	2	0.9	20	8.7	161	70.0	47	20.4
Bar of chocolate	5	2.2	19	8.3	47	20.4	134	58.3	25	10.9
Sweets	5	2.2	12	5.2	45	19.6	133	57.8	35	15.2
Cordials	6	2.6	10	4.3	31	13.5	90	39.1	93	40.4
Hamburger	0	0	1	0.4	37	16.1	153	66.5	39	17
Cookies, biscuits	5	2.2	12	5.2	68	29.6	127	55.2	18	7.8

consumed vegetables three to four times a week. Nearly a third of the respondents (30.9%, n=71) reported that they consumed salads three to four times a week, followed by just over a quarter (26.1%, n=60) who reported they consumed salads daily and another 25.2% (n=58) who revealed that they consumed salads one to two times a week.

Fats and oil As many as 28.7% of the respondents (n=66) indicated that they seldom consumed butter, while 23.9% (n=55) reported that they consumed butter daily. More than a third of the respondents (36.1%, n=83) indicated that they never consumed tub margarine, while 21.7% (n=50) consumed tub margarine on a daily basis. The majority of the respondents (67.8%, n=156) never consumed brick margarine followed by 22.6% (n=52) of the respondents who seldom consumed brick margarine. Nearly a third of the respondents (30.4%, n=70) reported that they seldom consumed vegetable oil, followed by 23% (n=53) who consumed vegetable oil three to four times a week.

Starchy foods Most of the respondents (40.4%, n=93) reported that they consumed white bread, bread rolls and buns seldom, while only 10% (n=23) of the respondents reported that they consumed these on a daily basis. Under a third of the respondents (29.6%, n=68) indicated that they consumed brown or whole wheat bread seldom, with 26.5% (n=61) who indicated that they consumed brown or whole wheat bread one to two times a week, followed by 19.1% (n=44) who consumed brown or whole wheat bread three to four times a week and only 14.3% (n=33) who consumed it on a daily basis. Nearly a third of the respondents (30%, n=69) reported that they consumed breakfast cereals seldom, while over a quarter of the respondents (27.4%, n=63) consumed breakfast cereals on a daily basis. Most of the respondents (44.3%, n=102) reported that they consumed maize meal porridge seldom, and 28.3% (n=65) never consumed maize meal porridge. Most of the respondents (44.8%, n=103) revealed that they consumed rice one to two times a week, and 29.6% (n=68) consumed rice seldom. The majority of the respondents (53.5%, n=123) reported that they consumed pasta one to two times a week, followed by nearly a third (32.3%, n=74) who reported that they seldom consumed pasta. None of the respondents indicated that they consumed pasta on a daily basis. Most of the respondents (49.6%, n=114) reported that they consumed potatoes one to two times a week, followed by 22.2% (n=51) who

consumed potatoes seldom and 21.3% (n=49) who reported that they consumed potatoes three to four times a week.

Legumes and nuts The majority of the respondents (57.8%, n=133) indicated that they consumed legumes seldom, with none of the respondents who consumed legumes on a daily basis. Half of the respondents (50%, n=115) reported that they consumed nuts seldom, followed by 23.9% (n=55) of the respondents who consumed nuts one to two times a week. Only 5.2% (n=12) and 12.6% (n=29) consumed nuts daily and 1-2 times a week respectively (23.9%, n=55) and 8.3% (n=19) never consumed nuts.

Beverages Most of the respondents (48.3%, n=111) reported that they consumed fruit juice seldom, followed by 20.4% (n=47) who consumed fruit juice one to two times a week. Most of the respondents (40%, n=92) indicated that they consumed soft drinks seldom, while 28.7% (n=66) indicated that they never consumed soft drinks. Only 10.4% (n=24) of the respondents revealed that they consumed soft drinks on a daily basis. The majority of the respondents (60%, n=140) reported that they never consumed sport or energy drinks, whereas nearly a third of the respondents (31.7%, n=73) consumed sport or energy drinks seldom. The majority of the respondents (87%, n=200), reported that they consumed water daily, while 8.7% (n=20) of the respondents reported that they consumed water three to four times a week

Fast- and snack foods The majority of the respondents (80.9%, n=186) indicated that they seldom consumed pizza, followed by 14.8% (n=34) of the respondents who indicated that they consumed pizza one to two times a week. None of the respondents revealed that they consumed pizza on a daily basis. Although the majority of the respondents (63%, n=145) reported that they consumed potato chips seldom, 19.1% (n=44) consumed potato chips one to two times a week and 12.2% (n=28) never consumed potato chips. The majority of the respondents (66.1%, n=152) reported that they seldom consumed fried chips, followed by 22.2% (n=51) who consumed fried chips one to two times a week. The majority of the respondents (64.8%, n=149) reported that they consumed cake, tart, cupcakes or muffins seldom, while 20% (n=46) consumed these one to two times a week. The majority of the respondents (70%,

n=161) reported that they seldom consumed meat pie, while 20.4% (n=47) reported that they never consumed meat pie.

Although majority of the respondents (58.3%, n=134) indicated that they consumed chocolate bars seldom, 20.4% (n=47) consumed chocolate bars one to two times a week. The majority of respondents (57.8%, n=133) also indicated that they seldom consumed sweets, followed by 19.6% (n=45) who consumed sweet one to two times a week and 15.2% (n=35) who never consumed any sweets. Most of the respondents (40.4%, n=93) reported that they never consumed cordials, while 39.1% (n=90) of the respondents reported that they seldom consumed cordials. The majority of the respondents (66.5%, n=153) indicated that they consumed hamburgers seldom, while 17% (n=39) never consumed hamburgers. None of the respondents reported that they consumed hamburgers on a daily basis. The majority of the respondents (55.2%, n=127) reported that they seldom consumed cookies and biscuits, while 29.6% (n=68) of the respondents reported that they consumed cookies and biscuits one to two times a week.

In the next sub-objective, the respondents' attitudes towards healthy eating as well as their perceptions of how much their friends and family cared about healthy eating was measured.

4.5.5 Attitudes towards healthy eating

The respondents' attitude towards healthy eating as well as their perception of how much their family and friends cared about healthy eating was determined. This was measured by a closed-ended question where the degree of care had to be marked as either not at all, a little bit, somewhat or very much. The attitudes of the respondents and their perception of their significant others gave insightful information regarding the social influences that might influence the social and home-food environments of the respondents. The results are depicted in Table 4.7.

I care about eating healthy food The majority of the respondents (57.4%, n=132), indicated that they cared very much about eating healthy food. Just over a third (36.1%, n=83) of the respondents indicated that they cared somewhat and 5.7% of the respondents (n=13) indicated that they cared a little bit about eating healthy food.

TABLE 4.7: ATTITUDE ABOUT EATING HEALTHY FOOD (N= 230)

ATTITUDE	Frequency (n)	Percentage (%)
I care about eating healthy food		
Not at all	2	0.9
A little bit	13	5.7
Somewhat	83	36.1
Very much	132	57.4
People I live with care about eating healthy food		
Not at all	6	2.6
A little bit	16	7.0
Somewhat	86	37.4
Very much	108	47.0
My friends care about eating healthy food		
Not at all	5	2.2
A little bit	37	16.1
Somewhat	122	53.0
Very much	66	28.7

People I live with care about eating healthy food The respondents also had to indicate to what extent the people they live with cared about healthy eating. Most of the respondents (47.0%, n=108) indicated that the people they live with cared very much about eating healthy food. However, more than a third of the respondents (37.4%, n=86) indicated that the people they live with only cared somewhat about eating healthy food. Only 2.6% (n=6) of the respondents indicated that the people they live with don't care about healthy eating at all.

My friends care about eating healthy food More than half of the respondents (53.0%, n=122), indicated that most of their friends only cared somewhat about healthy eating. Only 28.7% (n=66) of the respondents indicated that many of their friends cared very much about healthy eating. The other respondents indicated that their friends cared a little bit (16.1%, n=37) or not at all (2.2%, n=5) about healthy eating.

4.5.6 Concluding summary on the food practices of the study group

From the results on the eating patterns, the dietary diversity of food consumed, number of servings and frequency of consumption of selected food groups, a brief concluding summary and discussion of the study group's food practices follows.

4.5.6.1 Eating patterns

The eating patterns of the study group comprises of their meal patterns and meal composition. Most of the respondents eat two to three meals a day and the majority also indicated to eat breakfast, lunch and supper every day. The majority of the study group indicated to eat most of their meals at home, however there was 23% who indicated to eat meals away from home on a daily basis. These meals were mostly eaten at restaurants and the workplace.

4.5.6.2 Adequacy of food consumed

The results on the dietary diversity and the non-quantitative Food Frequency Questionnaire (FFQ) further revealed the following regarding the adequacy of the study group's food consumption in terms of adherence to the Food Based Dietary Guidelines for South Africans (Vorster *et al.*, 2013). (See Addendum D for the revised general Food Based Dietary Guidelines for South Africans).

From the results derived from the Dietary Diversity score, it was found that the majority of respondents consumed a variety of food, and the FBDG of "*enjoy a variety of foods*" was followed by the majority of the study group. Most of the respondents' Dietary Diversity Score scores were six or more as 50% of the respondents included six or more of the nine food groups as part of their meals or snacks the previous day.

From the results on the dietary diversity and the non-quantitative Food Frequency Questionnaire (FFQ) information on meal composition or content of the meals consumed on a regular basis could be deduced (See Table 4.8).

The majority included starchy foods the previous day as part of their meals and snacks. It seemed as if the guideline of "*making starchy foods as part of most meals*" is followed by most of the respondents. Although most of the respondents included fruit and vegetables in their meals and snacks the previous day, the quantities that were consumed raises concern as the majority indicated that they included only one serving of fruit and vegetables. It seems as if the FBDG of "*eat plenty of vegetables and fruit every day*" is not followed by many of the respondents. Most of the respondents did not include legumes and nuts the previous day and indicated to only consume these

foods seldom. It seems if the guideline of *“eat dry beans, split peas, lentils and soya regularly”* is not followed by many of the respondents. The majority of respondents did not adhere to the FBDG for legumes and nuts as they indicated they consumed it seldom.

TABLE 4.8: SUMMARY ON ADEQUACY OF FOOD CONSUMPTION (N = 230)

FOOD GROUP	Consumed the previous day	Food frequency questionnaire
STARCHY FOODS	86%	Varied but confirmed daily
FRUIT, VEGETABLES AND SALADS Orange-fleshed fruit Dark green vegetables Other fruits and vegetables	60% 43% 91.3%	52% daily, however, there were many +/- who did so only 2-4 times a week
LEGUMES AND NUTS	30%	Majority seldom 58%
MILK AND DAIRY PRODUCTS	90%	More than 70%
PROTEIN-RICH FOODS Meat Fish Chicken Eggs	93% 50%	Varied but confirmed daily
FATS AND OIL	77%	Varied in terms of fats

The majority of respondents included milk and dairy products the previous day as part of their meals and snacks. It seems as if the guideline of *“have milk, maas and yogurt every day”* was followed by majority of the respondents. Most of the respondents indicated to make protein-rich foods part of their meals and snacks the previous day and therefore followed the guideline that states *“fish, chicken, lean meat or eggs can be eaten daily”*. However, the intake of eggs varied, as only half of the respondents indicated they consumed eggs the previous day. The majority of the respondents included fats and oils as part of their meals and snacks the previous day. It seems if most of the respondents did not follow the guideline that states *“use fats sparingly”* as many respondents indicated to use butter, tub margarine and vegetables oil more than 3-4 times per week. It is important for the respondents to stick to the guidelines regarding the type of fat consumed, as these guidelines state *“choose vegetable oils, rather than hard fat”*. The respondents seemed to use animal fat such as butter more

than vegetable fat such as margarine, which seems that they did not adhere to the FBDG for the type of fats consumed.

In the second objective of the study, the contribution of the local urban food environment to the food practices of the study group is explored. This objective address not only aspects related to the location of food stores, but also how frequently food is purchased and how accessible the food in the urban environment is, as viewed by the study group. The location of food outlets and extent to which the respondents have access to food are of importance as it has an impact on their food practices and it can restrict or promote their food intake (Larson & Story, 2009).

4.6 THE LOCAL URBAN FOOD ENVIRONMENT

The first sub-objective deals with where (the location) and how often (the frequency) food is purchased by the study group.

4.6.1 Location and frequency of food purchased

Respondents had to indicate if they had made use of internet shopping for food. The majority of the respondents (95.7%, n=220) indicated that they did not make use of internet shopping for food. This implies that the majority still purchased food at traditional brick and mortar stores. A question was also posed as to how the purchased food is transported home. The majority of the respondents (95.2%, n=219) indicated to have their own vehicle to transport their food home. Only 4.3% (n=10) of the respondents walked and carried their food purchases home themselves and only one respondent made use of a bus or taxi. In the Eastern and Southern suburbs of Tshwane there is a big variety of different food stores in close proximity to the neighbourhoods where the study group resides. The majority of respondents have their own vehicles for transport and chooses to use this type of transport as public transport is very limited in most areas of Tshwane. Safety is also another concern as it is unsafe for women to walk and carry groceries for long distances. Therefore, most respondents choose to drive to food stores with their own vehicles as it is safer, more convenient and the best option for them overall.

The location where and frequency of food purchasing were also of importance. Respondents were asked to indicate the location where food was purchased and how frequently they purchased food from specific food outlets. The Eastern suburbs of Tshwane has an array of different food outlets for respondents available to purchase from. In order to determine the location and frequency of food purchases, respondents had to answer closed-ended questions to indicate how often they purchased from the listed food outlets.

The results on the frequency of food purchased from selected food outlets are graphically presented in Figure 4.7.

Supermarket (i.e. Shoprite, Checkers, Spar, Pick 'n Pay, Woolworths food store)

Most of the respondents (41.3%, n=95) indicated that they purchased food from a supermarket at least once or twice a week and 35.2% (n=81) indicated that they do so 3-4 times a week. A small group visited supermarkets daily (9.1%, n=21). Overall, the majority (76,5%, n=176) purchased food from a supermarket at least one or more times a week. Only 13.0% (n=30) of the respondents indicated to purchase from supermarkets more than three times a month. Less than one percent did so only on special occasions (0.9%, n=2), or never (0.4%, n=1).

Fresh fruit and vegetable food market (Fruit Stop, Fruit Shop, Food Lovers' Market, Green Grocer)

Nearly a third of the respondents (31.7%, n=73) indicated that they purchased from fresh fruit and vegetable food markets 1-2 times a week, followed by 28.3% (n=65) who indicated that they only purchased from fresh food markets on special occasions and 27.4% (n=63) who indicated that they purchase food from fresh food markets more than three times a month. The remaining respondents indicated that they purchased from fresh food markets 3-4 times a week (5.7%, n=13), never (5.2%, n=12) or daily (1.7%, n=4).

Butcher Most of the respondents (45.2%, n=104) indicated that they only purchased food from butchers on special occasions, followed by 30.9% (n=71) who indicated that they purchased food from the butcher more than three times a month. Only 13.5% (n=31) indicated that they purchased from a butcher 1-2 times a week and 9.6% (n=22) indicated they never purchased from a butcher. Only one respondent (0.4%)

respondent indicated that food was bought from a butcher 3-4 times a week and another respondent (0.4%) indicated to purchase food from a butcher on a daily basis. It seems as if the frequency of food purchases from butchers has decreased, as the availability of butchers in urban areas has also decreased.

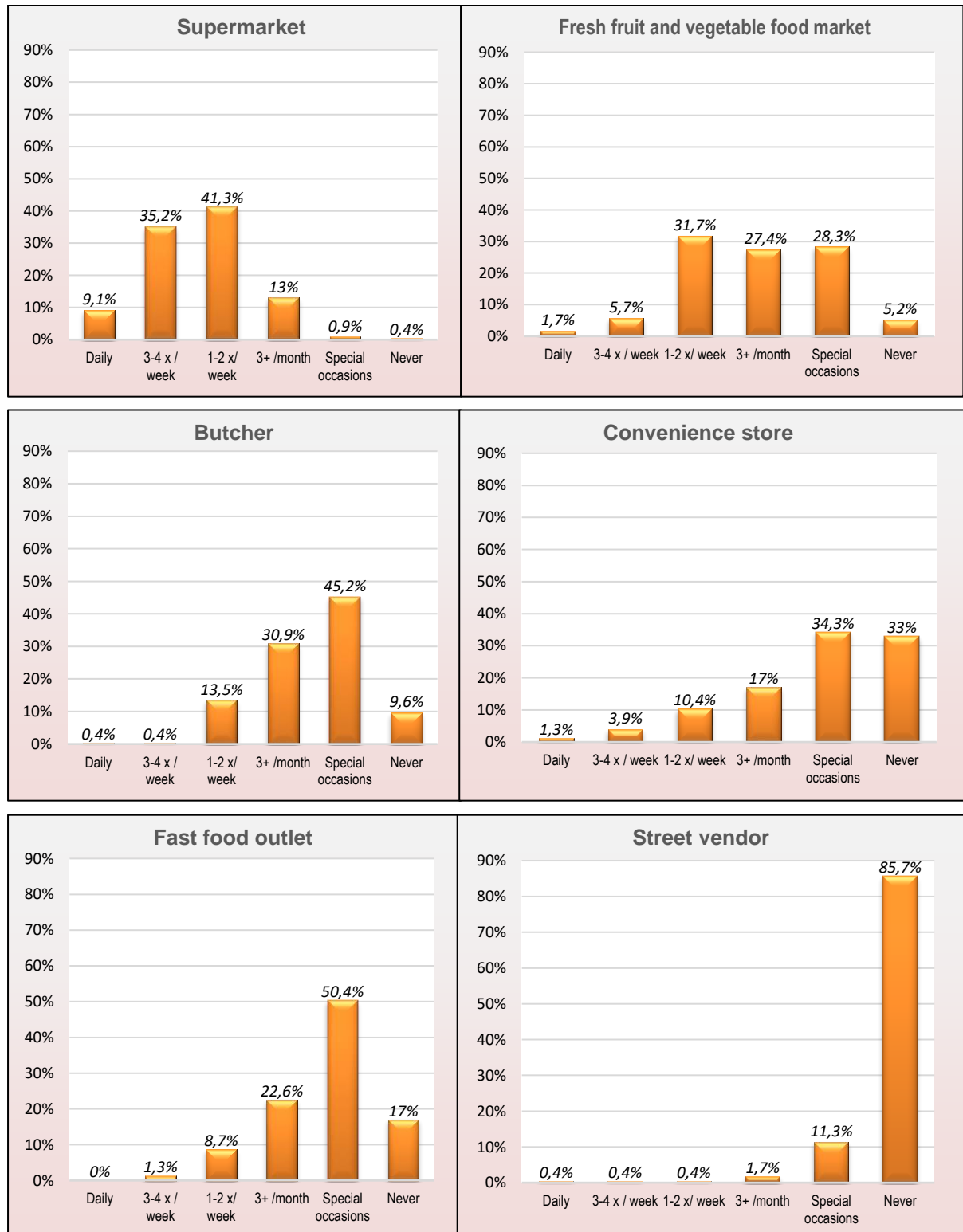


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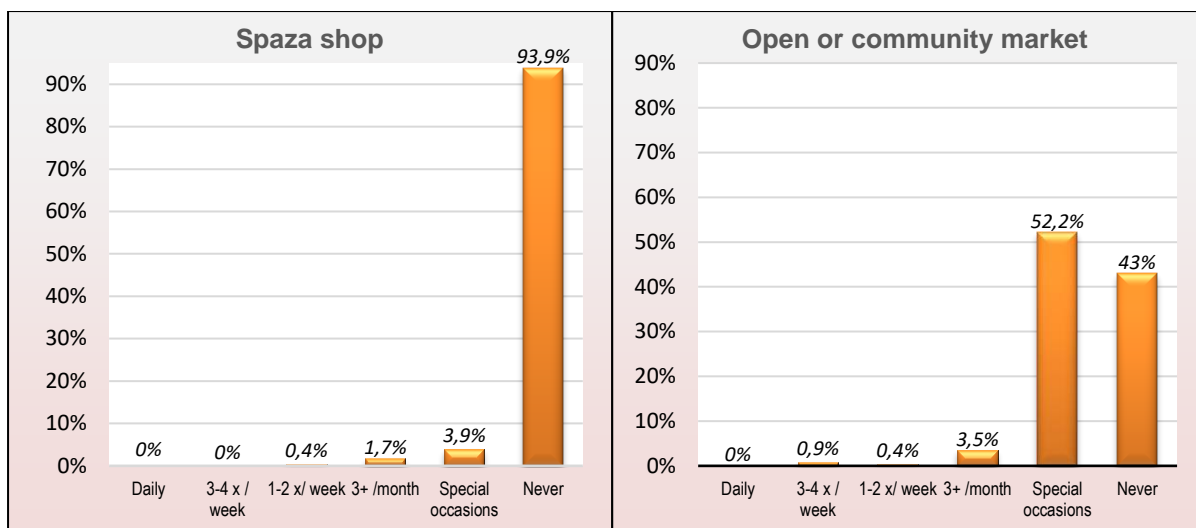


FIGURE 4.7: FREQUENCY OF FOOD PURCHASES FROM SELECTED OUTLETS

Convenience store (i.e. Caltex, BP Express, Shell Select, Sasol). Just over a third of the respondents (34.3%, n=79) indicated that they only purchased food from convenience stores on special occasions or never (33.0%, n=76). Seventeen percent (n=39) of the respondents indicated that they purchased from convenience stores more than three times a month, while 10.4% (n=24) indicated that they purchased from convenience stores once or twice a week. Only 3.9% (n=9) indicated that they purchased from convenience stores 3-4 times a week and only 1.3% (n=3) indicated that they purchased food from convenience stores on a daily basis.

Fast food outlet (i.e. KFC, Nando's, McDonalds, Steers, Romans Pizza). The respondents who indicated to purchase from fast food outlets, only purchased food two times a week at most. The majority of the respondents indicated to purchase from fast food outlets once a week or less. Just over half of the respondents (50.4%, n=116) indicated that they only purchase food from fast food outlets on special occasions, followed by 22.6% (n=52) who indicated that they do so more than three times a month. The other respondents indicated that they never purchase food from fast food outlets (17.0%, n=39), or 1-2 times a week (8.7%, n=20) or 3-4 times a week (1.3%, n=3).

Street vendor The majority of the respondents (85.7%, n=197) indicated that they never purchase food from a street vendor, followed by those who purchase food from

street vendors only on special occasions (11.3%, n=26). The rest of the respondents marked that they bought from street vendors more than three times a month (1.7%, n=4), 1-2 times a week (0.4%, n=1), 3-4 times a week (0.4%, n=1), or daily (0.4%, n=1). These results are expected as street vendors are operating only in certain areas of Tshwane and are of very active in the Eastern and Southern suburbs of Tshwane. This explains the high percentage who never purchased from street vendors.

Spaza shop* Similar results as purchasing from street vendors were obtained regarding buying food from a spaza shop. The majority of respondents (93.9%, n=216) indicated that they never buy food from a spaza shop. Other respondents indicated that they buy food from a spaza shop only on special occasions (3.9%, n=9). Only 1.7% of the respondents (n=4) indicated that they buy food from a spaza shop more than three times a month. Only 0.4% of the respondents (n=1) indicated that they buy food from a spaza shop 1-2 times a week.

* A spaza shop is usually operated in a suburb, sometimes in the home of the owner and could be described as a small-scale informal convenience store where a limited number of basic food items, toiletries and cleaning aids can be purchased (Viljoen, 2009:53).

Open or community market More than half of the respondents (52.2%, n=120) indicated that they purchase food from an open or community market only on special occasions, followed by a large percentage of the respondents (43%, n=99) who indicated that they never purchase food from open or community markets. Only 3.5% (n=8) indicated to purchase food from open or community markets more than three times a month, followed by 0.9% (n=2) who indicated to purchase 3-4 times a week and 0.4% (n=1), 1-2 times a week. People tend to shop at open or community markets on weekends when they have time to go to these markets. Also, most open or community markets in urban areas happen over weekends and are thus not always available or open during weekdays, therefore people tend to shop there less frequently and when there is opportunity to go to these markets. These markets also offer speciality and artisan products which is usually not available at normal food stores.

4.6.2 The accessibility of food in the local urban food environment

The second sub-objective deals with the accessibility of food in the local urban environment. The accessibility to food was measured by using a 5-point Likert-type scale to measure the food access dimensions of availability, accessibility, affordability, acceptability and accommodation (See Addendum B, Section B). Respondents had to indicate to what extent they agree with the statements asked by marking if they strongly agree, agree, are undecided, disagree or strongly disagree. Some scale items measured more than one aspect of accessibility. The results are presented in Table 4.9 and are discussed according to the access dimensions.

TABLE 4.9: THE ACCESSIBILITY OF FOOD (N = 230)

ACCESSIBILITY	Strongly agree		Agree		Undecided		Disagree		Strongly disagree	
	n	%	n	%	n	%	n	%	n	%
I am satisfied with the range of food outlets I have access to in my neighbourhood	109	47.4	106	46.1	4	1.7	6	2.6	5	2.2
Good quality fruit and vegetable products are available in the food outlets I normally shop	85	37	122	53	13	5.7	8	3.5	2	0.9
Healthy foods are available in the food outlets where I normally shop	85	37	120	52.2	16	7	8	3.5	1	0.4
I usually buy food at the food outlets closest to where I live	85	37	107	46.5	12	5.2	23	10	3	1.3
I am satisfied with the types of food I have regular access to	83	36.1	125	54.3	9	3.9	11	4.8	2	0.9
The food stores in my neighbourhood compare well with food stores in other areas of Tshwane	88	38.8	99	43	24	10.4	16	7	3	1.3
Fruits and vegetables are affordable in the food outlets I normally buy from	31	13.5	92	40	55	23.9	45	19.6	7	3
I have to travel some distance to buy good quality food	10	4.3	35	15.2	22	9.6	111	48.3	52	22.6
These outlets accommodate my needs (i.e. credit facilities, extended operating hours)	77	33.5	130	56.5	17	7.4	4	1.7	2	0.9

4.6.2.1 Availability and accessibility

From the results it is clear that food is available and accessible to the study group as gleaned from the above Table. Almost half of the respondents indicated that they strongly agreed (47.7%, n=109) and agreed (46.1%, n=106) with the statement that they are satisfied with the range of food outlets that they have access to in their neighbourhood. The majority of respondents agreed (53%, n=106) and strongly agreed (37%, n=85) with the statement that good quality fruit and vegetable products are available in the food outlets they normally shop at. More than half the respondents agreed (52.2%, n=120) and 37% of the respondents (n=85) strongly agreed with the statement that healthy foods are available in the food outlets where they normally shop. The majority of respondents also agreed (46.5%, n=107) and strongly agreed (37%, n=85) with the statement that they usually buy food at the food outlets closest to where they live. People often tend to shop for food in their own neighbourhood as they have easy access to food stores and don't have to travel long distances (Cannuscio *et al.*, 2014). This is confirmed by the statement whether or not they had to travel some distance in order to buy quality food, as almost half of the respondents (48.3%, n=111) disagreed and 22.6% (n=52) of respondents strongly disagreed. However, 15.2% of respondents (n=35) agreed and 4.3% (n=10) strongly agreed that they do have to travel some distance to buy good quality food.

4.6.2.2 Affordability

Only one statement related to the affordability of fruits and vegetables. Forty percent of respondents (n=92) agreed, while 23.9% (n=55) of respondents were undecided and 19.6% (n=45) disagreed with the statement that fruits and vegetables are affordable in the food outlets they normally buy from. Only 13.5% (n=31) of respondents indicated that they strongly agreed with the statement that fruits and vegetables were affordable in the food outlets that they normally buy from.

4.6.2.3 Acceptability

There were three statements that related to the acceptability of food in the local urban food environment. More than half of the respondents (54.3%, n=125) agreed and another 36.1% respondents (n=83) strongly agreed that they are satisfied with the type

of food that they have regular access to. The majority of respondents agreed (53%, n=106) and strongly agreed (37%, n=85) with the statement that good quality fruit and vegetable products are available in the food outlets they normally shop at. Regarding the statement that food stores in their neighbourhood compared well with other food stores in other areas of Tshwane, 43% (n=99) of the respondents indicated that they agreed and 38.8% (n=88) strongly agreed with the statement, while only 4.8% (n=11) of the respondents disagreed with 1.3% (n=3) that strongly disagreed.

4.6.2.4 Accommodation

Accommodation was measured by a statement if the outlets accommodated the needs of the study group (i.e. credit facilities, extended operating hours). More than half of the respondents agreed (56.5%, n=130) and 33.5% of respondents (n=77) strongly agreed with the statement that these food outlets accommodate their needs. More than half of the respondents (54.3%, n=125) agreed and another 36.1% respondents (n=83) strongly agreed that they are satisfied with the type of food that they have regular access to. These results confirm that the food stores in the study area accommodates the needs of the respondents as they physically have access to a wide range of stores.

4.6.3 Concluding summary on the local urban food environment

The local urban food environment together with the food access dimensions of availability, accessibility, affordability, acceptability and accommodation contribute to the food practices of urban consumers. The results of this study confirm that this is also the case with regard the food practices of the study group. The respondents strongly agreed that the access to food as measured by the five food access dimensions is adequate as they indicated to be mostly satisfied with the availability, accessibility, affordability, acceptability and accommodation of food in their local urban food environments. In terms of location, the results confirm that there are many food stores available and accessible to these urban consumers. Figure 4.8 shows a map indicating the respondents and retail outlets per sub place in the city of Tshwane. This map confirms that there are many retail outlets and food stores in close distance to many of the respondents.

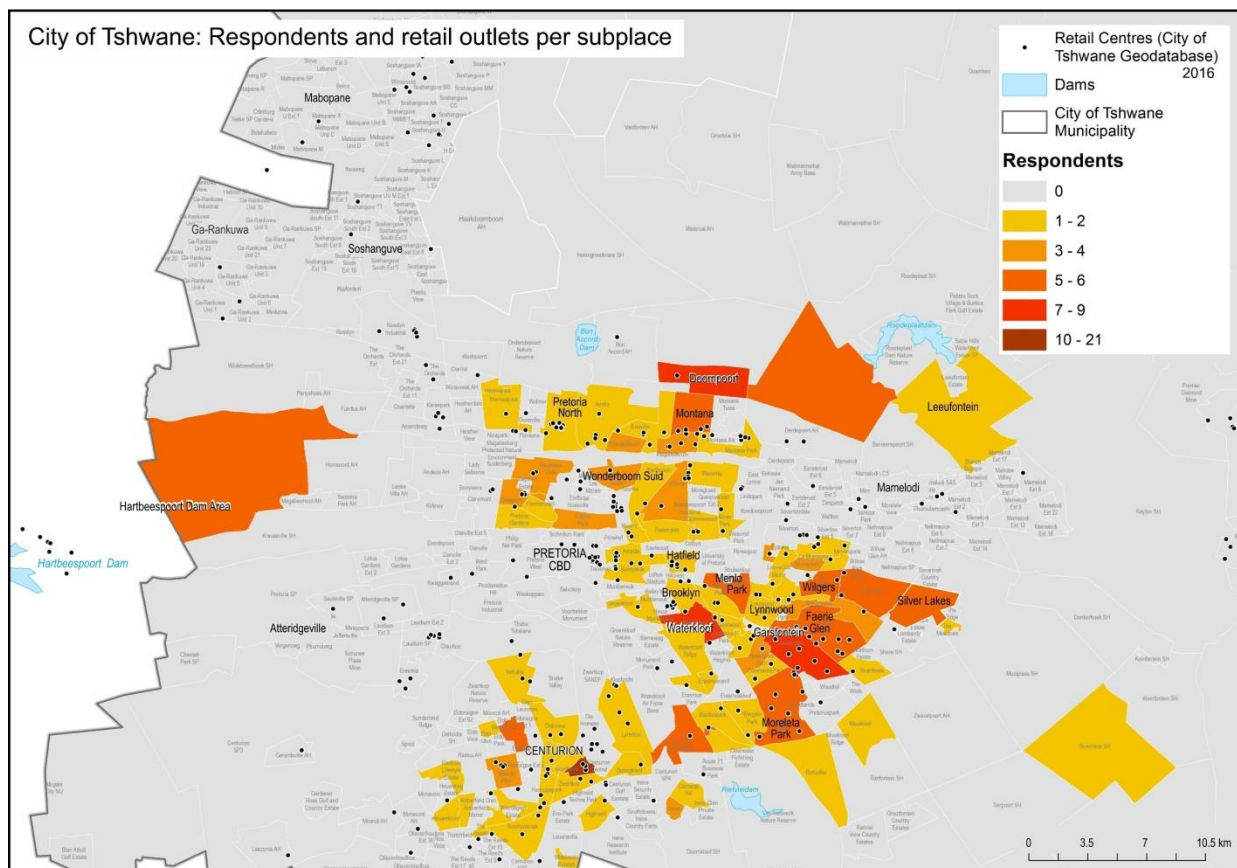


FIGURE 4.8: A MAP INDICATING THE RESPONDENTS AND RETAIL OUTLETS PER SUB PLACE IN THE CITY OF TSHWANE

These food stores also accommodate their needs in terms of supplying good quality food of a wide variety at reasonable prices. As most respondents have their own vehicles, they are able to visit these outlets regularly to obtain their daily or weekly food purchase. Overall the majority of respondents are satisfied with the accessibility they have to a wide variety of good quality food from a wide selection of food outlets.

Apart from the urban food environment, literature also indicates that the immediate home-food environment also makes a substantial contribution to the food practices of people (Larson & Story, 2009; Ricciuto *et al.*, 2006). Therefore, the third objective of the study deals with the contribution of food in the home-food environment.

4.7 THE HOME-FOOD ENVIRONMENT

In a household there is usually a gatekeeper who is responsible for controlling what food comes into the home and how the food is prepared and served (Burton *et al.*,

2017; McLeod *et al.*, 2011; Jilcott *et al.*, 2009). The first sub-objective determined who is the person mainly responsible for these tasks in the households of the study group.

4.7.1 Person responsible for food purchasing and preparation

Two closed-ended questions were asked, and Table 4.10 gives the results.

TABLE 4.10: RESPONSIBILITY OF FOOD PURCHASING AND PREPARATION IN THE HOUSEHOLD (N = 230)

RESPONSIBILITY	Frequency (n)	Percentage (%)
Person mainly responsible for household food purchases		
Yourself	105	45.7
Spouse / partner	116	50.4
Children	1	0.4
Another person in the household	8	3.5
Person mainly responsible for household food preparation		
Yourself	66	28.7
Spouse / partner	134	58.3
Children	4	1.7
Domestic worker / helper	17	7.4
Another person in the household	9	3.9

Household food purchases Most of the respondents (45.7%, n=116) indicated that their spouses / partners were mainly responsible for the household's food purchases, followed by 45.7% (n=105) who indicated that they themselves were responsible for the household food purchasing and only one respondent (0.4%) indicated that children were responsible for food purchasing. Eight respondents (3.5%, n=8) indicated that another person in the household was responsible for food purchases. Further analyses revealed that the gender of the person responsible for the food purchases was female 72.4% (n=160) and that only 27.6% (n=61) who indicated that they performed this task were male. These results were confirmed in the SANHANES-1 study as overall on national level, it appears as if the majority of female South Africans are responsible to do grocery shopping for their homes (Shisana *et al.*, 2014:184).

Household food preparation The same tendency regarding the responsibility of food preparation was reported. The majority of respondents (58.3%, n=134) indicated

that their spouses / partners were mainly responsible for household's food preparation, followed by 28.7% (n=66) who indicated that they were responsible for the household's food preparation and four respondents (1.7%) who indicated that children were responsible for the food preparation. Only nine respondents (3.9%, n=9) indicated that another person in the household was responsible for food preparation and seventeen respondents (7.4%, n=17) indicated that the domestic worker / helper in the house was responsible for preparing food. Further analyses revealed that 77.5% (n=155) of the food preparation was the responsibility of a female in the household, with only 22.5% (n=45) who indicated that a male was responsible for the household's food preparation. These results were also confirmed in a recent American study where the researcher found that performing food preparation tasks were increasing amongst men, although most of the food preparation tasks were still performed by females (Taillie, 2018).

4.7.2 Availability of (selected) types of food in the home

The second sub-objective concerning the home-food environment deals with the availability of selected types of food in the home. Respondents had to indicate how often (always, usually, sometimes, never) certain foods were available in their homes. Table 4.11 gives the results on how often healthy food, snack food and sugar-sweetened beverages were available in their homes.

4.7.2.1 Availability of healthy food in the home

Availability of fruits and vegetables The majority of the respondents (60%, n=138), indicated that fruits and vegetables are always available in their homes and, 33% of the respondents (n=76) indicated that it is usually available in their homes, whereas 6.5% (n=15) indicated that fruits and vegetables are sometimes in their home. Only one respondent indicated that fruits and vegetables are never available at home.

Availability of milk The majority of the respondents (86.1%, n=198) indicated that milk is always available in their homes followed by 9.1% (n=21) who indicated that they usually have milk available in their homes. Only 3.9% (n=9) of the respondents indicated that milk is sometimes available in their homes, and two respondents 0.9% (n=2) marked that milk is never available in their homes.

TABLE 4.11: AVAILABILITY OF FOOD IN THE HOUSEHOLD (N = 230)

Availability	Always		Usually		Sometimes		Never	
	n	%	n	%	n	%	n	%
Availability of healthy food								
Fruits and vegetables are available in my home	138	60.0	76	33.0	15	6.5	1	0.4
Milk is available in my home	198	86.1	21	9.1	9	9.3	2	0.9
100% fruit juice is available in my home	39	17.0	42	18.3	120	52.2	29	12.6
Vegetables are served with main meals in my home	119	51.7	87	37.8	10.4	10.4	-	-
Food is prepared in a healthy manner in my home	94	40.9	118	51.3	18	7.8	-	-
Snack foods available								
Potato chips/salty snacks are available in my home	23	10.0	59	25.7	129	56.1	19	8.3
Chocolates/sweets are available in my home	25	10.9	53	23.0	138	60.0	14	16.1
We have "junk food" in my home	2	0.9	23	10.0	144	62.6	61	26.5
Sugar-sweetened beverages available								
Soft/ fizzy drinks are available in my home	31	13.5	53	23.0	110	47.8	36	15.7

Availability of fruit juice More than half of the respondents (52.2%, n=120) indicated that 100% fruit juice is sometimes available in their homes. While 18.3% (n=42) indicated that 100% fruit juice is usually available in their homes, 17.0% (n=39) indicated that it is always available in their homes.

Serving vegetables with main meals Just over half of the respondents (51.7%, n=119) indicated that vegetables are always served with main meals in their homes, followed by 37.8% (n=87) of the respondents who had vegetables usually served with main meals and 10.4% (n=24) only sometimes served vegetables with main meals in their homes.

Food is prepared in a healthy manner Just over half of the respondents (51.3%, n=118) indicated that food is usually prepared in a healthy manner in their homes. Another 40.9% (n=94) indicated that they always prepared food in a healthy manner,

followed by 7.8% (n=18) who indicated that their food is sometimes prepared in a healthy manner in their homes. The way food was prepared in the home was regarded as healthy by the majority of the respondents.

4.7.2.2 Availability of snack type foods in the home

Availability of potato chips and other salty snacks The majority of the respondents (56.1%, n=129), reported that potato chips and other salty snacks are sometimes available in their homes. Just over a quarter of respondents (25.7%, n=59) revealed that potato chips and salty snacks are usually available in their homes and 10% of respondents (n=23) indicated that it was always available in their homes. Only 8.3% (n=19) of the respondents indicated that potato chips or salty snacks are never available in their homes.

Availability of chocolates and other sweets The majority of respondents (60.0%, n=138) indicated that chocolates and other sweets are sometimes available in their homes. Nearly a quarter of the respondents (23.0%, n=53) indicated that chocolates and sweets are usually available in their homes and 10.9% (n=25) of the respondents indicated that chocolates and sweets are always available in their homes, with only 6.1% (n=14) of the respondents who indicated that chocolates and other sweets are never available in their homes.

Availability of “junk food” The majority of respondents (62.6%, n=144) indicated that they sometimes have junk food available in their homes, while over a quarter 26.5% (n=61) revealed that they never have junk food in their homes. Only 10% (n=32) of respondents indicated that they usually have junk food in their home and 0.9% of respondents (n=2) indicated that they always have junk food in their homes.

4.7.2.3 Availability of sugar-sweetened beverages in the home

Availability of soft / fizzy drinks Almost half of the respondents (47.8%, n=110) indicated that soft / fizzy drinks were sometimes available in their homes, followed by 23.0% (n=53) who indicated that soft / fizzy drinks were usually available in their home and 15.7% (n=36) who indicated that soft / fizzy drinks are never available. Only 13.5% (n=31) of the respondents indicated that soft / fizzy drinks are always available in their homes.

From the results, it is clear that there is adequate access to healthy food such as fruit and vegetables in the home-environment. The majority of the respondents only indicated to have snack foods sometimes or not at all in the home.

The next sub-objective deals with family meals in the home. Research shows that family meals are important in the home setting. Frequent family meals are associated with a healthier food intake, higher levels of emotional well-being and fewer weight issues (Berge *et al.*, 2012). Family meals form an important part of the food practices in the home-food environment of respondents as it determines the number of meals eaten, the frequency of family meals and how these meals are eaten at home.

4.7.3 Family meals

Data was gathered on family meals in the home. In three closed-ended questions dealing with the number of meals eaten at home, the frequency of meals at home, and how these meals are eaten, respondents gave information on their family meals (Figure 4.9).

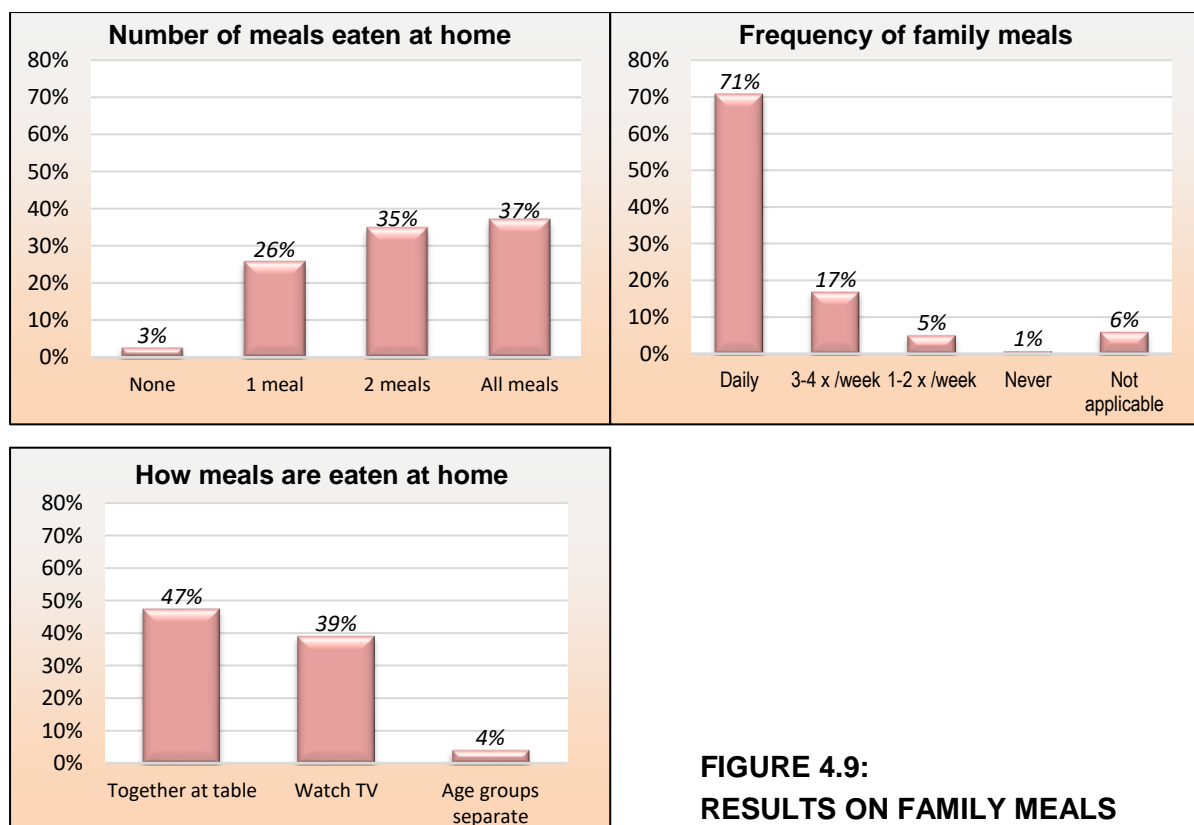


FIGURE 4.9:
RESULTS ON FAMILY MEALS

Number of meals eaten at home during weekdays More than a third of the respondents (37.0%, n=85) indicated that they eat all of their meals at home on weekdays, followed by 34.8% (n=80) of the respondents who indicated that they eat two meals at home a day on weekdays and 25.7% (n=59) of the respondents who indicated that they only eat one meal at home a day on weekdays.

Frequency of family meals eaten together The majority of the respondents (70.9%, n=163) indicated that they eat family meals together on a daily basis whereas 17% of the respondents (n=39) indicated that they eat family meals 3-4 times a week with family members, whereas 5.2% of the respondents (n=12) indicated that they have family meals 1-2 times a week. There were 6.1% of the respondents (n=14) who lived on their own, and this question was thus not applicable to them.

How meals are eaten at home Most of the respondents (47.4%, n=109) indicated that all members of the household sit and eat together at the table. The other 39.1% of respondents (n=90) indicated that they watch television while eating and 3.5% of the respondents (n=8) indicated that different age groups are formed and that they ate separately.

The next sub-objective deals with the attitudes of the respondents towards family meals.

4.7.4 Attitudes towards family meals

Apart from measuring the frequency of family meals at home and how the meals are eaten, five Likert-type questions measured the respondents' attitudes toward family meals. The respondents had to indicate how strongly they agree with the given statements. The results are given in Table 4.12.

I enjoy meals with my family Nearly all respondents indicated that they enjoyed meals with their family as 64.3% (n=148) strongly agreed and another 32.6% (n=75) agreed with the statement.

TABLE 4.12: ATTITUDES TOWARDS FAMILY MEALS (N = 230)

ATTITUDES	Strongly Agree		Agree		Undecided		Disagree		Strongly Disagree	
	n	%	n	%	n	%	n	%	n	%
I enjoy meals with my family	148	64.3	75	32.6	6	2.6	0	0	1	0.4
In my family eating brings people together in an enjoyable way	199	51.7	96	41.7	12	5.2	2	0.9	1	0.4
In my family mealtimes are a time for talking with other family members	101	43.9	99	43.0	22	9.6	5	2.2	3	1.3
In my family dinner time is about more than just getting food, we all talk to each other	94	40.9	94	40.9	28	12.2	12	5.2	2	0.9
In my family we often watch television while eating dinner	27	11.7	96	41.7	22	9.6	51	22.2	34	14.8

In my family eating brings people together in an enjoyable way Almost all of the respondents indicated that eating brings people together in an enjoyable way in their family as (51.7%, n=119) strongly agreed and another 41.7% (n=96) agreed with the statement. A small number 5.2% (n=12) of the respondents were undecided, whereas 0.9% (n=2) of the respondents disagreed and 0.4% (n=1) of the respondents strongly disagreed with this statement.

In my family mealtimes are a time for talking with other family members Nearly all the respondents indicated that mealtimes are a time for talking with other family members as 43.9% (n=101) strongly agreed and another 43% (n=99) agreed with this statement. However, some were undecided about this statement as 9.6% (n=22) indicated so, with only five respondents who did not agree.

In my family dinner time is about more than just getting food, we all talk to each other Almost all of the respondents indicated that dinner time is about more than just getting food and that interaction and socialising takes place as 43.9% (n=101) strongly

agreed and 43.0% (n=99) agreed with the statement. Although 12.2% (n=29) were undecided and 5.2% (n=12) disagreed with two respondents (0.9%) who strongly disagreed with this statement, the majority agreed to it.

In my family we often watch television while eating dinner More than half of the respondents indicated to watch television while eating dinner as 41.7% (n=96) agreed and 14.8% (n=34) strongly agreed with the statement. Just over a third (37%, n=85) of the respondents indicated that they do not watch television while eating dinner.

4.7.5 Concluding summary on the home-food environment

Family meals and mealtime proves to be an important indicator of healthy food practices in the home. A recent study done in Japan (Takeda *et al.*, 2018) also relates the urban environment to the frequency of family meals. Older and retired family members were able to eat more family meals together than younger family members living alone in urban Japan (Takeda *et al.*, 2018). Similar results were extracted from this study as the majority of this sample were in the Baby Boomer age group category and the majority also frequently ate family meals together. Regarding meals eaten at home and family members watching television while eating dinner, similar results were obtained from a recent study compiled in Ohio (Tumin & Anderson, 2017). The majority of white adults (53%) in the study ate most of their family meals at home and 37% of these white adults never watched television while eating dinner (Tumin & Anderson, 2017). Similar results were obtained in this study as most respondents also ate most meals at home and 37% of the respondents also indicated to never watch television while eating dinner. The parallels of these results from different countries just stands to show that the changing urban lifestyles and environments, as well as generational differences of urban consumers around the world, has an impact on food practices in the home-food environments worldwide.

4.8 HOW THE LOCAL URBAN AND HOME-FOOD ENVIRONMENTS CONTRIBUTE TO THE FOOD PRACTICES OF THE STUDY GROUP

The fourth objective of the study concerns the identification and description of how the local urban and home-food environments contribute to the food practices of the study group.

In the second objective regarding the local urban food environment, the five food access dimensions of availability, accessibility, affordability, acceptability and accommodation were explored and described as well as the foods that were frequently purchased due to it being readily available and accessible in the urban environment of the Eastern suburbs of Tshwane. Due to the easy access to a selection of food stores that carry a large variety of good quality food at relative affordable prices that meet and satisfy the needs of the study group, it was concluded that the urban environment is conducive to the study group's food practices. (see 4.6 above). Concerning the home-food environment as described in the third objective, the food available in the home environment as well as family meals were identified as important determinants of the study group's food practices (see 4.7).

It is thus clear that both the local urban and home-food environments of the study group are of such a nature that they contributed to healthy and sound food practices of the study group. Taking both the local urban and home-food environments into account, the study group proved to consume a variety of foods and followed the Food Based Dietary Guidelines, although there is still room for improvement. The study group also demonstrated to have an overall positive attitude towards healthy eating.

Table 4.13 summarises how aspects of the local urban and home-food environments of the study group contribute to their food practices.

In conclusion the local urban and home-food environments of the study group are important contributing factors to their food practices. This is confirmed through the results and findings throughout the study and shown in the abovementioned table.

TABLE 4.13: CONTRIBUTION OF THE LOCAL URBAN AND HOME-FOOD ENVIRONMENTS TO THE FOOD PRACTICES OF THE STUDY GROUP

	Confirmed	Yes/No
Local Urban Environment		
<i>(See 4.6 for detailed description)</i>		
Location of food stores	Easily accessible and food stores available. Conformed through map observation.	Yes
Frequent food purchases	Frequent food purchases confirmed through the questionnaire	Yes
Availability	Respondents are satisfied with type and variety of foods and food stores available.	Yes
Accessibility	Large variety of good quality foods including healthy foods are accessible and within close proximity to most urban consumers in the Eastern suburbs of Tshwane.	Yes
Affordability	Healthy and good quality food is affordable to the urban in the Eastern suburbs of Tshwane.	Yes
Acceptability		Yes
Accommodation	The food in the stores in the in the Eastern suburbs of Tshwane accommodate the needs of the study group.	Yes
Home-Food Environment		
<i>(See 4.7 for detailed description)</i>		
Availability of healthy food in the home environment	Fruits and vegetables and fruit juice are available in the home.	Yes
	Milk is available.	Yes
	Overall food practices in the home-food environment is healthy.	Yes
<i>(See Table 4.11)</i>		
Family meals	Respondents enjoy family meals together and are in favour of frequent, healthy family meals.	Yes

4.9 CONCLUSION

The results of the study were given to determine the food practices of the study group regarding the contribution of the local urban and home-food environments. Results were presented and discussed according to the objectives and sub-objectives of the study which helped to reach the aim of the study. First the socio-demographic profile of the respondents and households were discussed. The usual eating habits, dietary

diversity, number of food servings and frequency of food groups consumed by the study group followed. The accessibility of food in the local urban environment was also addressed and discussed, including the frequency of food purchased from selected outlets. Lastly the results on the home-food environment was covered that addressed food in the home as well as information on family meals and the attitudes of the study group towards family meals.

In the next and final chapter of this study, the conclusions of the study are given in terms of the contribution of the local and home-food environments on the food practices of white adults in the Eastern suburbs of Tshwane. An evaluation of and recommendations on the study are also included.

Chapter 5

CONCLUSIONS, EVALUATION AND RECOMMENDATIONS OF THE STUDY

5.1 INTRODUCTION

This chapter gives the conclusions derived from the study, on the contribution of the local and home-food environments to the food practices of white adults in the Eastern suburbs of Tshwane. The conclusions on the main objectives of the study are covered as well as the significance of the study and its limitations, recommendations from the findings of the study and suggestions for future research.

The urban food environment contributes to consumers' lifestyle and food practices and ultimately to the health and well-being of the consumer. The local urban food environment includes the human-built environment that is represented by the infrastructure and physical features such as homes, work sites, schools, neighbourhoods, shopping malls, restaurants, fast food outlets, supermarkets, hypermarkets and convenience stores (Story *et al.*, 2008). In urban South Africa, the formal food retail sector includes a wide variety of speciality stores, neighbourhood convenience stores, chain supermarkets as well as large wholesale and retail outlets (Claasen *et al.*, 2016).

The urban consumer's lifestyle has undergone changes as they have longer work days, more women are educated and follow career paths and people spend a substantial amount of time to travel from home to work and back every day. The resulting modern urban lifestyle therefore has a major influence on family and home-food environments. The urban household has become more heterogeneous and smaller and the modern female consumer is often overwhelmed due to time constraints to balance work and family demands and also to provide healthy meals to their families (Johnson *et al.*, 2011).

It is not only the local urban food environment that influences the food practices of the modern urban consumer, but the home-food environment is also regarded as an important determining factor. The home-food environment forms part of both the

individual and socio-cultural environments due to the intertwined and overlapping nature of these two environments. Food choices are not only the result of the individual's own internal influences but are also influenced by their immediate family and therefore the home-food environment becomes an important determinant of food practices. Food practices imply how the chosen food is used and have embedded food-related behaviour that is typical of an individual or group (Viljoen, 2009:15). Food choices are an integral part of food practices and the food choice process is guided by two groups of environments namely the external and internal environments. The external environment comprises of the natural, physical, economical/political and the socio-cultural environments, whereas the internal environment or individual environment comprises of influences and the personal food system.

Currently, limited information is available regarding the food practices of white urban consumers in Tshwane. Therefore, this study sought to investigate the contribution of the local urban and home-food environments on the food practices of white adults in the Eastern suburbs of Tshwane. By exploring the local urban and home-food environments of the study group, insight was obtained on how these two environments contributed to the food practices of white adults in the Tshwane Metropolitan area.

The purpose of this Master's study was to explore and describe the local urban and home-food environments of white adults (25 years and older) in the Eastern suburbs of the Tshwane Metropole and how the local food environment and demographic profile of the household contribute to the food practices of the study group.

5.2 CONCLUSIONS ON THE OBJECTIVES OF THE STUDY

The conclusions reached on the objectives and sub-objectives of the study are presented next in order to provide confirmation the study reached the formulated aim and objectives.

5.2.1 Conclusion on the food practices of white urban adults (25 years and older) in the Eastern suburbs of Tshwane

The first objective was to determine and describe the food practices of white urban adults. This objective included information on the study group's eating patterns, the diversity of their food intake, as well as the number of servings usually consumed of

selected food groups and the frequency of consumption thereof. The respondents' attitude towards healthy eating as well as their perception of how much their family and friends cared about healthy eating were determined.

5.2.1.1 Usual eating patterns

The results on the first sub-objective indicated that the majority (62.2%) of the respondents eat three meals a day, which included a daily pattern of breakfast (68.7%), lunch (53%) and supper (83%). More than a third of the respondents (31.3%) also include daily snacking in-between meals.

Most of the respondents eat most of their daily meals at home. Nearly a quarter of the respondents (23%) indicated that some meals were eaten away from home. These meals are eaten either at the workplace or at restaurants. Just over half of the respondents (50.9%) eat meals away from home only once to twice a month.

5.2.1.2 Dietary diversity of food intake

Apart from the meal patterns of the study group, the type of food consumed is also of importance. Information on how diverse the study groups' food intake is, was determined. The majority of the respondents consumed of the nine essential food groups, as described by Kennedy *et al.*, (2011:24) the previous day. The nine food groups include starchy staples; orange fleshed vegetables and fruit; other vegetables and fruit; fats and oils; meat, poultry or fish; and milk and dairy products.

The following three food groups were not consumed by most of the respondents the previous day: dark leafy green vegetables; legumes and nuts; and eggs from chicken, duck or any other egg. Other non-essential food groups that were consumed the previous day were sweets or sugar sweetened beverages; spices and; and beverages. However, the majority (66.5%) did not consume alcoholic beverages the previous day. (See 4.5.2 for detailed food lists).

The calculated Dietary Diversity Score was 6.20 out of a possible 9. The majority of the respondents (68.3%) included at least six or more of the nine food groups as part of their meals or snacks the previous day and their Dietary Diversity Score thus indicated that they had a varied food intake, as a dietary diversity score of 9 indicates

a very varied diet and a dietary diversity score of 4 or less a poor dietary diversity. Results from other South African studies shows somewhat different results. Whites from another study had a mean Dietary Diversity Score of only 4.96 (Steyn & Ochse, 2013). In the SANHANES-1 study (Shisana *et al.*, 2014) the national Dietary Diversity Score of South Africans was 4.20 and 39.7% of the population had a Dietary Diversity Score of less than 4. The DDS of the white population of Tshwane was therefore higher than the national populations' Dietary Diversity Score.

5.2.1.3 Number of food servings

The daily number of servings of selected foods and beverages consumed was also determined in order to ascertain if the number of servings of the different food groups were in conformity with the Food Based Dietary Guidelines and other guidelines for healthy eating.

Just over half of the respondents (53.0%) only had one serving of starchy food the previous day, whereas the Food Based Dietary Guidelines advises to make starchy food part of most meals (Vorster, 2013). The respondents' intake of vegetables seemed to be limited. More than half of respondents reported that they only ate one serving of vegetables and only 10.9% of the respondents ate three servings of vegetables. Most of the respondents (50.9%) also only consumed one serving of fruit a day (approximately 80 grams), whereas the WHO recommends five servings of fruits and vegetables (Naudé, 2013). The majority of the respondents only consumed one serving of milk and dairy products a day, while it is recommended to consume two servings of milk and dairy products a day (Vorster *et al.*, 2013). Most of the respondents consumed a serving of meat, chicken or fish a day. Most of the respondents drank three cups of tea and coffee a day and the majority did not add any sugar to their tea or coffee. Sugary foods such as chocolate bars and sugar-sweetened soft drinks and foods that are high in salt such as potato crisps, did not form part of the majority of the respondents' eating patterns.

5.2.1.4 Frequency of consumption of selected food groups

The frequency of consumption of eight food groups (protein-rich foods, milk and dairy products, fruit, vegetables and salads, fats and oils, starchy foods, legumes and nuts,

beverages, fast- and snack foods) was measured. This was served as a cross-check of the frequency and the type of food consumed.

Protein-rich foods The majority (51.7%) of the respondents consumed red meat three to four times a week and the majority consumed chicken one to two times a week. Fish was consumed once to twice a week by most. Eggs were consumed once to twice a week by most respondents.

Milk and dairy products Most (40.9%) of the respondents consumed full cream milk on a daily basis. Other dairy products, such as cheese, were consumed once to twice a week by more than a third of the respondents, while yogurt was consumed rarely by a third of the respondents.

Fruit, vegetables and salads Most (41.3%) of the respondents consumed fruit daily and the majority (52.2%) of the respondents reported to also consume vegetables daily. The respondents' intake of salad type foods was low as just over a quarter indicated to consume salads daily.

Fats and oil Some of the respondents consumed butter daily. Tub margarine was consumed daily by some, while more than a third (37.3%) consumed vegetable oil three to four times per week or more.

Starchy food Bread such as white bread, bread rolls, buns, brown bread and whole-wheat bread were rarely consumed by most (40.4%) of the respondents. Nearly a third of the respondents consumed breakfast cereals daily. Most of the respondents consumed maize meal porridge rarely and most indicated that they consumed rice once to twice a week. The majority of the respondents consumed pasta only once to twice a week. Potatoes were consumed once to twice a week by most of the respondents.

Legumes and nuts Legumes and nuts were only rarely consumed by the majority of the respondents, however more than a third (36,5%) consumed nuts at least few times a week.

Beverages Beverages such as fruit juice and soft drinks were rarely consumed by most respondents and sport and energy drinks were never consumed by the majority. Water was consumed daily by the majority (87%).

Fast- and snack foods Pizza and potato chips were rarely consumed by the majority of respondents. Fried chips, cake, tart, cupcakes, muffins, chocolate bars, sweets, cookies and biscuits were rarely consumed by the majority of respondents. Cordials were never consumed by most of the respondents and hamburgers were rarely consumed by the majority of the respondents.

5.1.2.5 Attitudes towards healthy eating

When it came to the respondents' opinions and feelings regarding healthy eating, most indicated that this was an important factor for themselves and the people they lived with. The majority of the respondents indicated that they themselves, as well the people they lived with, cared very much about healthy eating. This indicates some level of recognition of the importance of healthy eating and the consequences or disadvantages related to unhealthy eating. However, the respondents thought that their friends did not care very much about healthy eating as the majority (53.0%) of the respondents indicated that most of their friends only cared somewhat about healthy eating.

After careful analyses and interpretation of the results, the food practices of white adults in Tshwane can be described as follows. The white consumers in Tshwane followed a typical Western eating pattern. The meal patterns consisted of three meals a day with in-between snacking. Most respondents ate all their meals at home and the majority consistently ate breakfast every day. Some respondents ate meals away from home daily and these meals were eaten either at the workplace or at restaurants. The composition of the study group's meals included a variety of different food types. The inclusion of certain food groups in their meals or snacks formed part of their Dietary Diversity Score. The study group's Dietary Diversity Score was 6.2 out of a possible 9 and the majority of respondents included six to eight of the food groups in their meals or snacks. The study group consumed a varied diet, with a dietary diversity score of six and higher, but on closer examination, many respondents did not adhere to some of the Food Based Dietary Guidelines and other guidelines for eating healthy.

In the next section, the conclusions on the contribution of the local urban food environment to the food practices of the study group are discussed.

5.2.2 Conclusions on the contribution of the local urban food environment to the food practices of the study group

The second objective of the study was to explore and describe the contribution of the local urban food environment to the food practices of the study group. This objective addressed the location and frequency of foods purchased, the accessibility of food in the local urban environment and how the purchased food was transported home.

5.2.2.1 The location and frequency of food purchased from selected outlets

In the first sub-objective regarding the contribution of the local urban food environment to food practices of the study group, the location and frequency of food purchased from selected outlets were indicated. In the Eastern suburbs of Tshwane, consumers have access to an array of different supermarkets, fresh fruit and vegetable markets, convenience stores and fast food outlets within a close proximity to their homes. This study group did not make use of internet shopping for food and went to a store physically to do shopping. The local food environment and food practices of urban consumers vary based on aspects such as the use of a vehicle for transportation and other features of urban design (Moore *et al.*, 2007) and therefore the method of transportation should be taken into consideration. Almost all of the respondents made use of their own vehicle to transport their purchased food home.

The results indicated that the respondents frequently purchased their food from supermarkets. Supermarkets are generally the main food stores where most foods are purchased (Moreira, *et al.*, 2015). Most (41.3%) of the respondents bought food from supermarkets 1-2 times a week and more than a third bought from supermarkets 3-4 times a week. Although some respondents frequently bought food from fresh fruit and vegetable markets, nearly a third (31.7 %) shopped for food at fresh fruit and vegetable markets 1-2 times a week. The respondents did not buy meat from the butcher often, as most of the respondents only bought meat from butchers on special occasions. A possible explanation may be that respondents would rather go to a supermarket where meat is also sold in the store and therefore they purchase all their foods in one place, instead of driving around to different places to buy meat, bread and other foods. It is clear that the respondents did not buy food from convenience stores often as more

than a third (34.3%) of the respondents only bought food from convenience stores on special occasions.

The respondents did not purchase food from fast food outlets regularly as the majority also bought from fast food outlets only on special occasions. However, 8.7% of the respondents bought from fast food outlets 1-2 times a week. The majority of the respondents never bought food from street vendors or a spaza shop. An explanation for this phenomenon could be that white urban consumers do not usually buy from street vendors in general, as they seem to rather buy foods from supermarkets or fast food outlets. Street vendors and spaza shops are not common in the regions where the study group reside and these types of outlets are more commonly found in townships. The majority of the respondents only bought food from open or community markets on special occasions, reason being that open or community markets are usually only accessible over weekends.

In conclusion, supermarkets and fresh fruit and vegetable markets are the most frequent choice for food purchases among this study group. This study group would rather drive with their own vehicle to a physical supermarket than buy food online. Speciality stores such as convenience stores, butcheries, fast food outlets and community markets were less frequently visited for food purchases. Street vendors and spaza shops were seldom patronised by the study group, as these type of food outlets only operate in certain areas and are not as abundant in the Eastern and Southern suburbs of Tshwane, as in other areas.

5.2.2.2 The accessibility of food in the local urban environment

In the second sub-objective regarding the contribution of the local urban food environment to food practices of the study group, the accessibility of food in the local urban environment was indicated by means of the food access dimensions of availability, accessibility, affordability, acceptability and accommodation. The respondents indicated that good quality fruit and vegetable products were available in the food outlets where they normally shop for food. Healthy foods were available in the food outlets where they normally shop and they usually buy food at food outlets closest to where they live. The majority of the respondents have adequate access to food in the local urban environment, as the infrastructure of these suburbs are well-

developed to meet the food related needs of urban residents. The respondents indicated that they were satisfied with the range of food outlets they have access to in their neighbourhood.

People tend to shop for food in their own neighbourhood as it is convenient, they don't have to travel long distances and it saves time and money (Cannuscio *et al.*, 2014). More than half of the respondents were satisfied with the type of food they had regular access to. Most of the respondents indicated that food stores in their neighbourhood compared well with food stores in other areas of Tshwane. Most of the respondents also indicated that fruits and vegetables were affordable at the food outlets from which they normally purchased.

The urban environment does not only include aspects related to the location of food stores, but also how frequently food is purchased and how accessible food in the urban environment is, as viewed by the respondents. All these factors contribute to the extent that the urban food environment influences the food practices of the study group. It can be concluded that the majority of respondents do most of their food shopping at a supermarket (i.e. Shoprite, Checkers, Spar, Pick 'n Pay, Woolworths food store). Similar results regarding supermarkets being the preferred choice for food shopping have also been found in other studies (Cannuscio *et al.*, 2014; Cannuscio *et al.*, 2013; Freedman & Bell, 2009; D'Haese & Van Huylenbroeck, 2005). In terms of the conclusion on the accessibility of food in the local urban environment, most of the respondents do not have to travel far distances to purchase good quality food and these food outlets are easily accessible. Most of the respondents indicated that these food outlets accommodated their needs. Overall, the access dimensions of the respondents in the local urban food environment are adequate as they have regular access to healthy and good quality foods at these outlets. The food in the stores are easily accessible and healthy foods are available. These outlets accommodate the respondents' needs.

In the next section, conclusions on the contribution of the home-food environment to the food practices of the study group are discussed.

5.2.3 Conclusions on the contribution of the home-food environment to the food practices of the study group

Food choices are not only influenced by the individual but are also influenced by the family and household contexts and therefore decisions regarding food in the home-food environment are important determinants of food consumption (Ricciuto *et al.*, 2006). The third and last objective of the study was to determine and describe the contribution of the home-food environment to the food practices of the study group. This objective dealt with the person responsible for food purchasing and preparation, the availability of selected types of food in the home, as well as the frequency of and attitudes towards family meals at home.

5.2.3.1 The home-food environment of the respondents

The socio-demographic characteristics of a household are proven to have a major influence on food purchasing and food practices of consumers (Ricciuto *et al.*, 2006). The majority of the respondents spoke Afrikaans as home language and were between the ages of 52 and 70 years which represented the Baby Boomer generation. More males than females participated in the study. The majority completed a tertiary degree and understandably earned a monthly household income of between R60001 - R100000. From this monthly household income, most of the respondents had a food budget of R4000 - R4500 a month.

More than a third of the households consisted of only two people and the status of the respondents' households represented either a married couple (31.3%) or a nuclear family structure (33.5%). The majority of the respondents did not have any dependent children under the age of 18 years old living with them and 90% of the respondents did not have toddlers or pre-school children. The majority of the respondents did not have any secondary schoolers between the ages of 13-18 years living in their household. Most of the respondents were thus part of a two-adult household. Household socio-demographic characteristics have a strong influence on food purchasing patterns and the ages of household members are therefore an important contributing factor to food selection, as a particular life stage usually reflects specific food needs and preferences which are incorporated into the household food purchasing decisions (Ricciuto *et al.*, 2006).

5.2.3.2 The person responsible for food purchasing and preparation

A female was mostly responsible for the tasks of food purchases and household food preparation. These results tie in with the literature regarding females being the gatekeepers in most households and thus responsible for preparation and purchasing decisions regarding food in the home (Cannuscio *et al.*, 2013; Liese *et al.*, 2013; Botonaki & Mattas, 2010; Dibsall *et al.*, 2002). Almost half of the respondents indicated that food was always prepared in a healthy manner at home.

5.2.3.3 The availability of selected food types in the home

In the second sub-objective regarding the contribution of the home-food environment to food practices of the study group, the availability of selected food types in the home was indicated. Foods available in the home are most likely to be a key influence on food intake (Bryant & Stevens, 2006). For example, the availability, accessibility and exposure to a range of fruits and vegetables in the home are linked with a frequent consumption of fruits and vegetables (Swinburn *et al.*, 2004). The availability of healthy food, snack food, as well as sugar-sweetened beverages in the home was also determined as part of this sub-objective.

Healthy food available Fruits and vegetables were always available in most of the respondents' homes and the majority of the respondents indicated that vegetables were always served with main meals in their homes. Milk was always available in the majority of the respondents' homes and more than half indicated that 100% fruit juices were sometimes available in their homes. The majority of the study group usually prepared their food in a healthy manner at home.

Snacks available Potato chips, other salty snacks, chocolates and other sweets were sometimes available in the majority of the respondents' homes. Junk food was sometimes available in the majority of the respondents' homes, while 10% revealed that junk food was usually available.

Sugar-sweetened beverages available Almost half the respondents indicated that sugar-sweetened beverages were sometimes available in their homes.

Not only the foods available in the home, but also the number and frequency of family meals in the home contribute to the food practices followed in the household. The next sub-objective deals with the number of meals eaten at home (the frequency of family meals) and how these meals are eaten at home.

5.2.3.4 *The frequency of family meals in the home*

More frequent family meals are related to higher intakes of fruit, vegetables and fibre rich foods and a lower intake of soft drinks, fried foods and saturated fats (Larson & Story, 2009). Family meals were eaten together on a daily basis by the majority (70.9%) of the respondents. Although more than a third of the respondents indicated that they ate all of their meals at home on weekdays, there were also those who tended to eat meals away from home more frequently. More than a third of the respondents revealed that they only ate two family meals at home a day on weekdays, followed by 25.7% who indicated that they only ate one family meal at home per day on weekdays. The explanation offered was that these were respondents in full-time employment who would frequently eat lunch at their workplace or at restaurants.

Together with the frequency of family meals in the home, the attitudes of the respondents towards family meals were also of importance and therefore the next sub-objective addressed the study group's attitudes towards family meals.

5.2.3.5 *Attitudes towards family meals in the home*

Overall, the study group had a positive attitude towards family meals. The majority of the respondents enjoyed sharing family meals with their family as they indicated that eating meals together brought people together in an enjoyable way. Most of the respondents indicated that mealtimes were a time for talking to other family members and most of the respondents felt that family meal times were more than just getting food, that it was a valuable time to talk to each other. Some of the respondents indicated that they tended to watch television while eating dinner. Turning off the television while eating dinner has been related to healthier food intake among adolescents and adults (Andaya *et al.*, 2011; Larson & Story, 2009). Most of the respondents indicated that all members of the household usually sat together at the table during family dinner time.

It became clear that the home-food environment has a positive influence on the food practices of the study group. The person responsible for food purchasing and preparation, the availability of selected foods in the home, family meals as well as attitudes towards family meals in the home setting, all contribute to the respondents' food practices to some extent or another.

In conclusion, the majority of the study group was aged between 52-70 years and represented the Baby Boomer generation. They can be described as educated as the majority was in possession of a tertiary degree and had a high middle-class monthly household income of R60 001- R100 000. Females were the gatekeepers of the study group's households and are mostly responsible for food purchasing and preparation in the home. The study group usually had healthy food available in the home and also mostly made use of healthy manners to prepare foods, however unhealthy food such as potato chips, sugar-sweetened beverages and sweets were sometimes available in their homes. This study group enjoyed family meals together on a daily basis and usually ate these meals together at a table, although there were some respondents who ate dinner in front of the television. The study group's homes were a place where healthy family meals were enjoyed and preferred, as they had positive attitudes towards family meals.

5.2.4 Conclusion on how the local urban and home-food environments contribute to the food practices of the study group

Both the local urban and home-food environments contribute to the study group's food practices in some extent or another. In the local urban food environment, the five food access dimensions of availability, accessibility, affordability, acceptability and accommodation as well as foods that are readily available in the urban infrastructure, all contribute to the study group's food practices. The urban environment does not only include aspects related to the location of food stores, but also how frequently food is purchased and how accessible food in the urban environment is, as viewed by the respondents. All these factors to some extent contribute that the urban food environment influences the food practices of the study group.

In the home-food environment, food available in the home as well as family meals are important determinants of the study group's food practices. The home-food

environment proved to have a positive influence on the food practices of the study group. Elements such as the person responsible for food purchasing and preparation, the availability of selected foods in the home, family meals as well as attitudes towards family meals in the home, all contribute to the respondents' food practices.

In conclusion, both the local urban and home-food environments of the study group are of such a nature that it contributes to healthy and sound food practices. Taking both the local urban and home-food environments into account, the study group proved to consume a variety of foods and they followed most of the Food Based Dietary Guidelines, although there is still room for improvement.

5.3 SIGNIFICANCE OF THE STUDY

The aim of the study was to explore and describe the food practices of white adults (25 years and older) in the Eastern suburbs of Tshwane and how the local urban and home-food environments contribute to the food practices of the study group. Limited studies have been conducted on the food practices of white urban consumers in South Africa and understandably limited research is published on this topic (Van Heerden & Schönfeldt, 2011). This study therefore fills an important knowledge gap regarding the food practices of the white population in South Africa. Few studies focus on both the home-food and local food environment and this study supports findings that the local urban food environment influences the home-food environment (Van Ansem *et al.*, 2012). Although this study was limited to white urban adults in the Eastern suburbs of Tshwane, valuable information was gathered.

The study provides valuable information on the local urban food environment. It was found that in the local urban environment of the Eastern suburbs of Tshwane, there are many supermarkets, restaurants, coffee shops, fast-food outlets and other food related stores in close proximity to the respondents of this study's residences. The urban consumers in Tshwane have easy, adequate access and transport to most of these food stores. The food in the urban food environment is thus available, accessible, affordable, acceptable and food stores accommodate the urban consumer. The white urban consumer aged 52-70 years who represents the Baby Boomer generation prefers to physically drive with a car to a food store rather than purchase food on the internet. The most preferred locations for purchases amongst

the white urban adults are supermarkets. This information could be of value to marketers and advertisers in the food industry.

The home-food environment is the most important setting in relation to eating behaviours and very little is known specifically about the home influences (Swinburn *et al.*, 2004), therefore this study was significant to determine these influences in the South African context. Eating meals together as a family and healthy eating are both important to this study group. The food practices followed by the white urban adults are typical of a Westernised eating pattern consisting of three meals daily with snacking in-between. These white urban adults follow a varied diet, although they consume sugar-sweetened beverages, sweets, fast-food and foods high in salt occasionally.

This study is significant and valuable to consumer educators and can assist in the development of intervention strategies to promote healthier food choices and better food practices amongst white urban consumers.

The next section deals with the limitations that were present in the study.

5.4 LIMITATIONS OF THE STUDY

When conducting a study of this nature, limitations are often inevitable, and this study is no exception. Although the research study reached its aims, there were still some shortcomings and limitations present.

5.4.1 The age and gender distribution of the study group

The age and gender distribution of the study group were not evenly distributed as there were more males than females who participated in the study. Most of the respondents in the study group were from the Baby Boomers generation, however, in spite of this limitation, valuable information on this generation group's food practices were gained. Limited information regarding families with children was obtained as the majority of the study group were from the Baby Boomer generation and their children already moved out of the house. This contributed to the limited information on families with children in the home.

5.4.2 Shortcomings of the food intake recall

The nature of the survey questionnaire allowed for only one day's food intake recall. It is advisable when using a food intake recall to repeat the recall more than once, preferably on three different occasions, however, in this study only one day's food recall was recorded due to limited time and the nature of the survey questionnaire, which could have influenced the results obtained.

5.5 RECOMMENDATIONS ON THE STUDY

The results of this study could be of value to consumer facilitators and educators. The following recommendations can be made based on the results of the study:

- Consumer facilitators and educators should educate consumers on some of the Food Based Dietary Guidelines that consumers do not fully adhere to. Although consumers have adequate access to healthy food in the local urban food environments, they do not necessarily adhere to the Food Based Dietary Guidelines and therefore, these consumers should be educated on the importance of adherence to these guidelines. The FBDG of *“eat plenty of vegetables and fruit every day”* was not followed by many of the respondents. The quantities that were consumed raises concern as the majority indicated that they included only one serving of fruit and vegetables, therefore educators should encourage consumers to include more servings of fruits and vegetables in their daily meals. The guideline of *“eat dry beans, split peas, lentils and soya regularly”* was not followed by many of the respondents. Most of the respondents did not include legumes and nuts the previous day and indicated to only consume these foods seldom. Consumers also seem not to follow this guideline and should be encouraged to consume more of these types of foods.
- Based on the results of this study, it is also recommended that consumer facilitators and educators ensure that consumers are informed about how healthy or unhealthy their everyday food choices are. The respondents of this study consumed enough starchy foods, dairy, and protein-rich foods such as chicken, lean meat or fish as part of their daily meals. Foods and beverages high in sugar were only rarely consumed by the study group, however

consumers should still be made aware of the dangers of a high sugar intake and the benefits of the regular intake of more nutritious food.

5.6 SUGGESTIONS FOR FUTURE RESEARCH

Suggestions for future research on the topic of the contribution of the local urban and home-food environments to the food practices of white South African adults include the following:

- It could be helpful in the future to have an equal representation of the different generation groups, in order to obtain more detailed information on their food practices. It is therefore advised that future research should aim to include young families from Generation Y to get more information regarding the younger generations' food practices.
- This study could be replicated in other urban areas of South Africa, in order to compare the results and to obtain more information on the food practices of white South Africans.
- It could also be helpful to investigate to what degree urban consumers are engaged in cultivating and growing their own fruits and vegetables, as there is limited information available regarding this activity.

5.7 CONCLUDING REMARKS

From the results obtained, there is confirmation that the local and home-food environments contribute to the food practices of the urban consumer. Although many studies have been conducted internationally on the contribution of environments on the food practices of consumers, limited studies have been conducted in the South African context and specifically on white consumers in South Africa. This research contributed to a better understanding of how the access dimensions in local urban environment, together with the home-food environment contribute to urban consumers' food practices. By exploring the local urban and home-food environments of urban consumers in Tshwane, this study contributed to fill the knowledge gap on this topic in South Africa.

The findings of the study confirm that the local urban environment contributes to the degree of access that consumers have to food. The local urban food environment in the Eastern suburbs of Tshwane is accessible to consumers as an array of different food outlets that offer good quality, fresh and healthy foods near the consumers' homes are easily reached. It was also found that supermarkets were the most preferred choice for all food purchases amongst this study group. Although these consumers have adequate access to healthy food, they do not necessarily follow the Food Based Dietary Guidelines for a balanced diet. The home-food environment contributes to the food practices of the study group in a positive way, as the majority enjoyed family meals together on a daily basis. Also, most respondents have a positive attitude towards family meals, eating together as a family and preparing healthy family meals.

In conclusion, the findings of the study show that the white urban consumers of Tshwane eat a variety of foods, follow the majority of the Food Based Dietary guidelines and have a positive attitude towards healthy eating. Overall it does not seem if the study group eats unhealthily, although exact quantities of food intake were not measured. The study achieved all its formulated objectives and therefore could be considered to make a valuable contribution to the research knowledge in this study field.

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ADDENDUM A

INFORMED CONSENT FORM

Dear respondent,

QUESTIONNAIRE ON FOOD PRACTICES

The purpose of the study is to learn about the food purchasing and eating patterns of adults in Tshwane. Through this research we would like to understand how urban consumers make their food choices and how the local urban, home and individual environments influence what, where, when and why food is bought and eaten. The current knowledge on the food practices of urban South African adults is limited and this study will enable us to plan and give more meaningful consumer education on healthy food choices and eating.

Thank you for taking time to share your food shopping and eating practices.

You will be asked to answer a number of questions regarding food shopping and eating patterns. All answers will be recorded for further use by the investigators only. You are welcome to refrain from answering any questions that pose, or is the cause of any discomfort or infringement of your privacy. Refusal to participate or withdrawal of consent, or discontinued participation will not result in any penalty. Please note that your participation is voluntary and does in no way release the researchers of the involved institutions from their legal and professional responsibilities. All information will be treated as highly confidential and the identity of respondents need not be disclosed and will remain anonymous. The results of this study will be presented anonymously.

Your decision to respond to the questions will be interpreted as confirmation that you agree to participate.

Should you wish to partake in future on-going research such as focus group discussions pertaining to this study please give a contact number or e-mail address in the space provided.

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Fakulteit Natuur- en Landbouwetenskappe
Lefapha la Disaense tsa Tlhago le Temo

QUESTIONNAIRE ON THE FOOD ENVIRONMENTS OF ADULTS IN TSHWANE

Respondent Number

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Section A: Socio-demographic information

A1 What is your age?

A1

A2 What is your gender? Male 1 Female 2

A2

A3 Please indicate your area of residence with the Tshwane Metropolitan Area

A4

A4 What is your highest level of education?

Lower than grade 12	1
Grade 12	2
Grade 12 plus a degree/diploma	3
Postgraduate degree	4

A5 What is your approximate monthly household income rounded up to the nearest R1000? (this question is optional)

R

A6 What is the approximate monthly food budget for your household, rounded up to the nearest R1000?

R

A7 What is your preferred home language?

Afrikaans	1
English	2
Ndebele	3
Northern Sotho	4
Sotho	5
Swazi	6
Tsonga	7
Tswana	8
Venda	9
Xhosa	10
Zulu	11
Other	12

A8 How many people live in your household?

A9 Indicate the structure that best describes your family/ household. Mark only one.

Single (living on my own)	1
Married couple (without children)	2
Nuclear family (both parents and children)	3
Extended family (parents, children and other family members)	4
Single parent family (father / mother and children)	5
Living with other family members (not parents or children)	6
Living with partner / friends or others	7

A10 Please indicate the number of **dependent children** under 18 years old who are part of your household?

A11 Please indicate how many children of the following age groups are currently part of your household?

Infants (0-2 years of age)	
Toddlers and pre-schoolers (between 3-6 years of age)	
Primary schoolers (between 7-12 years of age)	
Secondary schoolers (between 13-18 years of age)	

A12 Please indicate the number of **adults (older than 18 years)** that are currently part of your household

A13 Who is **mainly** responsible for **most** of your household's **food purchases**?

Yourself	1
Husband / Wife / Partner	2
Children	3
Another person in the household	4

A14 Who is **mainly** responsible for **most** of your household's **food preparation**?

Yourself	1
Husband / Wife / Partner	2
Children	3
Domestic worker / helper	4
Another person in the household	5

A15 In terms of the employment Equity Act of SA, to which population group do you belong to?

African	1
Asian	2
Coloured	3
Indian	4
White	5
Other	6

Section B: Usual food shopping patterns

B1 How often do you buy from the stores or food outlets listed below?

Shop or food outlet	Daily	3 – 4 times per week	1-2 times per week	more than 3 times per month	Special occasions	Never
Supermarket (i.e. Shoprite, Checkers, Spar, Pick n Pay, Woolworths food store)	1	2	3	4	5	6
Fresh Fruit and Vegetable Food Market (Fruit stop, fruit shop, food lovers market, green grocer)	1	2	3	4	5	6
Butcher	1	2	3	4	5	6
Convenience store (i.e. Caltex, BP Express, Shell Select, Sasol)	1	2	3	4	5	6
Fast Food outlet (i.e. KFC, Nanados, McDonalds, Hungry Lion)	1	2	3	4	5	6
Street Vendor	1	2	3	4	5	6
Spaza Shop	1	2	3	4	5	6
Open or community market	1	2	3	4	5	6

B2 Please indicate which of the listed items you have purchased from which food outlet in the past 7 days. **You may mark more than one outlet per group of items.**

Item	Did not purchase item	Supermarket	Fruit and Vegetable Market	Butcher	Convenience Store	Fast Food Outlet	Spaza Shop	Street Vendor
Fruit (includes fresh, frozen, canned or in jar)								
Citrus fruit (oranges, lemons, naartjies)	1	2	3	4	5	6	7	8
Orange-coloured fruit (yellow peaches, mangoes, paw paw, spanspek, plums)	1	2	3	4	5	6	7	8
Other fruit (apples, bananas, grapes, pears, litchis)	1	2	3	4	5	6	7	8
Vegetables (includes fresh, frozen, canned or boxed)								
White roots and tubers (potatoes, white sweet potatoes)	1	2	3	4	5	6	7	8
Orange-fleshed vegetables (pumpkin, carrot, butternut, orange-fleshed sweet potato)	1	2	3	4	5	6	7	8
Dark green leafy vegetables (spinach, kale, indigenous green leafy vegetables)	1	2	3	4	5	6	7	8

<i>Item</i>	Did not purchase item	Supermarket	Fruit and Vegetable Market	Butcher	Convenience Store	Fast Food Outlet	Spaza Shop	Street Vendor
Other vegetables (tomatoes, onion, green beans, cabbage, gem squash, peas, beetroot)	1	2	3	4	5	6	7	8
<i>Milk and dairy products</i>								
Milk (fresh, powdered, UHT, maas)	1	2	3	4	5	6	7	8
Cheese and cottage cheese	1	2	3	4	5	6	7	8
Yoghurt	1	2	3	4	5	6	7	8
Dairy beverages (yogi sip, dairy-fruit beverages)	1	2	3	4	5	6	7	8
<i>Beverages</i>								
Fruit juice	1	2	3	4	5	6	7	8
Cordials and concentrates (Oros, Wild island, Carribean)	1	2	3	4	5	6	7	8
Soft drinks (fizzy and energy drinks)	1	2	3	4	5	6	7	8
<i>Meat</i>								
Beef	1	2	3	4	5	6	7	8
Mutton/ Lamb	1	2	3	4	5	6	7	8
Goat Meat	1	2	3	4	5	6	7	8
Chicken	1	2	3	4	5	6	7	8
Pork	1	2	3	4	5	6	7	8
Boerewors	1	2	3	4	5	6	7	8
Offal cuts	1	2	3	4	5	6	7	8
Bacon	1	2	3	4	5	6	7	8
Processed meat (ham, cold cuts, polony, Viennas, Russians)	1	2	3	4	5	6	7	8
Biltong	1	2	3	4	5	6	7	8
<i>Bread and bread-like products</i>								
Bread (white, brown),	1	2	3	4	5	6	7	8
Buns, bread rolls	1	2	3	4	5	6	7	8
Sweet buns	1	2	3	4	5	6	7	8
Scones	1	2	3	4	5	6	7	8
Fat cakes	1	2	3	4	5	6	7	8
Crisp breads / Crackers	1	2	3	4	5	6	7	8
Rusks	1	2	3	4	5	6	7	8
<i>Cereal products</i>								
Maize meal	1	2	3	4	5	6	7	8
Rice	1	2	3	4	5	6	7	8
Flour (cake, bread)	1	2	3	4	5	6	7	8
Sorghum	1	2	3	4	5	6	7	8
Pasta (macaroni, spaghetti, noodles)	1	2	3	4	5	6	7	8
<i>Oils and fats</i>								
Oil (sunflower, olive, canola)	1	2	3	4	5	6	7	8
Margarine (brick)	1	2	3	4	5	6	7	8
Margarine (tub)	1	2	3	4	5	6	7	8
Butter	1	2	3	4	5	6	7	8
Lard	1	2	3	4	5	6	7	8

Item	Supermarket	Fruit and Vegetable Market	Butcher	Convenience Store	Fast Food Outlet	Spaza Shop	Street Vendor	Supermarket
Eggs								
Eggs	1	2	3	4	5	6	7	8
Legumes and nuts								
Dry beans (sugar, butter), split peas	1	2	3	4	5	6	7	8
Lentils	1	2	3	4	5	6	7	8
Nuts (peanuts, pecan, walnuts, macadamia)	1	2	3	4	5	6	7	8

- B3 Indicate to what extent you **agree / disagree** with the following statements about the food outlets you buy from.

	Strongly agree	Agree	Undecided	Disagree	Strongly disagree
I am satisfied with the range of food outlets I have access to in my neighbourhood	1	2	3	4	5
Good quality fruit and vegetable products are available in the food outlets I normally shop	1	2	3	4	5
Healthy foods are available in the food outlets where I normally shop	1	2	3	4	5
I usually buy food at the food outlets closest to where I live	1	2	3	4	5
I am satisfied with the types (variety) of food I have regular access to	1	2	3	4	5
The food stores in my neighbourhood compare well with food stores in other areas of Tshwane	1	2	3	4	5
Fruits and vegetables are affordable (reasonable priced) in the food outlets I normally buy from	1	2	3	4	5
I have to travel some distance to buy good quality food	1	2	3	4	5
These outlets accommodate my needs (i.e. credit options, extended hours)	1	2	3	4	5

- B4 Do you make use of on-line / internet shopping for food?

Yes	1	No	2
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B5 How do you normally transport your purchased food home?

I walk and carry it myself.	1
Somebody helps me carry my food.	2
I take a taxi/ bus.	3
I use a car.	4

Section C: Usual eating patterns

C1 How many meals do you eat a day? (this excludes snacking between meals)

--

C2 During the past week, how many days did you eat **breakfast**?

Never	1
1-2 days	2
3-4 days	3
5-6 days	4
Everyday	5

C3 During the past week, how many days did you eat **lunch**?

Never	1
1-2 days	2
3-4 days	3
5-6 days	4
Everyday	5

C4 During the past week, how many days did you eat **supper**?

Never	1
1-2 days	2
3-4 days	3
5-6 days	4
Everyday	5

C5 During the past week, how many days did you **snack** between meals?

Never	1
1-2 days	2
3-4 days	3
5-6 days	4
Everyday	5

C6 How many of your daily meals do you eat **at home** on a weekday?

None	1
1 meal	2
2 meals	3
All meals	4

C7 How often do you eat a meal or meals **away from home**?

Never	1
1-2 times per month	2
3 times per week	3
Daily	4

If answer is **never** continue with C9

C8 If you eat away from home, where do you eat most often?

Fast food outlets	1
Restaurants	2
Supermarkets	3
Street vendors	4
Workplace	5

C9 How often do you and your family/household members eat a meal together?

Daily	1
3-4 times per week	2
1-2 times per month	3
Never	4
Not applicable I live on my own	5

If your answer is **never/ Not applicable**, continue with question C12

C10 When eating with family/household members, how are most of the meals eaten?

All members of the household eat together at the table	1
Different age groups are formed and eat separately	2
We watch television while eating	3

C11 How strongly do you **agree /disagree** with the following statements?

	Strongly agree	Agree	Undecided	Disagree	Strongly disagree
I enjoy eating meals with my family	1	2	3	4	5
In my family eating brings people together in an enjoyable way	1	2	3	4	5
In my family mealtimes are a time for talking with other family members	1	2	3	4	5
In my family, dinner time is about more than just getting food, we all talk to each other	1	2	3	4	5
In my family we often watch television while eating dinner	1	2	3	4	5

Indicate which statement applies best to you.

C12 I care about eating healthy food

Not at all	1
A little bit	2
Somewhat	3
Very much	4

C13 Many of my friends care about eating healthy food

Not at all	1
A little bit	2
Somewhat	3
Very much	4

C13 The people I live with care about eating healthy food.

Not at all	1
A little bit	2
Somewhat	3
Very much	4
Not applicable – I live on my own	5

C15 Indicate how often the following applies to the food in your home.

	Always	Usually	Sometimes	Never
Fruits and vegetables are available in my home	1	2	3	4
Vegetables are served with main meals in my home	1	2	3	4
Milk is available in my home	1	2	3	4
100% fruit juice is available in my home	1	2	3	4
Potato chips and other salty snacks are available in my home	1	2	3	4
Chocolates and other sweets are available in my home	1	2	3	4
Soft/fizzy drinks (Coke, Sprite, Fanta) are available in my home	1	2	3	4
We have "Junk food" in my home	1	2	3	4
Food is prepared in a healthy manner in my home	1	2	3	4

C16 Please indicate if you have included foods from the following groups as part of your **meals** or **snacks yesterday**.

	Yes	No
Cereals: maize, rice, wheat, sorghum, and any other foods made from cereals such as porridge, bread, pasta and noodles	1	2
White roots and tubers: potatoes and white sweet potatoes	1	2
Orange-fleshed vegetables and fruit: Pumpkin, carrots, butternut, orange-fleshed sweet potatoes, yellow peaches, paw-paw, mangoes, plums, spanspek, apricots	1	2
Dark green leafy vegetables: spinach, kale, indigenous green leafy vegetables	1	2
Other vegetables: tomatoes, onion, green beans, lettuce, cabbage, broccoli, cauliflower, eggplant, gem squash, beetroot	1	2
Other fruit: apples, bananas, grapes, pears, litchis, oranges, naartjies	1	2
Legumes and nuts: dried beans, dried peas, lentils, nuts or foods made from these (i.e. peanut butter, hummus)	1	2
Fats and oils: oils, fats or butter added to food or used in cooking	1	2
Meat, poultry or fish: beef, pork, mutton/lamb, goat, chicken, duck, fresh, frozen, tinned or dried fish or shellfish	1	2
Milk and dairy products: milk, maas, cheese, yogurt or any other milk products	1	2
Eggs: eggs from chicken, duck or any other egg	1	2
Sweets: sugar, honey, sugary foods such as chocolates, candies, cookies, cakes and sugar sweetened beverages such as fizzy drinks and cordials	1	2
Spices and condiments: spices, salt and pepper, condiments (i.e. tomato sauce, soy sauce, salad dressing)	1	2
Beverages: coffee, tea, herbal teas	1	2
Alcoholic beverages: beer, wine, whiskey, brandy, vodka	1	2

- C17 **How many servings** of the following foods do you usually eat each day? Use the serving guide provided for each item to determine the approximate serving quantity you eat.

Food	Servings per day
Starchy food (rice, maize meal, bread, pasta, breakfast cereals). Serving size: 1 slice of bread, ½ cup rice, pasta, porridge,	
Vegetables (fresh, frozen, or salad). Serving size: ½ cup cooked, 1 cup for raw leafy vegetables	
Fruit (all fresh) Serving size: ½ cup chopped fruit, 1 medium apple, banana, 2 medium sized apricots, plums, ½ cup fruit juice, 2 tablespoons raisins	
Meat, chicken or fish. Serving size: meat - palm size, slice 10mm, chicken – 1 medium breast, white fish – 1 large piece	
Milk and dairy products (yoghurt, cheese, cottage cheese, maas). Serving size: 1 cup milk, yoghurt, maas, 1 cube of 30mm cheese.	
Soft drinks (fizzy drinks i.e. Sprite, Coke, Fanta). Serving size: 340ml can	
Water. Serving size: 1 cup/ 1 glass	
Tea and coffee. Serving size: 1 cup	
Sugar in tea or coffee. Serving size: 1 teaspoon	
Potato crisp or other savoury snacks Serving size: 1 small packet (35g)	
Chocolates bars. Serving size: 1 bar	

- C18 Indicate how often you eat or drink the following foods.

	Daily	3-4 times per week	1-2 times per week	Seldom	Never
Red meat (beef, pork, mutton)	1	2	3	4	5
Chicken	1	2	3	4	5
Boerewors	1	2	3	4	5
Processed meat	1	2	3	4	5
Fish	1	2	3	4	5
Eggs	1	2	3	4	5
Full cream milk	1	2	3	4	5
Low fat milk	1	2	3	4	5
Cheese	1	2	3	4	5
Yoghurt	1	2	3	4	5
Fruit	1	2	3	4	5
Vegetables	1	2	3	4	5
Salads	1	2	3	4	5
Butter	1	2	3	4	5
Margarine (tub)	1	2	3	4	5
Margarine (brick)	1	2	3	4	5
Vegetable oil	1	2	3	4	5
White bread, bread rolls and buns	1	2	3	4	5
Brown or whole wheat bread	1	2	3	4	5
Breakfast cereals	1	2	3	4	5
Maize meal porridge	1	2	3	4	5

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	Daily	3-4 times per week	1-2 times per week	Seldom	Never
Rice	1	2	3	4	5
Pasta (macaroni, spaghetti, noodles)	1	2	3	4	5
Potatoes	1	2	3	4	5
Legumes (dry beans, lentils, split peas)	1	2	3	4	5
Nuts	1	2	3	4	5
Fruit juice	1	2	3	4	5
Soft drinks (fizzy such as Coke, Sprite, Fanta)	1	2	3	4	5
Sport or energy dinks (Energade, Red Bull)	1	2	3	4	5
Water	1	2	3	4	5
Pizza	1	2	3	4	5
Potato chips (crisps)	1	2	3	4	5
Fried chips (slap chips)	1	2	3	4	5
Cake, tart, cup cakes or muffins	1	2	3	4	5
Meat pie	1	2	3	4	5
Bar of chocolate	1	2	3	4	5
Sweets	1	2	3	4	5
Cordials (Oros, wild island, Carribean)	1	2	3	4	5
Hamburger	1	2	3	4	5
Cookies , biscuits	1	2	3	4	5

- C19 When deciding what foods to **buy** or **eat** on a daily basis, how important is each of the listed aspects below. Mark your level of importance by using the scale provided (1-not at all important, 2- a little important, 3- moderately important, 4- quite a bit important and 5- very important).

Items	Not at all important	A little important	Moderately important	Quite a bit important	Very important
How it tastes	1	2	3	4	5
Whether it is considered a traditional food	1	2	3	4	5
How it smells	1	2	3	4	5
Whether it is easily available in shops and supermarkets	1	2	3	4	5
Degree to which it is good value for money	1	2	3	4	5
Whether I think it will help me cope with stress	1	2	3	4	5
Degree to which it will help me cope with life events	1	2	3	4	5
How likely it is to help me control my weight	1	2	3	4	5
Degree to which it reflects my cultural or ethnic traditions	1	2	3	4	5
Degree to which I can be sure it is not associated with food-borne illness	1	2	3	4	5
Whether it is grown or produced in an environmentally friendly way	1	2	3	4	5
The amount of kilojoules/calories in it	1	2	3	4	5
How easy or difficult it is to prepare	1	2	3	4	5
Degree to which it contains natural ingredients	1	2	3	4	5
Degree to which it has been prepared with extreme care and safety	1	2	3	4	5
Degree to which it will help me lose weight	1	2	3	4	5
Degree to which it looks good	1	2	3	4	5
The amount of vitamins and minerals in it	1	2	3	4	5
Whether it can be cooked very simply	1	2	3	4	5
How long it takes to prepare	1	2	3	4	5
How similar it is to the food I ate when I was a child	1	2	3	4	5
How much it will help me relax	1	2	3	4	5
Whether I am certain it does not contain harmful bacteria and viruses	1	2	3	4	5
How many artificial additives it contains	1	2	3	4	5
Whether it can be bought in shops close to where I live or work	1	2	3	4	5

ADDENDUM C



UNIVERSITEIT VAN PRETORIA
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Faculty of Natural and Agricultural Sciences
Ethics Committee

E-mail: ethics.nas@up.ac.za

Date: 21/07/2016

ETHICS SUBMISSION: LETTER OF APPROVAL

Dr A Viljoen,
Department of Consumer Science
Faculty of Natural and Agricultural Sciences
University of Pretoria

Reference number: EC160318-009

Project title: Investigation of food environments, food practices and dietary intake of adults in Tshwane

Dear Dr Viljoen,

We are pleased to inform you that your submission conforms to the requirements of the Faculty of Natural and Agricultural Sciences Ethics committee on the condition that the only participation of the subjects is as described in the proposal narrative.

Please note that you are required to submit annual progress reports (no later than two months after the anniversary of this approval) until the project is completed. Completion will be when the data has been analysed and documented in a postgraduate student's thesis or dissertation, or in a paper or a report for publication. The progress report document is accessible on the NAS faculty's website: Research/Ethics Committee.

If you wish to submit an amendment to the application, you can also obtain the amendment form on the NAS faculty's website: Research/Ethics Committee.

The digital archiving of data is a requirement of the University of Pretoria. The data should be accessible in the event of an enquiry or further analysis of the data.

Yours sincerely,

A handwritten signature in black ink, appearing to read 'M. Potgieter'.

P/P Chairperson: NAS Ethics Committee

ADDENDUM D

Revised general Food Based Dietary Guidelines for South Africans, 2012 (Vorster *et al.*, 2013):

- Enjoy a variety of foods.
- Be active!
- Make starchy foods part of most meals.
- Eat plenty of vegetables and fruit every day.
- Eat dry beans, split peas, lentils and soya regularly.
- Have milk, maas or yoghurt every day.
- Fish, chicken, lean meat or eggs can be eaten daily.
- Drink lots of clean, safe water.
- Use fats sparingly. Choose vegetable oils, rather than hard fats.
- Use sugar and foods and drinks high in sugar sparingly.
- Use salt and food high in salt sparingly.

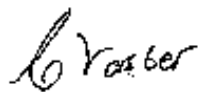


Language Editor Declaration

DECLARATION

I, C Vorster (ID: 710924 0034 084), Language editor and Translator and member of the South African Translators' Institute (SATI member number 1003172), herewith declare that I did the language editing of a dissertation written by Ms J De Kock from the University of Pretoria (student number: 15391028)

Title of the dissertation: Contribution of the local and home-food environments to the food practices of white adults in the Eastern suburbs of Tshwane



7 November 2018

C Vorster

Date

ADDENDUM F

Turnitin Results

An extract from the Turnitin report on the Master's dissertation of Jeandelene de Kock (9 January 2019).

The results of the Turnitin 'Originality Report'.

Masters

ORIGINALITY REPORT

16%

SIMILARITY INDEX

8%

INTERNET SOURCES

11%

PUBLICATIONS

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STUDENT PAPERS
