



Cape Peninsula
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Influence of nutritional labelling on the choice of a fast food by young adults from the professional and clerk occupational groups in the City of Cape Town, South Africa

by

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ABSTRACT

Objective: To determine whether nutritional information provision would influence the choice of a popular fast food by young adults employed in the City of Cape Town, South Africa (SA), within the professional and clerk occupational classifications as consumer group, using a beef burger as exploratory item.

Methodology: A survey, in the form of a self-administered questionnaire comprising closed-ended multiple-choice questions, was used to obtain information on the respondent fast food consumption, fast food consumption on nutritional information provision using a beef burger as exploratory item, demographic, biographic and lifestyle characteristics, and eating practices. Through the purchasing of beef burgers across four major leading fast food franchises located within the Western Cape, and specifically those based in the City of Cape Town competitive in this fast food category, information pertaining to beef burger ingredients and the individual ingredient weights were obtained, to compile 16 representative beef burger-types to be presented in the questionnaire. Beef burgers were presented as two menu-options (i.e. the first containing energy provision alone, vs. the second containing extended nutritional information as energy, total fat, saturated fat and cholesterol provision) within the questionnaire, to obtain information on whether nutritional information provision would influence the respondents' choice, and if so, which provision would do so. The questionnaire was assessed for content- and face-validity by an expert panel, and on the research receiving ethics approval, piloted and adapted before being distributed.

Questionnaires were distributed according to the respondent preference for ease of use as either a hard printed copy or an electronic questionnaire. This was done via means of purposive and convenience sampling and by way of snowball sampling, to obtain young adults aged 20 to 34 years who were consumers of fast food and specifically beef burgers, within the selected occupational classifications working for small- to medium-sized companies in the City of Cape Town. Via the Pearson's chi-squared and Fisher's exact test and a logistic regression (Wald chi-square statistic) applied on the analysis, the factors to significantly influence the respondents to change their beef burger choice on the nutritional information provision were determined.

Results: The final sample consisted of 157 respondents. A near-even split occurred between the respondents who would (52.2%) and wouldn't (47.8%) be influenced by the nutritional information provision. Of the respondents who indicated that they would be influenced, the extended nutritional information provision had the highest influence. Twelve factors comprising a combination of the respondent biographic and lifestyle characteristics ($n = 2$), eating practices ($n = 7$), and fast food consumption ($n = 3$), were found to significantly ($p < 0.05$) influence the

respondent choice of a beef burger on the nutritional information provision, and on application of the logistic regression, one factor strongly ($p < 0.001$) in each of the three domains. Of the respondents who indicated that they would not be influenced, more than half (54.4%) gave their reason as even though they were aware, or had an idea of the nutritional content of burgers, that they would still purchase their original choice even if the nutritional information was available, followed by one-quarter (25%) who indicated that they did not understand nutritional information.

Conclusions: Extended nutritional information provision was found to positively influence a popular fast food choice among young adults employed within the City of Cape Town, SA, with health-consciousness being the overall factor identified to influence the choice of a healthier option on the nutritional information provision, as the identified significant factors were all related to health-conscious consumer attributes.

Key words: Fast food, Beef burger, Nutritional information, Young adults, Health-conscious

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DEDICATION

For my mom, Audrey Cheryl May Stowe.
For without you, this wouldn't have been possible.

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LIST OF ABBREVIATIONS

AI	Average Intake
BMI	Body Mass Index
CVD	Cardiovascular disease
DV	Daily Value
DGA	Dietary Guidelines of America
DOH	Department of Health
DDS	Dietary Diversity Score
FAFH	Foods away from home
FAH	Foods at home
FDA	Food and Drug Association
GDA	Guideline Dietary Allowance
HEI	Health Eating Index
QSR	Quick-service restaurant
RDA	Recommended dietary allowance
SA	South Africa
SAFBDG	South African food-based dietary guidelines
SEG	Socio-economic group
SES	Socio-economic status
U.K.	United Kingdom
U.S.	United States
USDA	United States Department of Agriculture
USDHHS	United States Department of Health and Human Services
WHO	World Health Organization

CLARIFICATION OF BASIC TERMS AND CONCEPTS

- Body Mass Index (BMI):** The World Health Organisation (WHO, 2016) defines being overweight as having a BMI greater than or equal to 25 kilograms (kg) per meter squared (m^2), and obesity as BMI of $\geq 30 \text{ kg}/m^2$.
- Dietary habits:** The habitual decisions of individuals or a group of individuals, regarding what foods are consumed. Healthy dietary habit choices encompass the consumption of vitamins, minerals, carbohydrates (CHO), proteins and fats. Dietary habits and the choices thereof, play a significant role in human health (Preedy & Watson, 2010:4189).
- Energy:** As the information on fast food is, in the main, provided through American publications, the fast food energy provisions provided (as part of the nutritional content and dietary contribution and nutritional health impact literature review sub-sections), were converted from kilocalorie (kcal) to kilojoule (kJ) in these publications and reported as such in Chapter 2. This was done by using the standard energy unit conversion factor of 4.2 kJ for one calorie (cal)/kcal (term ‘cal’ often used in publications to denote kcal) (Sizer & Whitney, 2014:C-1), with the calculated energy provision in kJ indicated in the chapter alongside the kcal provision provided in the publications.
- Fast food:** Cooked or ready-prepared foods (Van Zyl et al., 2010:124) that are available within a short time after consumers have ordered them (Sizer & Whitney, 2006:GL-6), i.e. “ordered, purchased and received within roughly ten minutes” (Driskell et al., 2006:524), bought from outlets such as takeaway restaurants (Van Zyl et al., 2010:124), which frequently operate as a franchise (Steyn et al., 2011). The Dietary Guidelines for Americans (DGA) (USDA/USDHHS, 2010:93) defined fast food as: “Foods designed for ready availability, use, or consumption and sold at eating establishments for quick availability or take-out”.

Traditionally, fast foods include hamburgers, French fries and soft drinks (Krishnan et al., 2010:470; Van Zyl et al., 2010:126; Oddy et al., 2013:782; Smith et al., 2013:2370; Kirkpatrick et al., 2014:927), often served together as a ‘meal deal’ (Brindal, 2010:30) or ‘traditional’ fast food meal (Driskell et al., 2006:525; Dunn et al., 2008:332; Brindal, 2010:10).

Fast food restaurants:

“Food service outlets quickly serving inexpensive foods with minimal preparation and table service” (Fleischhacker et al., 2010:e461). Fast food restaurants are also known as quick-service restaurants (QSR’s) (U.S. Department of Agriculture and U.S. Department of Health and Human Services (USDA/USDHHS), 2010:93; Drewnowski & Rehm, 2013).

Food away from home (FAFH):

Restaurant, fast food outlet, and takeaway meals. “Ready-to-eat and consumed as is, where the consumer has no control over and less knowledge of their nutritional content” (Lin & Guthrie, 2012:iii). Fast food outlets are one of the predominant contributors of FAFH (Lachat et al., 2012:343). Throughout the literature, the use of the term FAFH thus includes fast food.

Healthy eating behaviours:

Healthy eating behaviours are associated with positive intakes of fruit and vegetables (Ambrosini et al., 2009:1811; El Ansari et al., 2012; Popkin et al., 2012:8; Dickson-Spillman & Siegrist, 2011:58; Monsivais et al, 2014:799), legumes, whole grains (Ambrosini et al., 2009:1811; Popkin et al., 2012:8), fish, dietary fibre and the majority of the micronutrients; and positively associated with energy, total fat, saturated fat and refined sugar intakes (Ambrosini et al., 2009:1811), a lowered consumption of FAFH, and specifically, a lowered consumption of fast food (Dickson-Spillman & Siegrist, 2011:58; Monsivais et al, 2014:799).

Health-consciousness:

Defined as “a psychological or inner status of a person, including health alertness, health self-consciousness, health involvement, and self-monitoring of one’s health” (Sun et

al., 2015:3029), as well as the monitoring of energy in foods, limiting dietary fats, and the reading of nutrition labels (Ellison et al., 2013; Dingman et al., 2014:570), regular engagement in physical activity (Ambrosini et al., 2009:5; Krishnan et al., 2010:468; Magistris et al., 2010:540; Scarborough Research, 2012; Anderson et al., 2011) and avoidance of smoking (Ambrosini et al., 2009:5; Magistris et al., 2010:540).

Nutritional information:

Though there seems to be no pre-defined definition for the term ‘nutritional information’, the use of the terms ‘nutrition labels’, ‘nutritional labels’ and ‘nutrition information labelling’, are used interchangeably among resources and throughout the current study. To standardise this term for the purpose of the current study findings the term ‘nutritional information provision’ is used. Mandatory nutrients (displayed as part of the nutritional label) required on most packaged foodstuffs, (among other information pertaining to label usage) to comprise the nutritional information displayed in these labels include: Energy, Total fat, Cholesterol, Sodium, Total Carbohydrates, Protein, Vitamins and Minerals (Food and Drug Association (FDA), 2012:19). The current study makes use of the nutrients: energy, total fat, saturated fat and cholesterol in its’ definition of nutritional information and refers to the group of these nutrients as ‘extended nutritional information’.

Street food:

Ready-to-eat food and beverage items sold by the informal sector, generally via stands/stalls (usually temporary structures) on the pavement of busy streets in both urban and rural areas (Steyn et al., 2011) or other public places (such as a market or fair). Hawker or vendors (defined as a “non-commercial outlet selling food, and in some cases a converted garage or a home, or a purpose-built building”) may sell these foods (Feeley et al., 2011:199) in “both urban and rural areas, usually at a lower cost than fast food” (Steyn et al., 2011). Street foods are usually available at a lower cost

than fast foods and therefore provide an accessible source of food to the poorer public. Many street food vendors serve the same food and beverage items and generally only a limited number of food and beverage items are available. Commonly these items include snacks, such as crisps and soft drinks. Cooked foods are also sold, but less frequently than snacks (Steyn et al., 2011).

Takeaway foods:

Typically British for takeout foods (American Heritage Dictionary of the English Language, 2017) ordered and made in a restaurant, and taken away to be eaten either at home or elsewhere (Collins English Dictionary, 2017).

Traditional fast food meal:

A fast food meal usually comprising a burger, chips and a soft drink (Driskell et al., 2006:525; Dunn et al., 2008:332; Brindal, 2010:41).

Westernised diet:

Characterised as high intakes of energy, total fat, saturated fat, refined sugars (Ambrosini et al., 2009:1811; Oddy et al., 2013:779) and salt (Myles, 2014), which are typically associated with high intakes of takeaway foods, red meats, processed meats, full-fat dairy products, fried chips, refined cereals, cakes, biscuits, confectionary, soft drinks, crisps, sauces and dressings (Ambrosini et al., 2009:1811; Oddy et al., 2013:779). Also known as the “Western-type dietary pattern”, commonly referred to as the “fats and processed meats” dietary pattern (high-fat and processed meats, foods high in fats and oils, fried potatoes, etc.) (Moore et al., 2009:30).

Young adults:

One of the most controversial and ambiguous life stages documented throughout history (Schindler, 1997:244). According to Erikson (1968:263), who was the first theorist to make use of the term “young adults”, young adulthood falls between the ages of 20 and 24 years after which, one would move into the period of middle adulthood between the ages of 25 and 64 years. The following decade, the 70’s, defined individuals between the ages of 18 and 26 years as young adults (Hyman, 1972:5). In the 80’s, young adults in

the United States (U.S.) were distinguished as those individuals eligible to vote at the age of 18 (Jennings & Richard, 1981:7) and ranging up to the age of 30 (Bocknek, 1986:83) years. Commonly referred to as “Generation X” (Nicholson, 1997:5), Schindler (1997:244) describes this age group as those who have reached sexual maturity, but are not yet married. In the modern era, young adults have been defined as those between the ages of 15 and 25 (Pritchard et al., 2011:2323), 29 (Bowman & Vinyard, 2004:166), 30 (Zebrack et al., 2010:4862; Geiger & Castellino, 2011:e492), 39 (Guthrie et al., 2002:142), or 40 (Thomas et al., 2010:5128; Geiger & Castellino, 2011:e492) years of age. For the purpose of this study, ‘young adults’ were defined as those between the ages of 20 and 34 years, for a more realistic age threshold.

CHAPTER 1 INTRODUCTION

1.1 Statement of research problem

Over time, fast food has become increasingly popular, both on an international level (Brindal, 2010:14; Anderson et al., 2011; Larson et al., 2011:1700; Seo et al., 2011:176; Bezerra et al., 2012:77; Dingman et al., 2014:567; Chen et al., 2015:547; Euromonitor International, 2015; Mazzone & Associates, 2015; National Restaurant Association, 2017, Statista, 2017), and in South Africa (SA) (Feeley et al., 2009:118; Van Zyl et al., 2010:127; Feeley et al., 2011:199; Steyn et al., 2011; Steyn et al., 2012; Steyn & Labadarios, 2011:462). According to Maumbe (2012), “SA has one of the fastest growing fast food industries in the world”, attributed mainly to an increase in household income. International literature shows that more people are relying on foods away from home (FAFH) to feed themselves and their families (Dumanovsky et al., 2011; Bezerra et al., 2012:65; Lin & Guthrie, 2012:iii), with the proportion of household income being spent on these foods steadily increasing over the past decades (Todd et al., 2010:1; Lin & Guthrie, 2012:iii).

In spite of the above, very little has been published around the consumption of fast food in SA. Concerning, when these foods have shown evidence of contributing greatly towards poorer dietary intakes among individuals (Ayranci et al., 2010:775; Todd et al., 2010:i; Steyn et al., 2011; Feeley et al., 2011:199; Cohen & Bhatia, 2012:621; Lachat et al., 2012:343; Jaworowska et al., 2013:312; Dominguez et al., 2014), and subsequently, towards the development of weight gain and obesity (Bes-Rastrollo et al., 2010:1358; Brindal, 2010:45; Krishnan et al., 2010:468; Todd et al., 2010:15; Anderson et al., 2011; Larson et al., 2011:1703; Poti et al., 2014:169), resulting in the development of other health-related consequences such as Type 2 diabetes (Ayranci et al., 2010:772; Krishnan et al., 2010:468; Dominquez et al., 2014; Poti et al., 2014:167; Shah et al., 2014:CC06; WHO, 2016), coronary heart disease, hypertension, stroke (Ayranci et al., 2010:772; Poti et al., 2014:167; WHO, 2016), hyperlipidaemia (Poti et al., 2014:167), and specific cancers (Ayranci et al., 2010:772; WHO, 2016).

Traditionally, nutritional information provision at fast food outlets has not been mandatory, and the usual trend therefore followed, has been one based on a ‘right-to-know’ premise, as part of a consumer product-labelling regulatory practice (Cohen & Bhatia, 2012:622). More recently, the United States (U.S.) government legislated the Menu Labelling Law that requires all chain restaurants to provide the energy information for all menu items (Ellison et al., 2013), in order to address the limited knowledge of consumers around the nutrient content of fast food (Cohen & Bhatia, 2012:622). In SA specifically, nutritional information provision on a food product is only

mandatory when a health claim is made for the product (SA Department of Health (DOH), 2010:29). Previous literature, in consequence, suggests that consumers are uninformed, and have limited knowledge around the nutritional content of unpackaged and pre-prepared foods. As a result, consumers, potentially, are lead towards making unhealthy food choices (Cowburn & Stockley, 2004:22). More recent research shows a positive association between the use of nutritional labels and healthier dietary intakes by individuals (Ollberding et al., 2010:1234; Campos et al., 2011:1502; Graham & Laska, 2012:419; Cooke & Papadaki, 2014:300). There seems to be a gap, however, in the knowledge of consumers, and particularly of young adults, and whether or not the display of nutritional information would influence them in their purchase of a (healthier) fast food choice. Younger age has been associated with the highest consumption frequency of fast food among all age groups (Bes-Rastrollo et al., 2010:1358; Anderson et al., 2011; Lachat et al., 2012:340; Steyn et al., 2012; Fryar & Ervin, 2013; Smith et al., 2013:2370; Dominguez et al., 2014).

1.2 Background to the research problem

Fast food consumption is, in the main, associated with an increased consumption of hamburgers, French fries and soft drinks (Krishnan et al., 2010:470; Van Zyl et al., 2010:126; Oddy et al., 2013:782; Smith et al., 2013:2370; Kirkpatrick et al., 2014:927). The consumption of fast food has frequently been associated with poor dietary quality (Todd et al., 2010:i; Steyn et al., 2011; Feeley et al., 2011:199; Cohen & Bhatia, 2012:621; Lachat et al., 2012:343; Jaworowska et al., 2013:312; Dominguez et al., 2014) and a more ‘Westernised’ dietary pattern, characterised by high intakes of energy, fat, saturated fat and refined sugars (Oddy et al., 2013:779) and salt (Myles, 2014), and low intakes of fruit and vegetables (Ayranci et al., 2010:775). It is well-established that fast food, by nature, is high in energy density, fat, saturated fat, refined carbohydrates, cholesterol and sodium; and low in dietary fibre and important micronutrients (Feeley et al., 2011:199; Cohen & Bhatia, 2012:621; Lachat et al., 2012:343). Thus, the health risks associated with the consumption of FAFH become apparent. The nutritional transition towards a more Westernised dietary pattern, commonly termed ‘Westernisation’ (Seo et al., 2011:169), is a large contributor towards the current worldwide epidemics of obesity, diabetes, cardiovascular disease (CVD) and other health-related diseases (Chopra et al., 2002:952). According to Seo et al. (2011:169), the transition of individuals towards this unhealthy lifestyle places demands on the need for diversity, speed and convenience from individuals. These attributes, commonly associated with fast food, among others, further promote the consumption of fast food (Brindal, 2010; 234; Poti et al. 2014:169). Fast food is attractive to consumers, as it is “quick, easy, and generally cheap”, which augments the need for convenience (Brindal, 2010:18) - a highly-rated factor among the literature (Lucan et al., 2010:633; Anderson et al., 2011) - and drives the consumption of fast food.

Fast food is a commonly consumed commodity by young adults (Seo et al., 2011:169; Lachat et al., 2012:340; Steyn et al., 2012; Fryar & Ervin, 2013; Smith et al., 2013:2370). In addition, fast food portion sizes (Urban et al., 2014), as well as their packaging size (Rolls et al., 2004:68) have also increased tremendously over the years. This “Supersizing” phenomenon (Duffey & Popkin, 2011; Dubois et al., 2012:1051; Zlatevska et al., 2014:140), among other marketing strategies, is commonly cited throughout the fast food literature and employed by fast food establishments to promote the increased consumption of fast food, and have been shown to contribute towards obesity among fast food consumers (Krishnan et al., 2010:470; Chandon & Wansink, 2011:11; Duffey & Popkin, 2011).

Obesity is a considerable health problem, both in SA (Van Zyl et al., 2010:124) and on a global level (Popkin et al., 2012:4), especially in low- and middle-income countries (Popkin, 2011:232). As there is a growing prevalence of obesity and health-related diseases, fast food consumption becomes an important public health concern (Bowman & Vinyard, 2004:167) and, today, remains in the spotlight for its association with poor dietary quality (Todd et al., 2010:15; Larson et al., 2011:1703), overweight and obesity (Brindal, 2010:31; Todd et al., 2010:15; Larson et al., 2011:1703; Feeley et al., 2011:200), as well as insulin resistance, and Type 2 diabetes mellitus (Stender et al., 2007:887). In SA, and in many other African countries, there is little information regarding the extent to which consumption of fast food contributes toward the problem of obesity in children and adolescents (Steyn et al., 2011), with literature being more concentrated around the consumption of street food (Feeley et al., 2009:118; Feeley et al., 2011:199; Steyn et al., 2011).

To the researcher’s knowledge, two studies around the consumption of fast food in SA shows an increasing proportion of household income being spent on fast food (Van Zyl et al., 2010:126; Steyn et al., 2011), with a direct correlation found between the amount of money spent on fast food, and the consumption frequency of fast food (Van Zyl et al., 2010:126), with burgers leading the fast food category in terms of popularity, followed by pizza and fried chicken (Steyn et al., 2012; Van Zyl et al., 2010:127). Fast food trends, according to a ‘Fast Food in South Africa’ report published by Euromonitor International (2015:1), confirmed these findings, showing how the popularity of fast food, together with increasing trends in the demands for both convenience and value for money, motivated growth of the fast food category in 2014. This growth was contributed to mainly by the burger category, which boasted a current value growth of half (49%) in 2014, and is predicted to experience the strongest growth (21%) among categories by 2019. At times where both economic and socio-economic pressures are restricting the disposable incomes among households in SA, individuals pursue value offerings across all food categories (Euromonitor International, 2015:1). In addition, fast food has been found to be increasingly

popular among individuals in SA, despite the growing concerns surrounding the prevalence of obesity and increasing levels of diet-related diseases (Steyn et al., 2011).

Research confirms that there is a demand for intervention approaches to assist young adults who are habitual consumers of fast food, to choose healthier food options (Todd et al., 2010:10; Larson et al., 2011:1702), especially for individuals who are more mindful of eating healthier, or trying to lose weight (Todd et al., 2010:10) (i.e. health-conscious individuals). In addition, Larson et al. (2011:1702) reported that there is a definite need for messages associated with healthy eating behaviours and the use of fast food outlets, particularly those serving foods contributing high fat and sodium contents, primarily those serving burgers and French fries or sandwiches/subs. Research published by GrubHub (2014) however, shows that despite the increased number of restaurants now offering healthier menu options and providing nutritional information to the consumers at the point-of-purchase, ultimately, consumers will still purchase according to what they crave.

Nutritional labelling of energy at the point-of-sale in national fast food restaurant chains has been promoted to address the limited knowledge of consumers around the nutrient content of FAFH (Cohen and Bhatia, 2012:622), although it still remains unknown as to whether this nutritional information provision will, in fact, foresee a lowered consumption of energy-dense foods, predominant at fast food outlets. Traditionally, nutritional information provision at fast food outlets has not been mandatory, and the usual trend therefore followed, has been one based on a 'right-to-know' premise, as part of a consumer product-labelling regulatory practice. Thus, it does not limit the individual agent, or the food choices presented by the fast food establishment. According to the researchers Cohen and Bhatia (2012:622), in theory, if consumers are aware of the energy content of foods offered at these establishments, they may then be able to make healthier food choices. However, information proving the effectiveness of menu labelling in assisting consumers to make healthier food choices is limited, with the majority of research, conducted in the U.S. (Elbel et al., 2009:w1117; Roberto et al., 2010:314; Dumanovsky et al., 2011; Dowray et al., 2013:177; Ellison et al., 2013; Morley et al., 2013:8), investigating the effects of energy provision at point-of-purchase at fast food outlets, when fast food is purchased.

1.3 Research question

The study aimed to establish whether or not an intervention approach such as the display of nutritional information, would influence young adults in the purchasing of a healthier fast food choice. That is, *"Would the provision of nutritional information influence the choice of a popular fast food item by young adults employed in the City of Cape Town within the professional and clerk occupational classifications as consumer group, using a beef burger as the fast food exploratory item?"*

1.4 Objectives of the research

The main objectives of the study aimed to answer the research question, and aimed to obtain deeper insights into the specific nutritional information likely to influence the choice of a popular fast food item (if influenced), and whether specific factors influenced the choice of a popular fast food item, on the nutritional information provision. The subsidiary objectives, though not focused around the research question, aimed to provide valuable insights into fast food consumption among young adults.

Main objectives:

- To determine whether the choice of a beef burger by young adults employed in the City of Cape Town, within the professional and clerk occupational classifications as consumer group, would be influenced, when nutritional information was provided for the fast food item;
- To establish the nutritional information provision likely to influence the beef burger choice of young adults employed in the City of Cape Town within the professional and clerk occupational classifications as consumer group;
- To determine whether factors such as the respondent demographic, biographic, lifestyle characteristics and/or their eating practices and fast food consumption influence their beef burger choice on the nutritional information provision of fast food, using a beef burger as the fast food exploratory item.

Subsidiary objectives:

- To establish the fast food consumption behaviour, preferences and popular choices, specifically in terms of beef burgers, by these young adults;
- To identify which of the established factors influencing fast food consumption, influence the consumption of fast foods by these young adults;
- To identify which of the established factors influencing fast food consumption, influence the choice of beef burgers by these young adults.

1.5 Significance of the research

Information proving the effectiveness of intervention approaches such as menu labelling, in assisting consumers to make healthier food choices is limited, with the research in the main conducted in the U.S. The research shows a positive influence of energy content provision in influencing consumers to purchase lower energy-dense foods. Although the literature has been focused mainly on the influence of energy provision (vs. a more comprehensive, or extended

nutritional information provision), these results suggest the display of nutritional information provision to have the potential to influence fast food consumers in moving towards considering healthier fast food alternatives. On a local level, and to the researchers' knowledge, no studies have been conducted in either regard, with literature regarding fast food consumption trends in SA still being scarce. In particular, no fast food studies have been conducted in the Western Cape, or in the City of Cape Town. The current study therefore is unique, in that it's the first of its kind, to the researchers' knowledge, in its nature, and geographically. In addition to adding to existing international literature, it will be the first study on a local level to present findings on the influence of energy provision on the choice of a fast food, and will present novel findings around the influence of extended nutritional information provision on the choice of a popular fast food item on a global level. It will further add to the dearth of fast food literature in SA around fast food consumption among young adults, and present findings as to whether or not a mandatory display of either energy provision, or a display of extended nutritional information provision, should be considered by the South African government.

Through the main objectives, the current study for all intents and purposes tested the theory posed by Cohen and Bhatia (2012:622), that if consumers were made aware of the energy content of fast food, that they might be able to make healthier food choices, and aimed to broaden the scope beyond just the influence of the energy provision on a fast food choice. It further aimed to determine whether specific consumer attributes have an influence on whether or not consumers are influenced by nutritional information provision or not. The current study may thus, aid in partially filling the gap around whether the display of nutritional information would influence individuals to make a healthier fast food choice through the crux of the research question.

CHAPTER 2 LITERATURE REVIEW

This chapter explores published literature through three dominant themes, these being fast food consumption (as 2.1), nutritional information provision on fast food (as 2.2), and the eating habits and dietary intake of young adults (as 2.3), as the constituents supporting the theoretical background of the research. Much of the literature reported here to cover these three themes are of American origin, as research on these topics were, in the main, carried out there.

2.1 Fast food consumption

The first theme (as 2.1) explored in this chapter is fast food consumption. To understand fast food consumption, it is important firstly to understand its contribution towards foods eaten away from home, then to define fast food and consider its popularity geographically. Equally important, and also explored through further sub-sections of this section, is to delineate the fast food consumer, the factors influencing fast food consumption, the nutritional contribution of fast food, the dietary contribution and nutritional health impact of fast food consumption, and the factors contributing to them.

2.1.1 Introduction

Literature shows that more people are relying on foods prepared and eaten outside of the home, that is, FAFH to feed themselves and their families (Dumanovsky et al., 2011; Bezerra et al., 2012:65; Lin & Guthrie, 2012:iii). According to Lin and Guthrie (2012:iii), the category of FAFH, now routinely form part of the diets of most Americans. The consumption of these foods, and specifically fast food, has frequently been associated with poor dietary quality (Todd et al., 2010:i; Steyn et al., 2011; Feeley et al., 2011:199; Cohen & Bhatia, 2012:621; Lachat et al., 2012:343; Jaworowska et al., 2013:312; Dominguez et al., 2014) and a more 'Westernised' dietary pattern (Ayranci et al., 2010:775; Oddy et al., 2013:779; Myles, 2014). Expenditures on FAFH, and particularly on fast food, have also increased steadily over time (Todd et al., 2010:1; Lin & Guthrie, 2012:iii), as well as the contribution of energy and nutrients from these food-types towards the diet of individuals, in comparison to foods prepared at home (FAH) which tend to be higher in nutritional quality (Lin & Guthrie, 2012:iii).

Fast food consumption is in the main, associated with an increased consumption of hamburgers, French fries and soft drinks (Krishnan et al., 2010:470; Van Zyl et al., 2010:126; Oddy et al., 2013:782; Kirkpatrick et al., 2014:927; Smith et al., 2013:2370). It is well-established that fast food by nature, is high in energy density, fat, saturated fat, refined carbohydrates, cholesterol and sodium; and low in dietary fibre and important micronutrients (Feeley et al., 2011:199; Cohen &

Bhatia, 2012:621; Lachat et al., 2012:343). Thus, the health risks associated with the consumption of FAFH become apparent. Frequently cited health risks associated with, and predominantly in the spotlight, include obesity (Bes-Rastrollo et al., 2010:1358; Brindal, 2010:45; Krishnan et al., 2010:468; Todd et al., 2010:15; Anderson et al., 2011; Larson et al., 2011:1703; Poti et al., 2014:169) and Type 2 diabetes (Ayranci et al., 2010:772; Krishnan et al., 2010:468; Dominquez et al., 2014; Poti et al., 2014:167; WHO, 2014:79; Shah et al., 2014:CC06).

2.1.2 Defining fast food

Many studies have attempted to define fast food throughout the fast food literature. However, definitions seem to differ from study to study and aren't refined to a singular definition. Currie et al. (2010:61), noted that there is little consensus on the definition of fast food in the literature. Thus, a high proportion of studies have been found to utilise their own set of characteristics in their defining of fast food restaurants, as reported by Fleischhacker et al. (2011:e461). The researchers found that the studies generally utilised characteristics based on the time taken to serve the food, the type of service that was provided, and the type of foods that were served.

2.1.2.1 Time taken to serve food

In this first context, Brindal et al. (2010:112) defined fast food as being 'fast' in its' delivery from the point of ordering. Driskell et al. (2006:524) defined fast food as foods obtained from a fast food restaurant in which food can be "ordered, purchased and received within roughly ten minutes". Similarly, the word 'quick' or 'quickly' has been utilised in various definitions. Both Jeffery et al. (2006) and the American Heritage Dictionary of the English Language (2017) focused on the time taken by making use of this adjective in their definition, in combination with the primary food-type served; thus fast food restaurants were considered as: "quick service burger outlets", "quick service pizza parlours", "quick service roast beef" (Jeffery et al., 2006) and "inexpensive food, such as hamburgers and fried chicken, prepared and served quickly" (American Heritage Dictionary of the English Language, 2017). Fast food restaurants thus, are commonly referred to as "quick service restaurants (QSR's)" (USDA/USDHHS), 2010:93; Drewnowski & Rehm, 2013). These restaurant-types typically govern restaurants whereby customers "pay before eating and purchases may be consumed on-site, taken out or delivered" (Mazzone & Associates, 2015).

2.1.2.2 Type of food service establishment

Studies have also attempted to define fast food according to the type of establishment in which they may be found. Steyn et al. (2011) defined fast food according to the type of structure, as "foods sold from outlets in formal structures such as buildings and malls that frequently operate

as a franchise”. The Dietary Guidelines for Americans (DGA) (USDA/USDHHS, 2010:93) defined fast food as: “Foods designed for ready availability, use, or consumption and sold at eating establishments for quick availability or take-out in this context. Thus, “fast food restaurants are also known as quick-service restaurants”.

Subsequent researchers have attempted to use the actual names of the fast food establishments as the representation in their fast food definition, as opposed to using the actual food-type. According to Brindal (2010:12), this delineation may be the clearest and most consistent method to define fast food, that is, by including “big brand fast food companies”, as delineated by Duffey et al. (2007:202), for fast food. This is consistent with Dunn et al. (2012:3), who attempted to narrow the numerous broader definitions of the term ‘fast food’ (which included all limited-services restaurants), by only including ‘large national’ or ‘regional’ chains and those that do not primarily serve pizzas, in their definition. Currie et al. (2010:38) benchmarked a broader definition of fast food restaurants to include the top ten fast food chains in the U.S., which included both independent burger and pizza establishments. The researchers also noted that the fast food chain Subway, might arguably be healthier than some of the other chains (Currie et al., 2010:56), which may provide a reason for some fast food studies excluding this chain as part of their fast food restaurant definition. Considering this latter delineation, the major fast food restaurants noted throughout the investigated literature, and reported by Fleischhacker et al. (2011:e465) as the most common chains noted across the fast food studies were: McDonald’s, Burger King, Wendy’s, Kentucky Fried Chicken (KFC), Pizza Hut (Currie et al., 2010:38; Boone-Heinonen et al., 2011:1163; Fleischhacker et al., 2011:e465; Kirkpatrick et al., 2014:927), Subway and Taco Bell (Currie et al., 2010:38; Fleischhacker et al., 2011:e465).

In addition to using the actual names of fast food establishments to define fast food, Brindal (2010:10) added that a deciding step in obtaining a definition with more clarity is to differentiate ‘fast food’ from ‘convenience food’. Although fast food is a distinctive sub-category of the latter, this differentiation is necessary due to the fact that there is a vast array of foods that may be labelled as ‘convenient’. Therefore, making use of the style of service representative of the fast food restaurant is one way to distinguish fast food. The researcher included that this refinement, however, will still not segregate only fast food-type establishments and thus cannot be used in isolation as a definition.

2.1.2.3 Type of food served

In the on-going attempt to define the term ‘fast food’, studies have also defined these food-types according to what they traditionally and consistently comprise of. A ‘traditional’ fast food meal usually comprises a burger, chips and a soft drink (Brindal, 2010:41); however the category of fast

food is not limited to these foods alone. Within this description, fast food has been represented as: burgers (Krishnan et al., 2010:468; Seo et al., 2011:171; Steyn et al., 2012; Kirkpatrick et al., 2014:927; Smith et al., 2013:2374), pizza (Krishnan et al., 2010:468; Seo et al., 2011:171; Steyn et al., 2012; Smith et al., 2013:2374), fried chicken (Krishnan et al., 2010:468; Seo et al., 2011:171; Steyn et al., 2012), chicken nuggets (Dunford et al., 2010:48), fried fish, Chinese food (Krishnan et al., 2010:468), seafood, hot dogs (Smith et al., 2013:2374), doughnuts (Seo et al., 2011:171), sandwiches (Smith et al., 2013:2374), Mexican (Krishnan et al., 2010:468; Kirkpatrick et al., 2014:927), French fries (Seo et al., 2011:171; Kirkpatrick et al., 2014:927; Smith et al., 2013:2374), Thai and Indian food (Smith et al., 2009).

2.1.3 Popularity of fast food

Over time, fast food has become increasingly popular, both on an international level (Brindal, 2010:14; Anderson et al., 2011; Larson et al., 2011:1700; Seo et al., 2011:176; Bezerra et al., 2012:77; Dingman et al., 2014:567; Chen et al., 2015:547; National Restaurant Association, 2017; Statista, 2017) and in SA (Feeley et al., 2009:118; Van Zyl et al., 2010:127; Feeley et al., 2011:199; Steyn et al., 2011; Steyn & Labadarios, 2011:462). Of particular notoriety, is the popularity of these food-types in the U.S. The U.S. region is known to have the largest fast food industry, with internationally-recognised major fast food brands (i.e. McDonalds, KFC, Subway, Burger King) originating in the U.S. (Statista, 2017) and the highest fast food consumption frequencies reported among young adults in the U.S. (Larson et al., 2011:1700; Fryar & Ervin, 2013; Qi et al., 2014).

While fast food over the years has evolved to encompass a wider range of foods available, hamburgers and French fries have continuously been identified as the leaders in terms of popularity and therefore volumes sold (Larson et al., 2011:1700; Kirkpatrick et al., 2014:927). Furthermore, according to Euromonitor International (2015:7), burgers have been reported to dominate the U.S. fast food industry, totaling more than half of all fast food expenditures. A 2014 restaurant industry report, published by Mazzone and Associates (2015), showed the category of burgers to dominate (42%) the QSR segment in this year. Because the bulk of the fast food literature is based around U.S. studies, and the current study is focused on young adults in the Western Cape region of SA, the sections to follow under the popularity of fast food consequently only include literature studies focused on these regions. The literature further utilises the fast food consumption frequencies as delineated by Steyn et al. (2011) as: 'high' (two or more times/week), 'moderate' (once/week or 2-3 times/month) or 'low' (seldom or never), where possible (i.e. where the same frequencies were reported in similar studies).

2.1.3.1 United States

Reported results from the studies to follow, show a clear upward trend towards increased consumption frequencies of fast food by young adults from the earlier years of the current millennium until today. In an early study of noteworthy mention by Bowman and Vinyard (2004:167), which investigated the fast food consumption habits of U.S. adults over the age of 20 years, the data revealed that the proportion of individuals eating at fast food establishments had already increased since the earlier 1900's; that is, from one-sixth (CSFII 1989-1991) to one-quarter (CSFII 1994-1996) of U.S. adults reporting fast food consumption. Further to this, the results showed that one-quarter (26.5%) of adults over the age of 20 years, reported fast food consumption at a rate of at least once over the period of ten days. The researchers further predicted that this trend of increased fast food consumption was likely to continue. As predicted, Larson et al. (2011:1700), later found that almost all (95%) young adult respondents reported consumption of foods from at least one type of restaurant in a given week, with a high proportion (88%) consuming foods from fast food outlets; comparative to the results of Anderson et al. (2011) which found a high proportion (80%) of adults frequenting fast food establishments at least once per month, and over one-quarter (28%) reporting high consumption (≥ 2 times/week).

Regarding the most popular food items consumed, Driskell et al. (2006:526) found that nearly two-thirds (62%) of their young adult respondents reported consumption of fast food from hamburger, fried chicken and pizza outlets at least once a week. Similarly, Chen et al. (2015:547) found the most popular establishments frequented among young adults and adults to be burger and pizza outlets. Driskell et al. (2006:526) found sandwich/sub [a common term for large sandwiches utilising long rolls as labeled by Larson et al. (2011:1700)] outlets to be the most frequented (73%) among university students; followed by burger-and-fries outlets (62%), and fried chicken, Mexican foods or pizza outlets (< 20% in combination). Larson et al. (2011:1700) also found burger-and-fries outlets to be the most popular food frequented where nearly one-third (30% and 29% respectively) of the respondents reported consumption of these foods, closely followed by foods from sandwich/sub outlets, at least once per week.

By 2014, Dingman et al. (2014:567) reported in their study, an average of three meals per week consumed by all college students, from fast food and pizza outlets. These results were in line with statistics revealed by Euromonitor International (2015:1), which reported that since 2009, the fast food sector has experienced a strong growth, year on year, in the U.S., with the strongest growth then experienced in 2014. A further recent report by Mazzone and Associates (2015) stated that Americans spent around 200 billion U.S. dollars (\$) on fast food meals in the year 2014, and predicted a segment growth of around 2% by the year 2019 (predicted spending of around \$219.3

billion). Reported statistics (Statista, 2017) on the revenue of the QSR industry in the U.S. from 2002 to 2014 (including predictions until 2010) also showed that around one-quarter of Americans reported consumption of fast food daily, and approximately 10% frequent these outlets at least once a week. Similarly, the National Restaurant Association (2017) predicted that quick-service and fast-casual sales are expected to total \$233.7 billion in 2017, 5.3% up from the 2016 sales volume in this category.

2.1.3.2 South Africa

According to Steyn et al. (2011), regardless of the fact that the fast food industry is a substantial category of the economy on a national scale for both the creation of jobs, and the provision of foods sold in SA to thousands of individuals, literature regarding fast food consumption trends in SA is still scarce. To date, and to the knowledge of the researcher, only one study has been published by Van Zyl et al. (2010:124), which investigated the characteristics and factors influencing the fast food intake of young adult consumers in the Johannesburg region, SA. No similar studies could be sourced on the fast food consumption of young adults in the Western Cape, SA.

Looking at regional distributions of fast food consumption, Steyn et al. (2011) found a 'high' (2 or more times/week) consumption frequency of fast food to be most prevalent (14.7%) in Johannesburg; an amount more than twice as high as any of the other provinces (with the exception of the Limpopo Province (7.5%)); that is, the Free State (7.1%), Kwa-Zulu Natal (6.2%), Mpumalanga (5.3%), Eastern Cape (4.7%), Western Cape (2.9%), Northern Cape (2.6%), and in the North West (1.5%). Van Zyl et al. (2010:126) though, reported prevalence more than double this figure (38.4%) in Johannesburg, for this 'high' consumption frequency. The researchers found that fast food is greatly consumed among young adults between the age of 19 and 30 years, across all socio-economic groups (SEGs), with high frequencies of weekly consumption patterns reported; comparative with similarly referenced U.S. results (Larson et al. 2011:1700; Dingman et al., 2014:567).

On a national level, the three most popular fast food choices in both the lower SEG (LSEG) and medium SEG (MSEG) were burgers (68.4% and 67.9%, respectively), pizza (51.3% and 61.3%, respectively), and fried chicken (47.0% and 36.8%, respectively). Among the higher SEG (HSEG), burgers and pizza were also the most popular first and second choices (72.0% and 57.6%, respectively). However, fries and fried chicken were only the third and fourth most popular (37.3% and 31.4%, respectively). Other popular fast food choices for all SEGs, in order of the most to the least popular, include but are not limited to: grilled chicken, toasted

sandwiches, hot dogs, salads, fried fish, pasta, grilled fish, schwarma's, sushi, Chinese food, deli sandwiches, Thai food and curries (Van Zyl et al., 2010:127).

Due to the dearth of literature around fast food consumption in SA, the literature to follow under this section assesses the consumption of 'street food', as well as fast food, as most street food in SA encompasses both finger foods and fast food (Steyn et al., 2012). According to the earlier study by Steyn et al. (2011), it may be important to consider street food in the South African assessment of fast food intake as both food types, i.e. 'fast food' and 'street food', both of which are high in sugar and saturated fat, and low in micronutrients, and also may contribute to an increased prevalence of obesity in SA. Street food is commonly accessed by individuals in both the urban and rural areas of SA due to their ease of access (i.e. at road intersections, main roads, high schools, next to grocery shops or adjoining shebeens) (Feeley et al., 2011:200).

2.1.3.2.1 Rural population

Steyn et al. (2000:54) defined 'rural' populations in the South African context, as "individuals (specifically students for the purpose of their study) residing on farms and in villages". A large sector of this population in SA was found to buy food from street food vendors and, to a lesser extent, from fast food outlets due to their cheaper pricing which, as a result, contributed to the food security of these individuals, who also represented those of a lower socio-economic status (SES) (Steyn & Labadarios, 2011:465).

Feeley et al. (2009:120; 2011:199), in their studies of both rural (Feeley et al., 2011:199) and urban (Feeley et al., 2009:120) populations of SA, found the most commonly purchased foods to be 'quarters' (also known as 'kota'), fried chips, and vetkoek. The primary favourite, can be described as a quarter of a white bread loaf, combined with processed cheese, chips and varying amounts of processed meats and sauces – a derivative of the original 'bunny chow', a popular food that originated in Durban in the late 1970s, or early 1980s, and comprised either a quarter or half of a white bread loaf, with the middle, softer part taken out and replaced with meat or a vegetable curry. The removed and spare bread is then used to scoop up the curry sauce. These ingredients are key attributes that make this street food item a 'quarter', or 'kota'. However, the ingredients of this commonly-encountered street food item are not standardised in SA and may include a number of ingredient variations (Feeley et al., 2009:120; Feeley et al., 2011:199).

2.1.3.2.2 Urban population

In contrast to the rural population, Steyn et al. (2000:54) defined urban populations in the South African context as "individuals (again, specifically students for the purpose of their study) residing in townships and cities". Feeley et al. (2009:119) extended this definition by defining urban areas as "those encompassing townships, settlements, towns and cities". In these areas,

individuals are increasingly exposed to a Western lifestyle influence, and thus foods that are relatively high in carbohydrates (CHO), fat and salt, and low in dietary fibre. Townships (e.g. Soweto in SA) have historically been classified as disadvantaged areas in SA. These areas have a vast array of vendors, both commercial and informal (street vendors and tuck shops, selling items of fast food such as fried chicken, chips, meats [including processed sausage], cakes [also known as 'vetkoek'] and deep-fried fish). In the study of Feeley et al. (2009:119), the consumption of fast food among black urban adolescents was assessed. The three most commonly frequented fast food was the 'kota/quarter' (30.7%), chips (21.8%) and vetkoek (12%), followed by: pies and sausage rolls (6.8%), boerewors rolls (6.7%), fried fish (5.6%), hotdogs (4.8%), pizzas (4%), hamburgers (3.9%), chicken burgers (1.5%), samoosas (1.4%) and pitta (0.8%).

2.1.4 The fast food consumer

Consumer characteristics investigated and found to be associated with frequent fast food consumption are demographic-related such as age, gender, race and ethnicity, SES, and family status and lifestyle- and health-related such as physical activity, smoking, alcohol consumption, health-consciousness and body weight status, and are reported in the sections to follow.

2.1.4.1 Demographic-related characteristics

Demographic-related characteristics investigated and found to be associated with fast food consumption include age, gender, race and ethnicity, SES and family status, with typically younger age and the male gender being positively associated with increased fast food consumption; and race and ethnicity, SES and family status showing varying associations throughout the literature.

2.1.4.1.1 Age

A significant and inverse association was found in numerous studies between younger age and fast food consumption (Bes-Rastrollo et al., 2010:1358; Anderson et al., 2011; Lachat et al., 2012:340; Fryar & Ervin, 2013; Dominguez et al., 2014; Smith et al., 2013:2370). In this context, Bes-Rastrollo et al. (2010:1358) found a decline in the mean age of individuals (mean age 37.4, 35.7 and 36 years), significantly associated with an increase in fast food consumption across the '1-3 times per month', 'once per week' and '2 or more times per week' frequencies, respectively. In earlier studies, young adults were reported to be four (Bowman & Vinyard, 2004:166) to five (Mohr et al., 2007:1458) times more likely to consume fast foods than adults over the age of 55 years. These results were consistent with the local study by Steyn et al. (2012), which confirmed that a decrease in age was directly related to fast food consumption frequency, with far more

individuals between the age of 16 and 34 years (15.7%) purchasing fast food greater than twice per week in relation to adults over the age of 35 years (10.3%).

In more recent studies, a peak in the consumption of FAFH in relation to age was established. Smith et al. (2013:2370) found an inverse J-shaped relationship between fast food consumption and age with the peak in the consumption of these foods to be between the ages of 19 and 30 years; Fryar and Ervin (2013) reported the peak in fast food consumption to be between the ages of 20 and 39 years. Lachat et al. (2012:340) explains this peak in the consumption of FAFH among young adults to be a generational effect, and a sustained effect from earlier years of increased FAFH frequencies during the years of adolescence.

2.1.4.1.2 Gender

Fast food consumption between the genders has shown variances over time, although males have consistently reported a higher frequency of fast food consumption versus females over the past decade (Mohr et al., 2007:1460; Smith et al., 2009; Bes-Rastrollo et al., 2010:1358; Anderson et al., 2011; Smith et al., 2013:2370). Mohr et al. (2007:1460), Bes-Rastrollo et al. (2010:1358) and Smith et al. (2013:2370) reported that fast food consumers were more likely to be male. In the early study by Bowman and Vinyard (2004:164), male participants (36%) showed higher fast food consumption frequencies in comparison to female participants (27%), and were found to consume a higher proportion of energy (1 022 kcal [4 292 kJ]) obtained from fast food than the female participants (653 kcal [2 743 kJ]). Driskell et al. (2006:525) also found that males seemed to frequent fast food outlets serving hamburgers, fried chicken and pizza more frequently (70%) than females (53%). Various studies have linked this association to the fact that females are likely more health-conscious than males (Ellison et al., 2013; Stefan, 2013:740; GrubHub, 2014), and have reported healthier diets in comparison (Boone-Heinonen et al., 2011:1165; Grunert, 2012:174).

In the South African study by Van Zyl et al. (2010:126), a large gap between the genders was found whereby half (50.3%) of the male participants were found to consume fast food; an amount almost double (27.8%) that of the female participants reporting fast food consumption. In addition, when reporting daily fast food consumption, more than double (15.5%) the proportion of male versus female (6.7%) participants reported consumption of fast food daily. Similarly, in the study by Smith et al. (2009), although a higher proportion of female participants (76.4%) reported a consumption of once, or less than once per week than male participants (59%), when combining the consumption frequencies for greater than once per week, male participants (37.9%) reported a fast food consumption of at least twice per week, that is, at a rate double than that of female participants (17.7%). These results were consistent with the later study

by Larson et al. (2011:1701), which also found that a higher proportion of males (92%) versus females (85%) consumed fast food on a weekly basis.

2.1.4.1.3 Race and ethnicity

On an international level, white individuals were consistently found to frequent fast food consumption less than non-white individuals (Dunn et al., 2012:8; Dingman et al., 2014:569). In the study by Dunn et al. (2012:8), white individuals were found to consume zero to one fast food meals per week, versus non-white individuals who were prone to consume two or more fast food meals per week. As an explanation for this lowered frequency of fast food consumption among white individuals, Dunn et al. (2012:8) found that individuals of the white racial grouping have less exposure to fast food, as this group was found to have a higher mean travel distance (1.7 miles [2.74 kilometres (km)]) to the nearest fast food outlets. Non-white individuals were also found to have more (0.5 and 3.3) outlets located within one and three miles (or 1.6 and 9.7 km), respectively, of their place of residence (Pereira et al., 2005:38).

A study by Larson et al. (2011:1706), revealed that across all the fast food categories (i.e. burger-and-fries, fried chicken, Mexican food, pizza, sandwich or sub), white individuals were only the third lowest (88.9%) after Asian (84.5%) and mixed or other (84.4%) ethnicities to report consumption of fast food at least once per week. These individuals were also found to be the lowest (25.9%) consumers of burger-and-fries fast food types, versus the other ethnic groups (Larson et al., 2011:1701). Across all the fast food categories, individuals of Native American (95.5%) and Hispanic (93.0%) ethnicity reported the highest consumption of fast food at least once per week. In the fast food burger-and-fries category though, consumption among the Native American (41.3%) and African American (40.2%) ethnic groups, were highest in comparison to the other ethnic groups. Steyn et al. (2011) in the South African context however, found the opposite association between the racial groups, where both white (43.9%) and Indian (44%) individuals reported the highest frequency of moderate (once/week or 2-3 times/month) fast food consumption. Similarly, both these groups were the highest consumers of a high (two or more times/week) fast food consumption pattern. Both black (67.6%) and mixed ancestry (60.5%) individuals reported the highest percentages for the low (seldom/never) frequency consumption pattern.

2.1.4.1.4 Socio-economic status

Education, income and occupation, as representation of SES, have frequently been associated with fast food consumption, although the results are not fully consistent, and are sometimes even conflicting. Where Smith et al. (2013:2372) found that fast food consumption was not associated with SES, both Larson et al. (2011:1701) and Van Zyl et al. (2010:127) found a higher

consumption frequency of fast food to be associated with individuals of the LSEGs. In the former study specifically, fast food consumption at burger-and-fries outlets was highest among individuals in LSEGs. Similarly, Van Zyl et al. (2010:127) found that the frequency consumption patterns reported for both the 'two to three times per week' and 'daily' were more pronounced among young adults of the LSEG (30.8% and 17.9%, respectively) than for the MSEG (24.5% and 8.5%, respectively) and the HSEG (27.1% and 5.9%, respectively). Moderate consumption frequency patterns ('once a week', or '2-3 times/month') were more likely to be practiced by consumers in the HSEG (62.7%) and MSEG (60.4%). Steyn et al. (2011) however, found individuals in the HSEG (13.2%), significantly more pronounced in practicing a high fast food consumption frequency versus individuals in the MSEG (3.8%), and LSEG (0.5%), and found employment specifically, to be associated with an increased intake of fast food.

i. Income, employment and occupational status

In relation to income, both Mohr et al. (2007:1460) and Dunn et al. (2012:4) found a positive and significant association between higher income and an increased fast food consumption frequency, assumedly because limited disposable income may hinder access to fast food and other commodities (Mohr et al., 2007:1460). With employment being closely related to income, Smith et al. (2009) found that consumers who were not in the workforce, and therefore assumedly had low levels of income, were infrequent consumers of fast food as a result of possibly not being able to afford such purchases. Employment status therefore, was reported as a significant factor predicting fast food consumption at least twice per week in the study by Smith et al. (2009), which was consistent with similar studies (Mohr et al., 2007:1460; Steyn et al., 2011), where actual employment was found to be associated with an increased fast food consumption frequency. Larson et al. (2011:1701) on the other hand, found a correlation between the choice of fast food outlets and employment status. That is, young adults employed in the U.S. either full-time, or part-time, were appreciably more likely to purchase fast food from sandwich/sub outlets on a weekly basis, compared to those who were unemployed.

Van Zyl et al. (2010:127), on a local level and at a first look, found conflicting results to the above. Although when comparing employed versus unemployed individuals in the study across all SEGs, employed individuals were found to frequent fast food consumption more often than unemployed individuals across the majority of the reported frequencies: 'seldom (less than twice per month)' (2.1% vs. 0.0%), 'at least two to three times per month' (35.1% vs. 28.6%), 'at least once a month' (21.5% vs. 21.4%) and 'two to three times per week' (31.8% vs. 28.6%). Reported frequencies for 'daily' consumption (9.5% vs. 21.4%) surprisingly, showed an opposite association. However, if by using the defined consumption frequencies delineated by Steyn et al. (2011) as 'high' (two or more times/week), 'moderate' (once a week or 2-3 times/month) or 'low'

(seldom or never) frequency, then the results from the Van Zyl et al. (2010:127) study showed that the unemployed young adult group (50%) reported the highest (two or more times/week) fast food consumption frequency patterns, in comparison to young adults who were either employed (41.3%), or who were students (24%). These individuals were also the largest reporters of weekly (71.4%) and daily (21.4%) fast food consumption. In support of this, no unemployed individuals reported a low consumption frequency of fast food. Students (64.8%) and employed individuals (56.6%), in this study, were more likely to report a moderate consumption frequency of fast food in comparison to the unemployed individuals (50.2%).

ii. Education

Both Pereira et al. (2005:39) and Dunn et al. (2012:4) found a positive correlation between a lower level of education and fast food consumption frequency, where the higher frequency consumers had fewer years of education (Pereira et al., 2005:39). Smith et al. (2009), Mohr et al. (2007:1460) and Smith et al. (2013:2370) however, did not confirm this finding in their studies; with the latter study reporting an inconsistency among the literature investigated on the subject.

In the Van Zyl et al. (2010:125) South African study, a significant difference was found between the level of education and the amount of money spent on fast food per month. That is, near half of both individuals with secondary school (43.4%) and tertiary (55.1%) education reported spending more than R200 on fast food per month, in comparison to those individuals who had at most, primary school education. A highly significant association was also found between the amount of money spent on fast food and the frequency of fast food intake. That is, an increased expenditure on fast food was associated with increased visits to fast food outlets, where just over three-quarters (78%) of individuals spending less than R200 per month on fast food, consumed fast foods less than once per month, and just less than two-thirds (62.2%) of individuals reporting an expenditure of greater than this amount, reported daily consumption of fast food.

2.1.4.1.5 Family status

Both parental and marital status was related to fast food consumption. However the results of these investigative studies are not consistent and some are conflicting. Jeffery et al. (2006), Mohr et al. (2007:1460) and Larson et al. (2011:1701) found that when children were in the home, a higher frequency of fast food consumption was found. Where Dominguez et al. (2014) found a strong association between increased fast food consumption and households where there was more than one child present, Smith et al. (2013:2370) found a strong association between individuals living in households of four or more people and an increased consumption of fast food, versus individuals living in households of two, or who lived on their own. Though Larson et al. (2011:1701) found no significant difference between being married with children (89%)

versus being married without children (88%) and the household fast food consumption, a larger difference was noticed when observing consumption of specific fast food, where more families with children (36%) were found to consume foods from burger-and-fries outlets, compared to those who had no children (28%). Both Smith et al. (2009) and Smith et al. (2013:2375) though, found a significant association between being single and increased fast food consumption between both males and females. Smith et al. (2013:2375) also found, in a later study, that there was a tendency for participants not living with a partner or spouse to be more likely to consume fast food, in comparison to those who did.

2.1.4.2 Lifestyle- and health-related characteristics

Specific lifestyle (i.e. physical activity, smoking and alcohol consumption) and health-related (i.e. health-consciousness and body status) factors found to be positively associated with fast food consumption throughout the literature are reported in the sub-sections to follow.

2.1.4.2.1 Lack of physical activity

Smith et al. (2009) found physical activity, television (TV) viewing and sitting to be significant predictors of fast food consumption among both males and females; however, whereas physical activity had a negative association, TV viewing and sitting had a positive association. These associations were consistent with earlier studies by both Pereira et al. (2005:39) and Jeffery et al. (2006), which found physical activity participation frequency to be inversely associated with the frequency of reported fast food consumption; and with the later study by Anderson et al. (2011) which found lowered physical activity to be associated with individuals reporting higher odds of more frequent consumption of fast food. In support of this, Ganasegeran et al. (2012) found poor eating habits to be significantly associated with no exercise among young adults. Pereira et al. (2005:39) also found that a higher fast food consumption frequency was associated with more hours of TV viewing. Krishnan et al. (2010:468) found that the consumption of burgers, fried chicken and fried fish were consistently linked to unhealthy behaviours such as lowered levels of physical activity and cigarette smoking.

2.1.4.2.2 Smoking status

Smoking status has been reported as a characteristic associated with eating FAFH (Bes-Rastrollo et al., 2010:1359). Studies (Pereira et al., 2005:38; Smith et al., 2009; Bes-Rastrollo et al., 2010:1358; Krishnan et al., 2010:468; Dominguez et al., 2014) have found a positive association between smoking and poorer eating habits (Ganasegeran et al., 2012) and fast food consumption, although many variables seem to exist throughout the studies coupled with this lifestyle factor. Ganasegeran et al. (2012) found the association between smoking and poor eating habits to be

significant. In the early study by Pereira et al. (2005:38), an inverse association between the prevalence of fast food use and cigarette smoking was found among young black adults; the opposite however, was found for white individuals. In the study of Smith et al. (2009), the association was found in males specifically, between being a ‘current smoker’ (defined as “having smoked any tobacco in the past 12 months, as well as those who had quit within the past year”) (Liu et al., 2011:406) and fast food consumption and among females, a relationship was reported between smoking status and fast food consumption, with the effect of fast food consumption on waist circumference being strongest among individuals who reported never having smoked. Similarly, Dominguez et al. (2014) found that ‘current smokers’ had the highest tendency to consume fast food (i.e. greater than two servings per week).

2.1.4.2.3 Alcohol consumption

An association was found among the literature between alcohol consumption and fast food consumption. Where the majority of the studies investigated, found this association to be positive (Bas-Rastrollo et al., 2010:1361; Krishnan et al., 2010:467; Ganasegeran et al., 2012; Dominguez et al., 2014), others found no (Smith et al., 2009) or a negative (Qi et al., 2014) association. Bas-Rastrollo et al. (2010:1361) found that consumption of FAFH was associated with two more alcohol drinks per week, in comparison to when no FAFH was consumed. Similarly, Smith et al. (2013:2375) found around two-thirds of fast food consumers reporting consumption of an alcoholic beverage. Similar to the associations with physical activity and smoking status, Ganasegeran et al. (2012) found alcohol consumption to be significantly associated with poorer eating habits.

2.1.4.2.4 Health-consciousness

An increased health-consciousness was found to be associated with a decreased consumption of fast food in numerous studies (Krishnan et al., 2010:468; De Magistris et al., 2010:540; Scarborough Research, 2012; Anderson et al., 2011; Dingman et al., 2014:569; Sarmugam & Worsley, 2015:8043). Mohr et al. (2007:1461) reported an increased fast food consumption frequency among young adults who were relatively unconcerned with the health concerns relating to poor dietary habits. Anderson et al. (2011) found health-related variables or the lack thereof (i.e. physical activity, fruit and vegetable consumption, and general health status), to be associated with regular fast food consumption. In support of this, the earlier study by Pereira et al. (2005:39) found a positive association between an increased fast food consumption, and lowered intake of fruit, non-starchy vegetables, whole grains, and reduced-fat dairy products.

In the Anderson et al. (2011) study, individuals reporting their health in the study as either ‘excellent’ or ‘poor’ were infrequent consumers of fast food, in comparison to regular fast food

consumers who rated their health as 'good'. Sarmugam and Worsley (2015:8043) found that health-consciousness was directly related to the frequency of fast food consumption. That is, the researchers found that health-consciousness was directly related to the frequency of fast food consumption, with health-conscious and non-health-conscious individuals reporting not much difference in the consumption frequency of between one and three times per month. In terms of frequency of consumption, health-conscious individuals were found to consume fast foods significantly less than once per week, although many more did not consume them at all.

Fast food consumption however, is seemingly not connected to less health-conscious consumers alone. Although this characteristic has been found to be negatively associated with fast food consumption, studies show that even health-conscious individuals frequent fast food consumption. Gresse et al. (2015:154), when comparing both health science and 'regular' (non-health science) students, found that more than two-thirds of both male and female students reported fast food consumption. No significant difference was found either, between the groups for a high fast food consumption frequency (i.e. > 3 times/week). Similarly, a consumer research study on health-conscious consumers in the U.S. and their fast food consumption habits (Scarborough, 2012), found that although health-conscious consumers reported a higher frequency of consumption of fast food at outlets serving healthier alternatives, around one-quarter (26%) of these individuals reported frequenting fast food outlets at least ten times over the past month. These results support the findings by Todd et al. (2010:10), who found that individuals who consider their dietary intake make the same fast food choices as those individuals who don't, and do not compensate for these unhealthy dietary choices by eating more healthily at home. They do, however, experience more difficulties in choosing foods when eating outside of the home and reportedly 'splurge' in environments that are more tempting. Thus, regardless of the individuals' dietary behaviour regimes (i.e. health-conscious or not), individuals seemingly make less-healthy dietary choices when eating FAFH.

2.1.4.2.5 Body weight status

A positive association has been found in numerous studies (Bowman & Vinyard, 2004:167; Smith et al., 2009; Larson et al., 2011:1701; Dunn et al., 2012:4; Qi et al., 2014; Shah et al., 2014:CC06) between heavier body weight status (as represented by the BMI), and the frequency of fast food consumption. As an explanation for this association, Dunn et al. (2012:4) hypothesised that a higher demand for fast food is associated with and prevalent among individuals who typically engage in dietary behaviours commonly associated with being likely to increase the prevalence of obesity.

Although Bowman and Vinyard (2004:167) originally found the positive association between being overweight and fast food consumption to be fairly weak, the researchers still concluded that the odds of being overweight for fast food consumers were higher than for non-fast food consumers. Later literature shows that the association between an increased consumption of fast food and being overweight has strengthened over time. The Larson et al. (2011:1701) study found that a larger proportion of overweight (91.7%) and obese individuals (93.7%) consumed fast food, compared to those individuals who were not overweight (83.2%). Consumption of foods from burger-and-fries outlets also showed the same pattern. Obese individuals (41.2%) contributed a significantly higher proportion of the individuals consuming these foods when compared to individuals who were either overweight (33.4%) or not overweight (24.2%). Similarly, Shah et al. (2014:CC06) found a significant association between an increased frequency of fast food consumption, and a higher BMI among medical students in India.

In the study by Smith et al. (2009), the researchers investigated the association between fast food consumption and abdominal obesity (based on waist circumference as classifier). Although the association between moderate abdominal obesity and fast food consumption was greater among the males, the association was also greatly present among the females. Among the males who frequented fast food consumption at least twice per week, one-third (33%) was more likely to have moderate abdominal obesity, in comparison to the males frequenting fast food less than twice per week. Among the females, around one-quarter (22%) were likely to portray moderate abdominal obesity for this same relationship. Using the BMI, an association was found in men between fast food consumption and being obese, although it was not statistically significant. Women frequenting fast food consumption at least twice per week though, had a significant prevalence of being overweight or obese.

2.1.5 Factors influencing fast food consumption

According to Brindal (2010:18), fast food is attractive to consumers as it is “quick, easy, and generally cheap”, which augments the need for convenience - a highly-rated factor, as shown by the literature (Stewart et al., 2006:iii; Bryant & Dundes, 2008:329; Lucan et al., 2010:633; Anderson et al., 2011), that drives the consumption of fast food. Second to convenience as a motivating factor, the taste of the food itself is a frequently-reported factor influencing the consumption of fast food. According to Vorster et al. (2011:434), humans seem to have an “inherent preference for foods that are energy-dense, smooth (refined, highly processed), salty, fatty and sweet”, like convenience and snack food.

Brindal (2010:18) further reported that food choices are formed within the condition of specific environments, time constraints and social variables, in addition to individual preferences. Certain

groups of individuals however, are more susceptible to some fast food consumption drivers in comparison to others, in that certain fast food establishments may be more popular, due to either their convenient location, their extended trading hours and/or the provision of lower cost foods. These attributes may be more appealing to some individuals, and will thus likely attract certain groups of individuals towards particular fast food establishments more than others. These factors were validated by other studies and will be deliberated in the sections to follow. Factors generally found to influence fast food consumption include: convenience (time constraints and availability), preference, taste and flavour, hunger or cravings, price, nutrition, friends and family and advertising and media messages.

2.1.5.1 Convenience

Convenience has continually been reported within the literature as a factor influencing the consumption of fast food. In an early survey published in the research report by Stewart et al. (2006:iii), the researcher predicted a trend towards an increased consumption of FAFH, attributed to a growing consumer demand for convenience. Spanish young adults, represented as college students between the age of 18 and 24 years in the study by Bryant and Dundes (2008:329), cited factors of 'convenience' - such as proximity, having many outlets closely located, and speedy service required due to a lack of time and always being in a hurry - as being the major reasons for their choosing to purchase fast food. Similarly, in the study conducted by Lucan et al. (2010:633), 'availability and convenience' - as a promoter in choosing to consume a fast food - was rated as second most popular after 'taste or flavour'. Anderson et al. (2011) found that among respondents who reported frequenting fast food restaurants at least once per month, the motivator for this restaurant-type choice was due to it being quick and convenient (64%), followed by the taste of the food (16%). Where fast food availability is concerned, multiple studies have found both positive (Inagami et al., 2009:691; Moore et al., 2009:34; Lucan et al., 2010:633; Boone-Heinonen et al., 2011:1165; Burgoine et al., 2014; Oni & Matiza, 2014:805) and/or no (Paquet et al., 2010:773; Deliens et al., 2014) or insignificant (Dingman et al., 2014:569) associations between exposure of individuals to fast food outlets, and increased fast food consumption, as detailed below.

2.1.5.1.1 Time constraints

According to Brindal (2010:234), the Western culture can be characterised as having elements that result in a lack of time. Thus, increasing time constraints have been cited as a major motivator towards the desire and drive for convenience by consumers, throughout fast food studies (Bava et al., 2008:487; Brindal, 2010:234; Todd et al., 2010:5; Van Zyl et al., 2010:127; Bezerra et al., 2012:77; 2008; Cohen & Bhatia, 2012:622; Freeland-Graves & Nitzke, 2013:311;

Deliens et al., 2014; Monsivais et al., 2014:796). Bava et al. (2008:487) noticed a substantial difference between perceived and actual time pressures in their study. However, they found that the greater the perceived time pressures were, the greater the chance of seeking convenience was among individuals. In an environment where lifestyles are rapidly changing, such as changes in time-demands, activity patterns, and eating behaviours (Brindal, 2010:234), as well as limited accessible time due to work and family responsibilities (Cohen & Bhatia, 2012:622), the desire to limit the amount of time spent on food preparation has emerged as one of the most significant influences affecting the choice of foods, according to Freeland-Graves & Nitzke (2013:311), thereby driving consumers' needs for more convenient, 'on-the-go' foods in the modern era (Brindal, 2010:234). In support of this, Monsivais et al. (2014:796) reported that individuals spending the least amount of time on the preparation of food (therefore representing a diet of lower quality) placed a higher priority on convenience. According to Brindal (2010:96), there is a clear trend towards eating fewer meals prepared at home. According to Brindal (2010:96) and Smith et al. (2013:2375), an increased demand for the convenience foods is likely to continue. The convenience of fast food has already become increasingly attractive to consumers (Bezerra et al., 2012:77).

In an earlier U.S. fast food study by Driskell et al. (2006:525), the majority (71%) of young adults in the study identified "limited available time" as a primary reason for their choosing to eat fast food. Other convenience-related terms such as "can be consumed easily", "can be prepared by the restaurant in a short amount of time", "can be eaten quickly", "can be carried easily", "suitable for consumption on the go" (Scheibehenne et al., 2007:583), "lack of time", "being in a hurry" and "speedy service" (Bryant & Dundes, 2008:329) have been cited as motivators for consuming fast food. In the fast food study by Brindal (2010:96), exploring the fast food consumption behaviours and social influences of Australian individuals, respondents found fast food to be 'easy' - a motivator for not having to cook - and gave this as their reason for choosing fast food.

2.1.5.1.2 Availability

Results from the studies of Inagami et al. (2009:691) and Boone-Heinonen et al. (2011:1165) supported the theory of a positive association between fast food consumption and availability. In the later study, a significant relationship was noted for low-income men between an increase in fast food availability and consumption (Boone-Heinonen et al., 2011:1165), potentially highlighting the importance of travel cost as an influencing factor. In support of this, Inagami et al. (2009:691) hypothesised that the ownership of a car by individuals in LSEGs may reduce the effect of the local fast food outlets in the area and thus, these individuals may be able to travel further and have a wider access to healthier foods. Similarly, Moore et al. (2009:34) found a

positive association between fast food outlet exposure, and fast food consumption and poorer diet among adults aged 45 to 84 years old. The researchers did note however, that the older age of the participants in the study might have positively influenced the associations. In the more recent study by Oni and Matiza (2014:805) assessing the factors influencing consumers' choice of a fast food outlet, second to 'affordability', the majority of the respondents selected 'conveniently located' as a factor motivating the choice of a specific fast food outlet. The majority (82.4%) of the respondents either agreed (46.8%) or strongly agreed (35.6%) that convenience of location had a great influence on their choice. The study showed that convenience of the fast food outlet location was largely influential in the choice of the fast food outlet.

In the study by Burgoine et al. (2014), exposure to fast food outlets was positively and significantly linked to consumption of fast food. Within the home environment, the individuals who were most exposed to fast food outlets, had significantly higher fast food consumption occasions than those who were least exposed. There was no evidence to show, though, that the greater the exposure in the home environment, the greater the consumption quantity. Exposure in the working environment, however, showed the opposite for the latter finding. Individuals in this setting who were more exposed to fast food outlets, also had positive associations with the fast food consumption quantity as this increased exposure to fast food outlets in the work environment resulted in increased consumption occasions of fast food. Individuals in this environment most exposed to fast food outlets consumed on average, 5.7 gram (g) more, per day, of fast food than those least exposed. Per week, this would provide for an intake of more than half a small serving of McDonalds French fries (approximately 71 g per serving) (USDA, 2015).

No trend in fast food consumption rates was seen when accounting for exposure on commuting routes (Burgoine et al., 2014). Paquet et al. (2010:773) also found no relation between fast food outlet availability and individuals' homes, and fast food consumption frequency. Similarly, Dingman et al. (2014:569) in their study found no association between an increased fast food consumption and fast food outlet availability by students on campus; although students in the Deliens et al. (2014) study did indicate that easy access to eating facilities, makes gratifying the temptation easier.

2.1.5.2 Preference, taste and flavour

The preference for and taste of a specific fast food has frequently been cited as an influencing factor when choosing to consume fast food. Where Driskell et al. (2006:525) found 'taste' to be the second most primary reason (41%) for choosing fast food after 'time constraints' (71%), Bryant and Dundes (2008:328) found 'taste/flavour' to be remarkably important when surveying both Spaniards (76%) and Americans (84%) in their study. Similarly, in the study by Harnack et

al. (2008), when individuals were asked to rate the influence of price, taste, nutrition and convenience on their fast food choice, taste was found to be the highest-rated factor (97.6%) in terms of being either very important, or somewhat important. Respondents in the Mulvaney-Day et al. (2012:359) study, made apologies for eating fast food, commenting that they were just “used to” eating them, or enjoyed the taste of these foods.

In the study conducted by Lucan et al. (2010:633) on the promoters and barriers to eating fruit, vegetable and fast food among urban, low income African American adults ‘taste and flavour’ as a promoter in choosing to consume a fast food, was rated as the most influencing factor. ‘Preference’ was identified next as a promoter in the consumption of fast food. Similarly, on a local level, young adults in the study by Van Zyl et al. (2010:127) indicated that they chose to eat at fast food establishments for purposes of wanting to eat a specific fast food meal and also provided this reason as their main motivator for not wanting to choose a healthier meal option at fast food outlets. Similarly, in the South African study by Temple and Steyn (2011:505), the researchers noted that the majority of ‘less healthy’ foods such as fast food, are popular due to their more enjoyable taste. Consumers may as a result identify ‘taste’ as a factor, as a barrier towards the adoption of a healthier diet.

Although ‘taste’ as an influencing factor has been well-documented throughout the fast food literature as an influencing factor in the choice of a fast food, the study by Oni and Matiza (2014:806) did not confirm taste as a critical factor influencing the choice of a fast food outlet by consumers. When asked whether their fast food outlet choice was due to the fast food tasting better than home-cooked food, although a large proportion of the respondents strongly agreed (27%) and agreed (15.4%), most (51.3%) of the respondents disagreed with the statement. Similarly, Anderson et al. (2011) found that among individuals frequenting fast food outlets at a rate of at least once per month, ‘taste’ (16%) was not rated as crucial, in comparison to ‘convenience’ (64%) as a deciding factor.

2.1.5.3 Hunger or cravings

In addition to the preference for, taste and flavour of the food, specific fast food choices are also prompted by factors that may satisfy primary needs during the time of purchase, such as hunger (Mulvaney-Day et al., 2012:360) or cravings (Lucan et al., 2010:631). In the study by Mulvaney-Day (2012:360) assessing young adults’ eating behaviours, the respondents indicated that being reactive to feelings of hunger and fullness dictated their choice of what to eat. The respondents in this study, also associated emotionally-driven words such as ‘desire’ or ‘starving’ to experiences of hunger, and further indicated that the ability of fast food, and specifically fast food burgers, to fulfil satiety was higher than the ability of ‘healthy’ foods. For example, one response was that,

“Burgers just make me feel fulfilled; like I had something good that I like. Just that kind of fulfilled feeling, not like an apple or something, it’s like, ugh, I gotta eat again”. This response is a good indication that individuals, and especially students, are driven by food choices that satisfy them, both in terms of taste and satiety, and the choice of ‘satisfying’ food becomes even more crucial under circumstances of hunger.

2.1.5.4 Price

Literature shows that price is an important determinant in the selection of fast food by individuals (Anderson et al., 2011; Seo et al., 2011:169; Mulvaney-Day, 2012:359; Oni & Matiza, 2014:808). Due to both economic and cost restraints being factors identified as affecting food choice, the low price of fast food makes it a popular and desirable food choice for consumers (Mulvaney-Day, 2012:359); presumably because consumers frequenting fast food outlets at a rate of at least once monthly, reported the choice of fast food to be good value for price. Oni and Matiza (2014:808) found that fast food affordability is a strong motivator for rural customers in their choice of a fast food outlet.

Although the lower price of fast food has been continuously cited as an influencing factor on food choice, literature also shows that price may not actually be a significant influencing factor in choosing to consume a fast food. This may be evident in the fact that Dunn et al. (2012:6) observed in the current decade, that consumers might not consider the cost of travel when making their fast food choice. Furthermore, Driskell et al. (2006:527) found price to be an infrequently reported influencing factor (after ‘limited time’ and ‘taste’), and Brindal (2010:19) found it to inconsistent as a predictor of fast food consumption. These findings are supported in the study by Cotti and Tefft (2013:142), which found no changes in self-reported consumption patterns of hamburgers, fried chicken, fruit and vegetables, and overall grams of fat, with fluctuations in food prices. Lucan et al. (2010:631) in contrast, found that cost and finances were in fact, barriers to the consumption of all foods, including fruits, vegetables and fast food.

2.1.5.5 Nutrition

Nutrition as a factor has been found to be an influencing factor in the choice of fast food, although not one that is critical throughout the literature. The earlier research by Stewart et al. (2006:6) found that on a scale of 1 (low) to 5 (high), nutrition ranked second (3.9) as a factor affecting the choice of a fast food, after taste (4.5) and was followed by convenience (3.5). In contrast, it was rated as the least likely to be important, or rated as only somewhat important (vs. taste, convenience and price), in the study by Harnack et al. (2008) to influence the choice of a fast food among young adults. Approximately half (58.2% in combination) of these respondents only, ranked it as either very important (20.8%), or somewhat important (37.4%). Similarly, in the

Oni and Matiza (2014:806) study, nutrition was not found to be a significant factor in influencing the choice of a fast food, where the majority (77.2%) of the respondents had no opinion (28.1%), strongly disagreed (25.5%) or disagreed (23.6%) that their fast food choice was influenced by the nutrition of the food.

The influence of nutrition on the choice of a fast food, however, was more appreciable when comparing genders. Driskell et al. (2006:527) found that only a small percentage of females (2%) indicated that they had never considered healthier fast food options versus a larger percentage of males (14%) indicating this consideration. Perceived healthfulness though of fast food was found to be non-related to fast food consumption in the study by Anderson et al. (2011). Lucan et al. (2010:633) found 'health or nutrition' to be the strongest barrier affecting fast food consumption.

2.1.5.6 Friends and family

Young adults identified social aspects as another influencing factor, when making a specific choice of a fast food (Brindal, 2010:104; Anderson et al., 2011; Seo et al., 2011:171; Cohen & Bhatia, 2012:622; Pelletier et al., 2014:148), predominantly eating with friends (Brindal, 2010:107; Seo et al., 2011:171; Pelletier et al., 2014:148) and family (Brindal, 2010:107; Pelletier et al., 2014:148). Eating occasions identified as promoting the consumption of fast food included special days (33.9%), or days when meeting friends (25.7%), as found by Seo et al. (2011:171). In support of this, Cohen and Bhatia (2012:621) reported that many social gatherings occur at restaurants, and that failing to attend these would lead to isolation from friends and family for these individuals.

Both Brindal (2010:107) and Pelletier (2014:148) investigated the influence of social networks in eating environments, presumably, because 'being more social' has been found to be associated with an increased consumption of fast food (Mohr et al., 2007:1461). Brindal (2010:107) found that individuals who ate with others spent a longer time eating than when eating alone. The researchers furthermore found that the actual 'who' present (i.e. friends, family, and significant other), as well as how much others in their social networks consumed, significantly influenced the amount eaten by young adults by positively influencing their intake. Just over three-quarters (78.4%) of young adults in this study reported consumption of fast food with others, i.e. with one other person (27.6%), groups of three (19.8%), four (17.2%) and larger (13.8%), with the highest proportion of individuals with whom young adults reported mostly consuming fast food, family, followed by friends. In the study by Seo et al. (2011:171), when asked 'with whom' students mostly consumed fast food, 'with friends' (61.6%) was cited as the group of individuals that was most influential of fast food consumption.

In the Brindal (2010:107) study, the perception of how much other individuals consumed in a fast food environment, was found to be a significant predictor of energy intake on a single eating occasion. In the study of Pelletier et al. (2014:148), where individuals perceived their family members as regular consumers of fast food, these individuals had also significantly increased their average intakes of these foods. Where the presence of family had a significant, positive relationship with quantity consumed, the presence of a partner had a positive, yet insignificant relationship. Individuals reportedly consumed fast food at a rate of 0.6 more days per week and also had higher average intakes of fast food, if they perceived their significant other to have higher intakes of fast food. Living arrangements however (i.e. living with friends, family, or a significant other) was not positively associated with fast food consumption.

2.1.5.7 Advertising and media messages

Research conducted by both Mohr et al. (2007:1461) and Deliens et al. (2014) found a positive association between individuals who were more exposed and receptive to advertising, and fast food consumption. However, while young adults in the U.S. identified advertisements as an influencing factor on fast food choice in the study by Driskell et al. (2006:526), it was not identified as a noteworthy influencer. In an early study by Fields (2004:A821), it was suggested that TV commercials, which are often seen as being persuasive, might be contributing towards unhealthy and sedentary lifestyles, resulting in an increase in body weight and, every so often, resulting in obesity. In the Deliens et al. (2014) study, the students were influenced to get something from their cupboards; primarily because they felt like the food being advertised, but also because they had seen it on TV. However, it is unknown whether the students would actually leave their residence to obtain the specific food being advertised.

On a more local level, Van Zyl et al. (2010:127) reported that media messages seemed to influence nearly half (49%) of the young adult respondents sometimes, if not always, in the purchase of fast food. When these respondents were asked to report on the influence that specific media messages had on promoting fast food purchases, the majority (80.6%) of them reported that TV announcements or advertisements most often resulted in purchasing of fast food, whereas very few (1.9%) were influenced by advertising via flyers or hand-outs.

2.1.6 Dietary and nutritional contribution of fast food

Consistently reported as being less nutritious than FAH, are FAFH (Todd et al., 2010:iii; Cohen & Bhatia, 2012:621). Among young adults, FAFH are an important contribution towards their dietary intake (Lachat et al., 2012:344; Lin & Guthrie, 2012:iii); supported by the Todd et al. (2010:iii) study findings, which indicated that a large percentage (42%) of Americans spent their budget on these foods. The consumption of these foods, and especially the fast food

consumption, which are predominantly high in fat, energy and salt, and lower in fruit and vegetables, iron, calcium and fibre (Cohen & Bhatia, 2012:621; Lachat et al., 2012:343), is associated with an unhealthy and less nutritious diet, as shown in numerous studies (Todd et al., 2010:i; Lachat et al., 2012:343; Jaworowska et al., 2013:312; Dominguez et al., 2014); thus, increasing the risk for diet-related chronic diseases (Hearst et al., 2013:589).

The consumption of fast food presents an obvious health risk, as common nutrients of public health concern have been identified as: excessive intakes of total fat, saturated fat, cholesterol and sodium; and low intakes of calcium, dietary fibre and iron; as well as the high energy contribution (USDA/USDHHS, 2010:4; Lin & Guthrie, 2012:1). Todd et al. (2010:iii), reported that most individuals do not consume enough fruits, vegetables and whole grains; and also too much saturated fat, sodium and added sugar. Fast food consumers also report less healthful diets outside of the fast food outlet and, as a result, are at an increased risk for developing weight gain and/or obesity (Poti et al., 2014:169).

2.1.6.1 Dietary contribution

Research shows an increased fast food consumption to be associated with meeting fewer of the dietary recommendations for the maintenance of optimum health. That is, a higher fast food consumption frequency is directly related to an increased prevalence of adopting a Westernised diet (Ambrosini et al., 2009:1811; Oddy et al., 2013:779; Poti et al., 2014:169). In the Moore et al. (2009:33) study, fast food consumers were found to have a 2-3 fold odds of having a nutritiously poorer diet.

More frequent consumption of FAFH is associated with a relatively higher intake of alcohol, soft drinks, red meat, processed meat, fast food and juice intakes (Bes-Rastrollo et al., 2010:1358) and a lower intake of fruits, vegetables, milk and milk products, legumes (Bes-Rastrollo et al., 2010:1358), and breads and cereals (Smith et al., 2009); further providing support that the consumption of fast food forms part of a Westernised diet. The increased prevalence of individuals adopting this diet has also been termed a 'nutrition transition'; defined by a diet that is lower in staple foods (characterised as being high in starch and dietary fibre), higher in foods derived from animal origin (which are typically high in total fat and saturated fat), lower in plant protein sources (i.e. legumes), higher in carbonated sweet- and alcoholic beverages, energy-dense snack-type foods, and higher levels of added sugar, fat and oil in food preparation (Vorster et al., 2011:430). A decrease in intakes of healthier foods such as legumes, coarse grains and vegetables, associated with this nutritional shift, has also been noted on a global level (Popkin et al., 2012:8). Thus, the nutrition transition is directly related to individuals moving towards a more

Westernised lifestyle, associated with poor dietary habits, and the habitual consumption of fast food (Seo et al., 2011:169; Poti et al., 2014:169).

According to Kirkpatrick et al. (2014:928), fast food restaurant offerings rate very poorly in relation to dietary guidance in health and wellness support. The researchers found that each fast food restaurant menu appraised in their study scored less than 50 points on the healthy eating index (HEI-500) out of a potential score of 100 (which would align perfectly with the dietary guidance in health and wellness support). Components scoring the lowest were: whole fruit, dark green and orange vegetables and legumes, whole grains, energy from solid fats and added sugars; and those scoring relatively well were total grains, meat and beans. In SA, Steyn et al. (2011) made use of the dietary diversity score (DDS) to calculate the dietary diversity (in alignment with the 9 major food groups) of individuals' diets after a 24-hour recall. Out of a possible DDS of 9 (which would indicate the consumption of food within the last 24 hours from each food group), individuals who reported a frequent consumption of fast food, were found to have a higher DDS (4.69 DDS) in comparison to those individuals reporting moderate (4.41 DDS) and infrequent (3.73 DDS) consumption, and significantly lower in comparison to street food consumption (3.81). This implies that there may be more dietary diversity among fast food consumers in comparison to street food consumers, and be as a result of fast food consumers being associated with a higher living standard measure (LSM) in the study, and therefore assumedly, an increased income available.

2.1.6.2 Nutritional contribution

Hearst et al. (2013:593) assessed the nutritional quality of the fast food offerings of eight of the major U.S. fast food outlets and found that overall, the nutritional quality of the fast food offerings were generally poorer than the diets of the U.S. population. Assessing 14-year trends of the fast food outlet offerings, the results showed that little improvements had been made to the fast food items offered and, in fact, although one of the major burger fast food outlets (Burger King) had decreased the proportion of meat, dairy and sodium, it had increased the proportion of energy from solid fats and added sugars. In 2009/2010, none of the fast food outlets achieved optimum HEI-500 scores for fruit, dark-green and orange vegetables and legumes, whole grains or sodium, with very few outlets being even close to achieving optimum scores for sodium.

While 'burger-and-fries' (i.e. 'traditional' fast food meals) are consistently reported throughout the fast food literature (Larson et al., 2011:1702), Krishnan et al. (2010:467) found burgers to be the highest consumed FAFH, with these fast food-types emerging as common foods evaluated throughout the fast food literature, and providing increased levels of nutrients of concern. Larson et al. (2011:1701) reported that an increased intake of total fat, saturated fat, energy and sodium

was associated with a higher frequency of burger-and-fries, as well as sandwich/sub outlet use. Furthermore, a higher prevalence of burger-and-fries food purchases was associated with an increased prevalence of overweight and obesity.

2.1.6.2.1 Energy and macronutrient concerns

Increased levels of energy intakes (Brindal, 2010:43; Todd et al., 2010:8; Cohen & Bhatia, 2012:621; Lachat et al., 2012:329; Powell et al., 2012:501) and fat and saturated fat intakes (Cohen & Bhatia, 2012:621; Lachat et al., 2012:343) are associated with FAFH, and specifically fast food. Bes-Rastrello et al. (2010:1358) found that more frequent consumption of FAFH was associated with lower intakes of monounsaturated fats and fibre and relatively higher intakes of trans fats, found to be present predominantly in takeaway and fast food and, more specifically, French fries and deep-fried meats, according to Jaworowska et al. (2013:315). Furthermore, the increased proportion of energy (13.5%) obtained through saturated fat contained in fast food, is of notable mention. Lin and Guthrie (2012:iv) found that FAFH, and especially fast food, contains a low 6.8 g of dietary fibre per 1 000 kcal (4 200 kJ), in comparison to FAH (7.7 g/1 000 kcal [4 200 kJ]). Despite their high contributory amounts of both energy and fat however, fast food has also shown to contribute towards an adequate intake of protein and CHO (Krishnan et al., 2010:468).

i. Energy

In the recent New Zealand study by Smith et al. (2013:2372), among young adults between the age of 19 and 30 years, the daily energy contribution from QSR purchases was around 8.7%. Mancino et al. (2009:560) and Todd et al. (2010:8) found similar findings in their studies regarding energy contributions from FAFH. Between the studies, FAFH contributed an estimated 130 to 134 kcal (546 to 563 kJ) towards the total daily energy intake of the average adult, which equates to around an average of 6.6% of the average adult Daily Value (DV) for energy of 2 000 kcal (8 400 kJ) (Sizer & Whitney, 2014:54). Both studies found lunch (158 kcal/664 kJ) and dinner (144 kcal/605 kJ) to contribute the largest proportion of energy; followed by snacks (107 kcal/449 kJ) and breakfast (74 kcal/311 kJ) (Todd et al., 2010:8).

Drewnowski and Rehm (2013), in using the National Health and Examination Survey (NHANES) 2003-2008 data, found that QSR purchases accounted for at least 15.9% of total energy intakes among adults in the U.S. between the age of 20 and 50 years, an amount more than double the values reported in the previous two studies, with the majority of the energy intakes across all FAFH categories (i.e. store, QSR and full service restaurants) contributed by soda, energy and sports drinks (6.8%), yeast breads (6.1%), chicken and chicken mixed dishes (6%), grain-based desserts (5.5%) and alcoholic beverages (5.3%). Under the QSR sector specifically, the largest fast food contributors of food energy per portion size were: pizza (63

kcal/265 kJ) (DV: 3.1%), chicken and chicken mixed dishes (50 kcal/210 kJ) (DV: 2.5%), Mexican mixed dishes (36 kcal/151 kJ) (DV: 1.8%), burgers (35 kcal/147 kJ) (DV: 1.7%); fried white potatoes (32 kcal/134 kJ) (DV: 1.6%), and soda, energy and sports drinks (25 kcal/105 kJ) (DV: 1.2%). Surprising here, is the low energy contribution of a burger in comparison to the study by Dunford et al. (2010:486), which found burgers (219 g portion size on average) to be the largest contributor of energy (2 185 kJ), which equates to about 26% of the DV.

ii. Total fat

Daily guidelines for fat consumption recommend that less than one-third (30%) of energy be derived from fat (Dietary Guidelines for Americans, 2010:15). Fast food energy values show a large contribution range throughout the fast food literature; from as low as less than 10% (Todd et al., 2010:8) to as high as 40% and greater (Brindal, 2010:43; Powell et al., 2012:501) contribution towards an energy requirement of 8 400 kJ (Brindal et al., 2008:113). Lachat et al. (2012:340) reported that FAFH provide a high-energy contribution from fat and saturated fat.

Although the majority of the fast food literature around energy and fat contribution is focused on burger-and-fries, these macronutrient intakes of concern are not limited to these foods alone. In the Krishnan et al. (2010:470) study involving a large adult African American women sample, intakes of total fat were significantly higher among the individuals when eating FAFH at least once per week, regardless of the types of foods being consumed (i.e. burgers, fried chicken, fried fish, Chinese food, pizza, Mexican food), in comparison to when eating FAH. Fats have been found to add flavour to foods that therefore cause foods to be highly palatable and as such, to be over-consumed (Popkin et al., 2012:8). According to Jaworowska et al. (2013:312), the high proportion of fat intakes associated with fast food consumption, may be a factor contributing towards the development of obesity, independent of total energy intake. A diet high in fat, particularly one rich in saturated fat, may not only lead to a higher risk of developing obesity, but may also have other adverse health risks (Jaworowska et al., 2013:312), such as diabetes (Krishnan et al., 2010:468).

2.1.6.2.2 Micronutrient concerns

The low levels of micronutrients among popular fast food items have been reported as being of particular concern (Van Zyl et al., 2010:147; Feeley et al., 2011:199), mainly because the diets of individuals have been reported to be low in important micronutrients (Labadarios et al., 2008:253; Steyn et al., 2012). Those of notable interest that appear within the fast food literature are low or deficient levels of calcium and iron (USDA/USDHHS, 2010:3; Cohen & Bhatia, 2012:621; Lachat et al., 2012:343) alongside increased levels of sodium (Dunford et al., 2010:486; USDA/USDHHS, 2010:45; Feeley et al., 2011:199; Cohen & Bhatia, 2012:621; Lachat et al.,

2012:343). Lin and Guthrie (2012:1) emphasised the reduction of the intake of energy and total fat as a major focus of dietary advice as well as the need to increase calcium intake.

i. Calcium

Among FAFH consumers, low calcium intakes are a public health concern (USDA/USDHHS, 2010:3), although age groups of particular concern are predominantly children, adolescent girls, adult woman, and adults over the age of 55 years (USDA/USDHHS, 2010:41). Lin and Guthrie (2012:iii) calculated the calcium density per 1 000 kcal (4 200 kJ) in fast food to be between 452 and 460 mg, which is considerably lower than the recommended intake of 1 000 mg calcium per day for young adults (USDA/USDHHS, 2010:76). Larson et al. (2011:1701) found that among young adults, calcium intakes decreased with an increased consumption of burger-and-fries. That is between consumers who consumed burger-and-fries at a frequency of less than once per week, to consumers who consumed it at a frequency of at least three times per week, calcium intakes decreased from 1 048 mg to 951 mg per day. Similarly, among young adults, Cooke and Papadaki (2014:300) found that almost all of the respondents in their study failed to meet the recommendations for calcium intakes.

ii. Iron

Like calcium, low intakes of iron are a public health concern (USDA/USDHHS, 2010:40), especially among adolescent girls and adult women. While the majority of individuals reportedly consume the recommended intakes of iron in their diets, these age groups report the lowest intakes (USDA/USDHHS, 2010:41). The RDA for iron is 18 mg and 8 mg for young adult females and males, respectively (USDA/USDHHS, 2010:76). Refined grains, common in fast food, are notably low in iron. This is because the processing of this food removes important vitamins, iron and dietary fibre. However, most refined grains are enriched, whereby important nutrients such as iron are added back (USDA/USDHHS, 2010:36).

The iron densities of both restaurant and fast food, has shown an appreciable improvement over time, with restaurant foods in particular having higher iron density levels than fast food. Although not mentioned why, it can be surmised that as the foods served at these establishments are known to be higher in refined grains, and as refined grains are mostly enriched with iron (among other important vitamins and minerals) (USDA/USDHHS, 2010:29), that this may result in these foods being higher in iron.

iii. Sodium

In contrast to low intakes of calcium and iron, high intakes of sodium is a public health concern as it is generally consumed way in excess (Henney et al., 2010:119; USDA/USDHHS, 2010:x), in

comparison to recommendations of reducing sodium intakes to less than 1 500 mg per day among adults (USDA/USDHHS, 2010:x). Henney et al. (2010:124) found that individuals in the U.S., consume around 3 400 mg of sodium (approximately 8.5 g, or 1.5 teaspoons of salt) on a daily basis. According to the American Heart Association (n.d.), the consumption of processed and restaurant foods contribute the greatest amount of sodium to the diet. The majority of dietary sodium is consumed as salt (or sodium chloride) and is found as an ingredient in many foods, and is predominantly found in processed foods (Henney et al., 2010:119; USDA/USDHHS, 2010:21). Processed foods, over time, have been shown to contribute the primary source of excessive salt intake in the diets of individuals (Webster et al., 2010:413; Henney et al., 2010:119; USDA/USDHHS, 2010:21), with meat and meat products in the processed food category having the highest contribution, approximately 864 mg per 100 g (Webster et al., 2010:413).

Fast food has been implicated to be high contributors to the dietary sodium intake (Lin & Guthrie, 2012:iii; American Heart Association, n.d.). In support of this, the USDA/USDHHS (2010:x) recommends limiting the consumption of foods containing refined grains containing solid fats, added sugar and sodium. Nutrient-dense foods are also low in sodium (USDA/USDHHS, 2010:5), and energy intake is further associated with sodium intake. Therefore, the more food and beverages consumed, the more sodium is consumed (USDA/USDHHS, 2010:23). Lin and Guthrie (2012:iii) calculated FAFH to contain around 1 820 mg of sodium per 1 000 kcal (4 200 kJ). Furthermore, fast food were particularly sodium dense, containing around 1 864 mg sodium per 1 000 kcal (4 200 kJ). In the Australian study by Dunford et al. (2010:486), chicken items were found to be the highest contributors of sodium per 100 g of food (at 583 mg), followed by pizza (at 573 mg) and burgers (at 520 mg), However, when considering the sodium contribution per portion size, as for the macronutrient contributions, burgers contributed the highest amount (at 1 118 mg/219 g portion size).

2.1.6.2.3 The 'traditional' fast food meal concerns

'Burger-and-fries' have consistently throughout the fast food literature, emerged as large contributors to both dietary energy and fat intakes. These two items are also often sold together at fast food establishments in the form of a 'meal deal' (typically, a burger, a side order [predominantly fried chips or fries], and a drink [often a soft drink]) (Brindal, 2010:30). Brindal (2010:10) also referred to these items as being 'traditional' fast food items, supported by both Driskell et al. (2006:525) and Dunn et al. (2008:332) in earlier studies; thus, a 'traditional fast food meal' usually comprises a burger, chips and a soft drink (Brindal, 2010:41). In this respect, the researchers reported that a medium Big Mac meal (306 g total), food only, from McDonalds (including a burger [201 g] and medium French fries [105 g]), provided around 38.9% of the

average adult energy requirement. In addition, the meals contributed about 37% of the adult recommended dietary allowances (RDAs) for CHO, and 30% for protein. Feeley et al. (2009:121) found similar findings where the McDonalds Big Mac meal equated to around 331 g and contributing per serve: 3 440 kJ energy, 35.6 g (10.8 g/100 g) total fat, 12.9 g (3.5 g/100 g) saturated fat, 90.6 g (27.4 g/100 g) CHO, 31.7 g (9.6 g/100 g) protein and 9.6 g (2.9 g/100 g) dietary fibre.

In an earlier collaborative study, Brindal et al. (2008:113) reported that, on average, a 'traditional fast food meal' contributes approximately half (47.5%) of an adult requirement of 8 400 kJ for energy. Similarly, Powell et al. (2012:501) revealed that among adults consuming fast food in the United Kingdom (U.K.), the daily energy contribution of these foods averaged 877 kcal (3 683 kJ), which also equates to approximately half of an adult requirement for energy. In the Dunford et al. (2010:486) study, in which the nutrient content of fast food categories were compared, on average, burgers were found to contribute moderate levels of total fat (11.7 g), saturated fat (3.9 g) and sodium (520 mg). Per serving (219 g on average), they were found to be the largest contributors of energy (2 185 kJ) and total fat (26.2 g) and contributed on average, 8.6 g saturated fat, 1 118 mg of sodium, and 7.4 g sugar. In addition, throughout the analysis, near one-quarter (22%) of the burgers were found to be high in saturated fat, a large proportion (> 90%) were found to be low in sugar, and none were found to be low in sodium. Similarly, Feeley et al. (2011:201), in their study of the informal fast food intakes within the rural population of SA, found fried chips (469 g on average) to provide the largest contribution of the macronutrients: fat (69 g), protein (20.2 g), and CHO (164.4 g). Per 100 g, this equated to around 14.7 g fat, 4.4 g protein and 35 g CHO. Its energy contribution was also the second highest (after the 'kota'/'quarter'), contributing 5 987 kJ (per 469 g average portion size) or 1 276.5 kJ per 100 g.

2.1.7 Nutritional health impact of fast food consumption

Chopra et al. (2002:952) in an early study, identified that the nutritional transition towards the more Westernised dietary pattern, is a large contributor towards the current worldwide epidemics of obesity, diabetes, CVD and other health-related diseases. This Westernised dietary pattern has been associated with many nutritional health implications (Vorster et al., 2011:430). Increased fat (Lachat et al., 2012:340; Lin & Guthrie, 2012:13; Jaworowska et al., 2013:312), saturated fat (Cohen & Bhatia, 2012:621; Lachat et al., 2012:343), and energy intakes (Todd et al., 2010:8; Brindal, 2010:43; Cohen & Bhatia, 2012:621; Lachat et al., 2012:329; Powell et al., 2012:501), common among FAFH and especially fast food consumers, has been associated with an increased risk of weight gain and obesity (Poti et al., 2014:169), Type 2 diabetes (Ayranci et al., 2010:772; Krishnan et al., 2010:468; Dominquez et al., 2014), and other health-related

consequences, such as CVD, hypertension, osteoporosis, and various types of cancer (Ayranci et al., 2010:772).

A poor diet, together with physical inactivity, are the two most important lifestyle-associated risk factors contributing towards overweight and obesity, according to the USDA/USDHHS (2010:1). However, these factors not only lead to obesity, but also to the development of other health-related consequences, such as CVD, hypertension, Type 2 diabetes, osteoporosis, and various types of cancer (Ayranci et al., 2010:772; Popkin, 2011:231; Vorster et al., 2011:430; De Vogli et al., 2014:104). Fast food consumption specifically, is independently and positively associated with an increase in mean BMI; a strong risk factor for the development of Type 2 diabetes (Krishnan et al., 2010:468). Krishnan et al. (2010:468) reported that fast food establishments commonly serve the types of food predominantly associated with the development of diabetes. The researchers reported that an increase in the consumption frequency of burgers, as well as fried chicken, was found to be associated with an increased risk of developing Type 2 diabetes.

The consumption of FAFH, and specifically the consumption of fast food, is often linked to an increased risk of becoming overweight and ultimately, developing obesity. Research shows a positive association between the consumption of FAFH, specifically fast food and an increased BMI. According to Bezerra et al. (2012:77), the consumption of FAFH has increased in its frequency over the last couple of decades and is a crucial risk factor towards weight gain, although available data on the association between FAFH and obesity according to the researchers (Bezerra et al., 2012:65) are fairly weak and inconclusive. In an earlier review investigating the relationship between fast food and obesity by Rosenheck (2008:546), the researcher established, “findings from observational studies as yet are unable to demonstrate a causal link between fast food consumption and weight gain or obesity.” The study by Stender et al. (2007:887) was reportedly the first long-term study recording that individuals who exposed themselves frequently to fast food consumption are at an increased risk of progressive weight gain and developing Type 2 diabetes. Shroder et al. (2007:1276), however, found a significant direct relationship between an increased frequency of fast food consumption and the development of obesity. That is, the consumption of fast food at a rate of greater than once per week increased the risk of developing obesity by 129%. Following this, the study by Smith et al. (2009) became the first study of its kind reportedly to show that young adults with an increased frequency of takeaway consumption have a somewhat higher prevalence of being overweight and obese, although significant associations between the genders differed. That is, where women reporting consumption of fast food of at least twice per week in the study were found to have a higher and significant prevalence of being overweight or obese ($\geq 25 \text{ kg/m}^2$), for men, the same

association was found, yet only evident at the higher level of obesity ($\geq 30 \text{ kg/m}^2$) and the association was not significant.

Brindal (2010:45) reported that as the consumption of traditional fast food meals increase, so does body weight and therefore, ultimately, the tendency to develop obesity. Similarly, Krishnan et al. (2010:468) found the odds of an increased BMI between those reporting a high consumption frequency in comparison to those reporting a low frequency to be highest for the consumption of fried chicken, followed by burgers, fried fish and Chinese food, among African American women. Similarly, in the student study by Bes-Rastrollo et al. (2010:1358), an increased frequency of eating FAFH was significantly associated with an increased body weight gain and increased risk of becoming overweight or obese during an average 4.4-year follow-up. These individuals were also more likely to have an increased baseline weight and BMI. These results were consistent with the study by Anderson et al. (2011), which found that individuals consuming fast food at a higher frequency (≥ 3 times per week) were at higher odds (81%) of becoming obese than individuals consuming fast food at a lower frequency (2-3 times per week) (60%).

In SA, there is very little published data on the impact that fast food consumption has on the incidence of overweight and obesity (Steyn et al., 2011). International studies (Brindal, 2010:31; Todd et al., 2010:15; Larson et al., 2011:1703) have proven the relationship, though, between fast food consumption and overweight and obesity. Fast food consumers reportedly have a slightly higher and statistically significant odd of being overweight than those who are non-consumers (Vorster et al., 2011:432; WHO, 2014:79). Feeley et al. (2011:200) reported that SA has experienced an increase in overweight and obesity in both its urban and rural areas, with an earlier study by Steyn et al. (2000:59) finding both to be elevated among black South African women. This increase in SA, is supported by BMI results reported globally, reflecting increased incidences of overweight and obese individuals as reported by the WHO (2014:206), where the percentage of overweight individuals (for both genders), increased from 48.3% to 50.7%, and from 22.8% to 24.1% for obese individuals, from 2010 to 2014 respectively. Subsequently, individuals are placed at a greater risk for developing the above referred-to health-related consequences. Both overweight and obesity have also been estimated to contribute towards 3.4 million deaths annually (WHO, 2014:79).

2.1.8 Factors contributing to the dietary contribution and nutritional health impact of fast food consumption

The common 'bigger is better' theme has led to the well-known 'supersize' phenomenon in food and meal provision; a term coined in much earlier years by Young and Nestle (1995:150). The larger portion sizes available to customers (commonly known as the 'supersize' phenomenon),

and packaging of fast food to accommodate this, have been criticised for contributing towards body weight gain and obesity by promoting excess food intake among individuals. Alongside this, the ‘upsizing’ and ‘meal deal’ concepts are common themes found throughout many fast food franchises (Brindal, 2010:73). These concepts are designed to be attractive in their offerings to customers by selling more food for less money - a concept often referred to as ‘value’ marketing (Cameron-Smith et al., 2002:686), where customers are attracted to the idea of getting more value for their money. The low pricing structure set for fast food makes them affordable in their offerings, which additionally increases their attractiveness to customers, as customers are able to ‘upsized’ their meal deals at a minimal cost. According to Anderson et al. (2011), regular consumption of fast food is associated with ordering of meal packages and super-size options.

2.1.8.1 Portion size

According to Benton (2015:988), an array of factors will influence the size of the ‘portion size’, defined as the “actual food put on your plate”, chosen. Among others, these predominantly include: “packaging, labelling, advertising, and the unit size, rather than the actual portion size of the food item”. “Supersizing”, a term commonly cited throughout the fast food literature, is not a new marketing strategy employed by fast food establishments to promote the increased consumption of fast food. While most of the literature around fast food portion sizes dates back to much earlier years (i.e. late 90’s to early 2000s’s), a few more recent studies (Duffey & Popkin, 2011; Dubois et al., 2012:1051; Zlatevska et al., 2014:140) have highlighted the effects of this “super-size” or “supersizing” phenomenon on the choice of fast food by consumers.

Increasing portion sizes, and particularly supersizing, has been identified as one of the major causes of the rising rates of obesity among fast food consumers (Krishnan et al., 2010:470; Chandon & Wansink, 2011:11); for one, because an increase in portion size (Zlatevska et al., 2014:142) as well as packaging size (Rolls et al., 2004:68) has been confirmed to consistently increase consumption. Benton (2015:999) refers to this phenomenon as “portion distortion”, which is defined as “a tendency to see a larger portion as normal and desirable”. Fast food industries therefore have seemingly capitalised on this “portion distortion” through the “supersizing” phenomenon, by offering a range of portion sizes in such a way that the consumer has the option to choose, albeit the consumer actually receives less value when opting for a smaller portion size. Increased portion size also has been shown to contribute towards obesity, due to contributing increased energy intakes (Krishnan et al., 2010:470; Duffey & Popkin, 2011), which in turn, leads to weight gain and ultimately, obesity (Krishnan et al., 2010:470). Again, this may be as a result of “portion distortion”, as this mechanism has proven that when more food is offered, more food is eaten (Benton, 2015:999). Rolls et al. (2002:1210) found that individuals

consumed close to one-third (30%) more food and energy (99 g and 676 kJ, respectively) when served the largest-serving size, versus when being served the smallest-serving size available.

In addition to increased energy intakes, larger portion sizes also mean a higher intake of both saturated fat and sodium levels, common among fast food (Brindal, 2010:113), with their resulting health risks relating to increased cholesterol levels and hypertension, and thus an increased risk of CVD (Edelman & Mandle, 2005:23). Dubois et al. (2012:1051) found that consumers may opt for the largest-sized fast food option as they associated these sizes with 'status', especially when presented in a hierarchical formation (i.e. small, medium and large). Thus, choosing a larger-sized option was a marker for status, and individuals ultimately, desire status, according to the researchers' findings. This study by Dubois et al. (2012:1051) provided further support for the common "bigger is better" theme associated with fast food consumption, promoting an increased consumption of fast food. Brindal (2010:75) also observed that labelling meals according to their common 'small', 'medium' and 'large' size, allowed individuals to order portion sizes that match the norms of the people surrounding them, thereby forming a common social group that may provide further support around the effects of social influences on consumer fast food purchases.

Fast food portion sizes have consistently increased over the years (Young & Nestle, 2002:247; Nielsen and Popkin, 2003:452; Stender et al., 2007:888; Urban et al., 2014). In a much earlier study by Nielsen and Popkin (2003:452), documenting the changes in portion sizes over the previous two decades (i.e. between 1977 and 1996), fast food portion sizes had already increased by 18% for hamburgers, 57% for French fries and 62% for soft drinks since the earlier years; equating to average portion sizes of 17.7 ounces (oz.) (502 g), 3.3 oz. (94 g) and 7.2 oz. (204 g) by 1996, respectively. Urban et al. (2014) in a more recent study in the U.S. between 1996 and 2013, confirmed this trend of increased portion size over time, where they found that between 1998 and 2006, fast food establishments minimised the 'spotlight' on increasing portion sizes by reassigning portion sizes among popular fast food items (e.g. by reassigning 'medium' portion sizes as 'small'). Similarly, where the original McDonald's burger, fries and 340 g (12 oz.) Coca-Cola provided 590 kcal (2 478 kJ), half a century later, a super-size value meal that includes a 'Quarter Pounder with Cheese', together with both fries and Coca-Cola, both as super-size portions, contributes an energy amount almost double, at 1 550 kcal (6 510 kJ) to the original (Centre for Science in the Public Research, 2003:11). In the study by Urban et al. (2014), the researchers investigated fast food items (cheeseburgers, French fries, grilled chicken sandwich, and a regular cola) among three national fast food chains. Their findings showed that by 2013, the sodium content of a large bundled meal (cheeseburger, French fries and a regular cola), represented between 97% and 139% of the reference intake of 1 500 mg sodium per day.

2.1.8.2 Affordability

The lower pricing of fast food has consistently shown to drive an increased consumption of fast food. According to Popkin et al. (2012:10), fast food is considered relatively cheap, which in turn, increases the popularity. In addition, the higher pricing of healthier food alternatives is a deterrent for consumers to be able to opt for healthier food choices. In the early study by Bowman and Vinyard (2004:163), traditional fast food in the line of burgers, nuggets and fries proved to be cheaper in comparison to healthier food choices, in that these foods were identified as being “relatively inexpensive for the amount of food gained”, thus supporting the inference that a lower food cost is linked to making less healthy food choices (Burton et al., 2009:260; Mulvaney-Day, 2012:359).

Temple and Steyn (2011:506), in their study around the cost of a healthy diet in SA, found that in SA, and especially in the Western Cape, healthier food-types (represented in the study as: lean hamburgers, fat-free milk, bran flakes, margarine or a lower-fat spread, brown rice and whole-wheat bread) were predominantly and consistently more expensive than less healthy food-types (represented in the study as: high-fat hamburgers, white rice and white bread, corn flakes, full-cream milk, brick margarine). Comparing these food-types by their weights (i.e. Rands spent/100 g), healthier food-types in comparison were typically 10% to 60% more expensive. On average, the researchers found that adopting a healthier diet in SA, costs around two-thirds (69%) more. For a family of five, this amounts to around 36 or 1 080 more Rands spent per day or month, respectively. This means that for the majority of South Africans this increased expenditure (R1 080/month) represents more than half (57%) of their total household income.

Early research conducted by Cameron-Smith et al. (2002:686) found that the cost difference was minimal between different portion and meal sizes at leading fast food franchises. That is, on average, for only a 12% increase in purchase cost, the consumer was able to purchase the next meal size up (a phenomenon known as ‘upsizing’). Although the meal size increase came at a minimal cost, the dietary contribution came at a much higher cost where, on average, the energy availability was increased by 23%, in combination with a 25% increase in fat (10.3 g) and 38% in sugar (18.8 g) availability. For example, increasing the size of McDonald’s Big Mac McValue meals to medium (10.1% cost increase) and large (20.2% cost increase), contributed a significant increase in the content of the meal energy (17.8% and 39.5%, respectively), fat (16.2% and 33.1%, respectively), and sugar (34.1% and 80.7%, respectively) (Cameron-Smith et al., 2002:686).

The low pricing models of fast food has also previously been blamed for the higher obesity rates (Fields, 2004:A822). According to the researcher Fields (2004:A822), the declining price of staples such as corn, wheat and soybeans, as well as the low price of high-fructose corn syrups,

hydrogenated fats, and corn-fed meats, means that FAFH have decreased in price because, according to the researcher, “the cheapest way to make food taste good is to add sugar and fat”. As a result, the lowered price of FAFH (represented as red meat (corn-fed), products loaded with fat and sugar, and fast food), may account for at least half of the increase in the obesity rates observed. The simplest explanation for this is that when people are confronted with cheaper foods, they eat more and, ultimately, weigh more, if these foods represent the products considered ‘fattening food’ (Fields, 2004:A822).

2.1.8.3 Meal deals

Considering that the literature around meal deals is rather dated, ‘meal deal’ strategies offered at fast food establishments are not a new concept. Marketing research established that consumers generally want to eat meals that are more substantial, as opposed to consuming just a main dish (Vermeer et al., 2009:74). Thus, fast food restaurants are popular for serving ‘traditional’ meal types (Brindal, 2010:30); presented as a ‘value’ (NANA, 2002:1; Vermeer et al., 2009:74) or ‘combo’ meal; a technique termed ‘bundling’, through point-of-purchase presentations and verbal sales prompts (NANA, 2002:1). This marketing strategy is often employed in combination with the ‘upsizing’ strategy (Cameron-Smith et al., 2002:686), where consumers are encouraged to combine their main orders (usually a burger or chicken item) with a soft drink and a side order (mainly French fries) (Cameron-Smith et al., 2002:686; Brindal, 2010:30), for a minimal extra cost (Cameron-Smith et al., 2002:686). This consequential complete-meal marketing technique, promotes an increased intake, as it appeals to customers’ desires for a ‘good deal’ (Vermeer et al., 2009:74). Fast food bundling, however, generally leads consumers toward energy-dense and lower nutrient content foods, rather than towards healthier options such as salads or yoghurts (NANA, 2002:1). By employing this strategy, the energy gain is often doubled relative to the additional cost. In addition, the excess amounts of both sugar and fat that are gained through this strategy, predominantly contributes ‘empty calories’ to the diet, and provides minimal nutritional gain at a risk of body weight gain (Cameron-Smith et al., 2002:686).

2.1.8.4 Availability

An association between fast food availability and its likelihood for consumer weight gain has been reported among studies (Dunn et al., 2012:9; Reitzel et al., 2014:114), but with varying inducements. Dunn et al. (2012:9), in their investigation of fast food availability on fast food consumption and obesity among white and non-white rural residents, found that a greater availability of fast food close to the homes of the white individuals did not increase their probability of consumption, or their obesity risk. However, the reverse was true for the non-white individuals. An increased availability for these individuals was positively linked to their

amount of fast food meals eaten, as well as their risk of developing obesity. As an explanation for this, the researchers concluded that this might be as a result of differences in economic resources, as well as geographies in the daily lives between these racial/ethnic groups (Dunn et al., 2012:9). In the study of Reitzel et al. (2014:114), the density of fast food establishments around participants' residences was not significantly associated with their BMI. However, closer proximity to the closest fast food outlet was associated with a higher BMI (Reitzel et al., 2014:114). In contrast, Richardson et al. (2011) found that neighbourhood fast food availability was not related to fast food consumption in their large, national young adult sample that inhabited neighbourhoods throughout the U.S. The researchers suggested that, based on their findings, targeting neighborhood fast food availability may not be a suitable course of action to reduce fast food consumption or obesity among young U.S. adults.

2.1.9 Section summary

In view of the literature, FAFH and especially fast food, have become increasingly popular over time both on an international level (especially in the U.S.) and in SA, with expenditures, and a reliance on these foods to feed individuals and their families, increasing steadily over time. This increased reliance on fast food, is mainly due to its convenience – in that it's quick in its delivery - and driven mainly by time constraints and promoted by availability. Other factors influencing an increased consumption of fast food include the preference for such food, taste and flavour demands by consumers being met, satisfying of hunger or cravings, lower price point, purchasing influence of friends and family, and advertising and media messages. As these foods are frequently associated with poor dietary quality and a more Westernised dietary pattern (higher intakes of energy, fat, saturated fat, refined sugar and salt; and lower intakes of fruit, vegetables, iron, calcium and fibre), the consumption trend towards an increased intake of these foods (included within the dubbed 'nutrition transition'), presents an obvious health risk, associated in the main with overweight, obesity, diabetes and CVD. Strategies employed by fast food industries (i.e. 'supersizing', upsizing, meal deals and lower pricing structures) furthermore, promoting excess food intake among individuals, makes the increased consumption of these foods a public health concern.

While fast food over the years has evolved to encompass a wider range of foods available, the consumption of these foods are commonly associated with an increased consumption of hamburgers, French fries and soft drinks (in combination, referred to as a traditional fast food meal), with burgers dominating the U.S. fast food industry, especially among young adults over the age of 20 years. In SA, literature regarding fast food consumption trends is still scarce, with no studies published thus far in the Western Cape region. One study conducted in the Johannesburg region (Van Zyl et al., 2010:126) found fast food to be greatly consumed among

young adults across all SEGs, with high frequencies of weekly consumption patterns reported of predominantly burgers, pizza and fried chicken. Consumer characteristics predominantly associated with frequent fast food consumption are younger age, male gender, lack of physical activity, smoking, alcohol consumption, a lowered health-consciousness and increased body weight status. Although associations have been found between race and ethnicity, SES and family status, and fast food consumption respectively, the associations are varying and sometimes even conflicting throughout the literature.

2.2 Nutritional information provision on fast food

The second theme explored in this chapter, the nutritional information provision on fast food, considers the influence of nutritional information provision on the purchase of fast food, with specific focus on the energy provision; the consumer utilisation of nutritional information on fast food; the predictors of both frequent and infrequent user utilisation of nutritional information; and lastly, international and national standards around regulatory guidelines and industry practices around the display of nutritional information on fast food and at fast food establishments.

2.2.1 Introduction

A positive association has been found between nutritional label use and healthier dietary intakes (Ollberding et al., 2010:1234; Campos et al., 2011:1502; Graham & Laska, 2012:419; Cooke & Papadaki, 2014:300). Ollberding et al. (2010:1234) found that nutritional information users reported lower total energy, fat, saturated fat and sugar intakes. More specifically, the user characteristics nutritional knowledge (Hess et al., 2011:411; Graham & Laska, 2012:418; Cooke & Papadaki, 2014:300) and health-consciousness (Hess et al., 2011:411; Graham & Laska, 2012:418; Ellison et al., 2013) has been largely associated with an increased utilisation of nutritional labels, and consequently healthier dietary intakes (Grunert et al., 2010:10; Cooke & Papadaki, 2014:300). In support of this, Burton et al. (2009:270) found that fast food consumers are generally quite poor at estimating the actual levels of fat, sodium and energy of fast food outlet offerings, particularly for food items that are energy-dense and poor in nutrient content. Research also confirms that there is a demand for intervention mechanisms to assist young adults, who are habitual consumers of fast food, to choose healthier food options (Todd et al., 2010:10; Larson et al., 2011:1702); especially for individuals who are more mindful of eating healthier, or trying to lose weight (Todd et al., 2010:10). In addition, Larson et al. (2011:1702) reported that there is a definite need for messages associated with healthy eating behaviours and the use of fast food outlets, particularly those serving foods with high fat and sodium contents, which are, primarily, those that serve burgers and French fries or sandwiches/subs.

Traditionally, nutritional information provision at fast food outlets has not been mandatory, and the usual trend followed by these outlets therefore, has been one based on a 'right-to-know' premise, as part of a consumer product-labelling regulatory practice (Cohen & Bhatia, 2012:622). In SA specifically, nutritional information provision on a food product is only mandatory when a health claim is made for the product (SA DOH, 2010:29). However, in 2010, the U.S. government legislated a menu-labelling law that required all chain restaurants to provide the energy information for all menu items (Ellison et al., 2013). This nutritional information provision was promoted to address the limited knowledge of consumers regarding the nutrient content of fast food (Cohen & Bhatia, 2012:622). It was unknown however whether this nutritional information provision would, in fact, foresee a lowered consumption of energy-dense foods, predominant at fast food outlets (Ellison et al., 2013). As a result, numerous U.S. studies (Elbel et al., 2009:w1117; Roberto et al., 2010:314; Dumanovsky et al., 2011; Dowray et al., 2013:177; Ellison et al., 2013; Morley et al., 2013:8), have investigated the effects of energy provision at point-of-purchase at fast food outlets on the purchase of fast food.

2.2.2 Influence of energy provision on the consumer choice of fast food

To date, there is limited literature available on the influence of extended nutritional information provision on the choice of a fast food, presumably because only the energy information provision of fast food outlet items are now mandatory in the U.S. (Ellison et al., 2013). Numerous studies (Elbel et al., 2009:w1117; Roberto et al., 2010:314; Dumanovsky et al., 2011; Dowray et al., 2013:177; Ellison et al., 2013; Morley et al., 2013:8) have as a result, investigated the influence of energy provision on the choice of a FAFH (both from restaurant and fast food outlets) by consumers. In the majority of the studies, energy content is seemingly the most influential nutritional information feature influencing consumers' food choice of a less energy-dense meal (Roberto et al., 2010:316; Dowray et al., 2013:177; Morley et al., 2013:14); and it was also shown to positively influence a reduced purchase of energy-dense foods (Roberto et al., 2010:316; Dumanovsky et al., 2011; Brissette et al., 2013:406; Dowray et al., 2013:177). A small number of studies on the other hand, have found energy provision to have very little or no effect, on the choice of a fast food by consumers (Elbel et al., 2009:w1117; Ellison et al., 2013).

According to Cohen and Bhatia (2012:622), in theory, if consumers are aware of the energy content of foods offered at these establishments, then they may be able to make healthier food choices. This theory was supported by the Martinez et al. (2012:321) study, in which the majority of the students indicated being influenced mostly by the energy (72%) provision, followed by the ingredient information (55%), and the fat content (50%) provision. In addition, near half (48%), reported using the nutritional information to assist them in selecting lower energy foods, or healthier meal options. Dumanovsky et al. (2011) reported a much lower proportion of adult

individuals (15%) reporting utilisation of energy provision in the selection of their lunchtime purchases at fast food outlets. However, of the respondents who did make use of this information, on average, far less energy (130 kcal/546 kJ) was consumed by the purchase made. Similarly, Brissette et al. (2013:406) found a similar proportion (18.3%) of adult fast food consumers reporting energy provision utilisation at fast food outlets. Consumers who always considered the energy provision when making their fast food choice were also generally found to purchase fewer energy-dense items (Roberto et al., 2010:316, Dumanovsky et al., 2011, Brissette et al., 2013:406; Dowray et al., 2013:177), purchase no beverages (Dumanovsky et al., 2011; Brissette et al., 2013:406), and only ordered a small portion of, or no, fries (Brissette et al., 2013:406).

In the study by Roberto et al. (2010:316), respondents were presented with dinner menus containing the following: the energy information, the energy information and the requirement for energy, and no energy information. The combined total of respondents in the energy information provision sample ordered foods that were 14% less in energy than the respondents ordering foods where no energy information was provided. On average, consumers in the first and second groups also consumed 124 kcal (521 kJ) and 203 kcal (853 kJ) less respectively, than those respondents who were not provided with the energy information. Dowray et al. (2013:177), conducted a similar study where a significant difference (9% less) was found in the mean energy content ordered before (1 020 kcal/4 268 kJ) and after (927 kcal/3 879 kJ) the presentation of energy information, as in the study by Roberto et al. (2010:316) where energy information was provided (1 630 kcal/6 820 kJ), in comparison to where no energy information was provided (1 380 kcal/5 774 kJ). Similar to the latter study (Roberto et al., 2010:316), Morley et al. (2013:11) found a significant difference in the average energy content reported (490 kJ less) by individuals in their study, where energy information was presented, in comparison to where no energy information was presented.

In contrast, Elbel et al. (2009:w1117) did not find any significance in their study on the influence of nutritional information, when it came to the purchasing of fast food by individuals. In the study, only about half the respondents actually noticed the energy provision and, of these respondents, around one-quarter reported being influenced by the provision, in comparison to the results by Morley et al. (2013:12), which also found that one-quarter of their respondents made use of the energy information when it was provided. As an explanation for these contrasting results, Morley et al. (2013:12) concluded that the study information had been obtained from low-income areas; which may explain the variances. Brissette et al. (2013:406) found the use of nutritional information to be associated with individuals from higher-income areas. Ellison et al. (2013) found that energy information provision had virtually no influence on

the choice of a fast food by consumers, unless it was combined with the traffic-light labelling. In addition, the researchers reported that energy information provision had a higher influence on individuals who were less health-conscious, as more health-conscious individuals would already, in theory, be aware of the energy content; and thus the influence of the provision would be lower in comparison. The primary findings were comparable to the results of Morley et al. (2013:12), which found traffic-light labels to be the most influential (38%), followed by the energy information (20%), and then the percentage daily intake (15%). Interestingly, Ellison et al. (2013) did report that near half (42%) of their respondents indicated wanting to see the energy information on labels, but didn't actually want to be told what they should or should not eat; represented by the traffic-light labelling (i.e. red = bad vs. green = good).

2.2.3 Consumer utilisation of nutritional information provision on fast food

Campos et al. (2011:1502) reported that consumers perceive nutritional labels to be a highly reliable source of information, and that many report the use of nutritional labels in guiding their choice of food products. Literature is limited around the utilisation of nutritional information provision on fast food, besides that of the energy information provision, as reported in the previous section; to the researchers' knowledge, the current research is the first study of this kind of a broader nature. However, numerous studies, as reported in the sections to follow, have investigated the utilisation of nutritional information provision by young adults, primarily represented by students and, when making food choices, not specific to fast food. Therefore, it may be possible to draw conclusions from these studies on the young adult consideration and usage of the nutritional information provision on fast food.

Young adults, represented by students reportedly, by and large make use of nutritional information when making their food choice. Findings from numerous studies (Van der Merwe et al., 2010:405; Hess et al., 2011:411; Graham & Laska, 2012:417; Martinez et al., 2012:321; Wie & Gebler, 2012:60; Christoph et al., 2015:2146) suggest that the average student utilises nutritional information sometimes. Across the studies, results show a medium frequency of nutritional label use, through the representation of most of the reported nutritional label use as a frequency of 'sometimes'. In the Martinez et al. (2012:321) study, a large proportion (88%) of students reported making use of nutritional information 'sometimes', 'often' or 'always' in making their food choice. These results were consistent with the South African studies by Van der Merwe et al. (2010:405), where the reading of labels, 'sometimes' to 'always' affected nearly two-thirds (62%) of consumers' purchasing decisions and Jacobs et al. (2010:514) where one-quarter (24.7%) of the respondents revealed that they 'always' read nutritional labels, and nearly half (42%) indicating that they did so 'sometimes'. A recent study by Christoph et al. (2015:2146) reviewing 16 studies across college students in the U.S., U.K., Canada and Korea, young adults in

the study also found that the prevalence of nutritional label use averaged around one-third (36.5% and 36.7% respectively) for the 'always' or 'often', and 'sometimes' responses. Similarly, Hess et al. (2011:411) reported that the mean degree of nutritional label use across their study sample of individuals between the age of 15 and 68 years was 3.33 on a scale of 1 to 6, with 1 representing 'never' and 6 representing 'very often'.

Reasons identified for the utilisation of nutritional information provision among consumers were: nutrients, and predominantly the macronutrient content, serving size and health benefits (Misra, 2007:2132; Chen et al., 2012:764). In the earlier study by Misra (2007:2132), the nutritional information most often utilised by students was for the total fat, energy, and energy from fat provisions; and the least likely utilised the dietary fibre, iron and vitamin A provisions. Similarly, Cheah et al. (2015:2782) found that the most read nutritional information was for fat and sugar, and Martinez et al. (2012:321) found that only a minority of students considered the vitamin and mineral content. The early Rasberry et al. (2007:79) study found significant predictors of frequent nutritional label use to be health reasons (i.e. to control diabetes, balance diet, to be 'healthier', etc.), weight control, looking for specific nutrient information (such as energy (cal), fat grams, CHO), and knowledge.

2.2.3.1 User characteristics predicting frequent utilisation of nutritional information provision

Being more health-conscious is a characteristic repeatedly associated with an increased usage frequency of nutritional information. By and large, health-consciousness predicts a frequent utilisation of nutritional information as reported throughout multiple studies (Jacobs et al., 2010:515; Hess et al., 2011:411; Graham & Laska, 2012:418; Ellison et al., 2013); this attribute being strongly linked to the female gender, nutritional knowledge, positive attitude towards nutrition healthier bodyweight status, risk of diet-related diseases, and not smoking. Another user characteristic associated with an increased frequency of nutritional information use is having a higher SES. Age as a further potential user factor was found to be inconsistent across studies, with both younger and older age associated with an increased frequency of nutritional label use. These predictors are elaborated in the sub-sections to follow.

2.2.3.1.1 Health-consciousness

A strong correlation was found between health-consciousness and the use of nutritional information, in that health concerns have shown to predict more frequent use of nutritional labels among multiple studies (Jacobs et al., 2010:515; Hess et al., 2011:411; Bosman et al. 2012:39; Graham & Laska, 2012:418; Ellison et al., 2013; Dingman et al., 2014:569). Health-consciousness and the utilisation of nutritional information provision is seemingly interrelated;

Campos et al. (2011:1502), for example, hypothesised that nutritional information provision may promote healthier eating; and that individuals, who have a higher affinity for consuming a healthier diet, may be more inclined to consult nutritional information. In this respect, the study by Campos et al. (2011:1502), showed a consistent association between nutritional label use and healthier diets. In the Graham and Laska (2012:418) study, the researchers found that young adults, who were more inclined to making healthier dietary choices, were thought to be utilising nutritional labels as a way of putting their healthy preferences into action. Similarly, Hess et al. (2011:411) found that health-related variables, for example, viewing 'healthy eating', 'nutritional values of food', and 'health' in general as 'important', significantly predicted nutritional label use. Bosman et al. (2012:39) also found a significant association between the usage of food labels and being health-conscious, in that respondents, who always sought health information and were concerned about their health, also choose health products based on health information and benefits presented on the labels.

i. Females

Females are reportedly more health-conscious than males. Being health-conscious is a stereotype often associated with women, according to a study conducted by GrubHub (2014), which investigated the restaurant food preferences between men and women. The research found that women ordered healthier food options such as salads, sushi, and vegetable-based dishes, more predominantly than men, and also took advantage of healthier menu options when ordering take-outs, compared to men. It is believed that females, as compared to males, have a higher tendency to consume healthier fast food choices, such as salads (El Ansari et al., 2012; Stefan, 2013:740), fruits and vegetables (El Ansari et al., 2012). The fact that men also consume higher intakes of fast food in comparison to women may further imply that females are more health-conscious than men (El Ansari et al., 2012; Stefan, 2013:740; GrubHub, 2014). According to Grunert (2012:174), women have a greater interest in and are more concerned about their bodily image, diet and health. Results from the study by Li et al. (2012:248) also revealed that females consumed a lower proportion of energy from fat, ate breakfast, and reported less consumption of fast food in comparison to men. Although the researchers also found that females reported lower consumption of fibre, and fruit and vegetable intakes than men (as men eat more in comparison), they did conclude that females were found to engage in healthier eating habits than males, which could translate to a higher consumption of fibre, and fruits and vegetables. Numerous studies (Ayranci et al., 2010:772; Ollberding et al., 2010:1234; Dumanovsky et al., 2011; Hess et al., 2011:411; Li et al., 2012:248; Martinez et al., 2012:323; Cheah et al., 2015:2780) furthermore, consistently found females to be more likely to utilise nutritional information, supporting the association between health-consciousness and the female gender.

ii. Nutritional knowledge and attitude

Being health-conscious is associated with having an increased nutritional awareness and knowledge (Ellison et al., 2013). In the early Misra (2007:2132) study, the researcher found that a positive attitude towards nutrition was related to nutritional education, nutritional knowledge and nutritional label use. Sun et al. (2015:3029) found that consumers' use of nutritional labels was influenced by their attitude towards nutritional labels and that consumers' attitude towards nutritional labelling, was influenced by health-consciousness and nutritional self-efficacy. Hess et al. (2011:411), found knowledge of nutrition to be the strongest predictor of nutritional label use, where being more knowledgeable - as well as aspiring to be more knowledgeable about nutrition and healthy eating - was associated with increased nutritional label usage. This was comparative to the results in the Chen et al. (2012:764) study, which found that individuals, who had higher nutritional knowledge, as well as positive nutrition perceptions and beliefs, were twice as likely to make use of nutritional information labels. Similarly, Graham and Laska (2012:418) found that individuals, who reported frequent use of nutritional labels, had greater nutritional knowledge than infrequent label users.

Nutritional knowledge (Chen et al., 2012:764; Hess et al., 2011:411; Graham & Laska, 2012:418; Ellison et al., 2013; Cooke & Papadaki, 2014:300) together with a more positive attitude towards healthier eating (Misra, 2007:2132; Cooke & Papadaki, 2014:300), were found to be significant predictors of nutritional label use. More specifically, the two predictors were positively associated with each other, in that although nutritional knowledge was found to be strongly associated with an increased frequency of nutritional information provision use, Misra (2007:2132) reported that nutritional knowledge on its own is not enough to predict nutritional label use and that it was necessary for this predictor to be mediated by attitude. In support of this, Rasberry et al. (2007:80) in their earlier study, found nutritional knowledge to be a significant predictor of nutritional label use; however, it had a relatively small probability in comparison to other predictors. Thus, nutritional knowledge on its own is evidently insufficient to predict nutritional label use. The use of nutritional labels was also found to mediate the relationship with dietary quality (Cooke & Papadaki, 2014:300); thus, greater nutritional knowledge and a more positive attitude towards healthier diets, predicted an increased likeliness of engagement in healthier dietary practices.

Van der Merwe et al. (2010:407) found a significant association between consumers' 'informedness' of nutrition, and their informedness around label information. That is, as the individuals' rating of the prior increased, so did their informedness around the latter increase, and *vice versa*. In addition, informedness of nutrition was found to transform into informedness of label information, reading of labels, and purchasing decisions based on the influence of labels.

Ellison et al. (2013) found however, that although health-conscious individuals possessed a greater amount of health or nutrition awareness and knowledge, the likeliness among these individuals to be influenced by nutritional information labels was low in comparison to less health-conscious individuals. The researchers theorised that health-conscious individuals would, in theory, already be aware of the energy information contained, and therefore would derive very little new information from nutritional information labels. In comparison, for less health-conscious individuals, the nutritional labels were likely to provide new information that could assist them in their purchase of lower-energy foods; thus, less health-conscious individuals had a greater likeliness of being influenced by energy provision. The researchers did conclude, however, that the more health-conscious an individual is, the greater the amount of nutritional knowledge or awareness he or she would have, and therefore, the less energy-dense foods purchased. Results indicated that all variables (i.e. attitudes toward labels, knowledge of nutritional labels, and diet-disease relationship beliefs) were significantly associated with one another. Significant differences were also associated with significantly higher knowledge, more favourable attitudes toward label reading, and more accurate perceptions of diet-disease association among label users than non-users.

iii. Bodyweight status and risk of diet-related diseases

A higher frequency of nutritional information use was associated with health-consciousness among individuals who were weight-conscious, overweight or obese. Rasberry et al. (2007:79) found that frequent nutritional label users were almost three times more likely to use labels for reasons of controlling body weight than non-users of labels. In addition, in the Wie and Giebler (2014:60) study, more than half (54%) of the respondents believed that energy information provision on menus can assist in weight maintenance or weight loss and 60% of the students majoring in nutrition as a subject, indicated that energy information provision on menus can 'always' assist in weight maintenance or weight loss, compared to only 28% of students not majoring in nutrition as a subject. Chen et al. (2012:764) found that nutritional label use was significantly higher among individuals who were either overweight or obese, or who perceived themselves as being overweight. By contrast, Li et al. (2012:249) found no influence of body weight status on the use of nutritional labels.

A higher frequency of nutritional information use was also associated with health-consciousness among individuals who are at risk for diet-related diseases, owing to the interrelated health-consciousness and nutritional information use relationship, as suggested by Campos et al. (2011:1502). Jacobs et al. (2010:515) reported that food labels facilitated health-consciousness in making the choice towards nutritious foods, or foods relevant to individuals with diet-related diseases; comparative to the study by Hess et al. (2011:411) which discovered that individuals

who felt like they were at risk for diet-related disease, was associated with a higher frequency of nutritional label use, although awareness of the risk alone, was not associated. Chen et al. (2012:764), on the other hand, found that acknowledgement of the diet-disease relationship, and the importance of nutrition, predicted a significantly higher nutritional label use. The desire to live healthily among the respondents in the Hess et al. (2011:411) study was still a stronger motivator for nutritional label use, than the desire to prevent the development of a diet-related disease.

iv. Smoking status

Smoking status and health-consciousness have further been associated with each other (Ambrosini et al., 2009:1811; De Magistris et al., 2010:540), with smoking absence being linked to healthier dietary intakes (Yen & Tan, 2012:949). Yen and Tan (2012:949) in their research found that individuals deemed to be smokers were associated with lower odds of consuming healthier foods in comparison to non-smokers. That is, smokers were found to be less likely to report consumption of fruits on a daily basis, versus non-smokers. Similarly, Staser et al. (2011) found that of their respondents who reported adequate fruit and vegetable intakes, few were smokers. These results were supported by the study by Dominguez et al. (2014), which found that smokers had the highest tendency to consume fast food at a rate of greater than two servings per week. In addition, smoking status has been associated with an increased frequency of nutritional label use; that is, smokers have been found to be less likely to make use of nutritional labels (Cheah & Naidu, 2012:1127; Cheah et al., 2015:2783).

2.2.3.1.2 Socio-economic status

Individuals with a higher SES were found to be more likely to utilise nutritional information provision in several studies (Campos et al., 2011:1502; Dumanovsky et al., 2011; Chen et al., 2012:764; Cheah et al., 2015:2782). In support of this, higher education levels (Ollberding et al., 2010:1234; Brissette et al., 2012:406; Chen et al., 2012:764; Cheah et al., 2015:2780), employment status (Cheah et al., 2015:2782), and higher income levels (Ollberding et al., 2010:1234; Chen et al., 2012:764; Cheah et al., 2015:2782) were associated with an increased frequency of nutritional label use.

Education was found to be a strong predictor across the majority of the studies (Brissette et al., 2012:406; Chen et al., 2012:764; Cha et al., 2014:336; Cheah et al., 2015:2780), with one exception (Hess et al., 2011:412), where education was not significantly associated with nutritional information use. Findings from the South African Jacobs et al. (2010:514) study suggested that where individuals' level of education was lower, the less frequently they read nutritional labels. In

support of this, Cha et al. (2014:336) found higher education to be associated with an increased frequency of nutritional label use and a better quality diet.

2.2.3.1.3 Age

Associations between age and frequency of nutritional information use were not consistent throughout the studies, with both younger adults, and older adults (predominantly over the age of 45 years) being reported as more frequent users of nutritional information. Although the study of Hess et al. (2011:412), which involved adults with a mean age of around 53-54 years (between 15-68 years), found no significant association between age and frequent nutritional information use, middle-aged or younger adults have been reported as high users of nutritional information (Campos et al., 2011:1502; Cheah et al., 2015:2780), with Cheah et al. (2015:2782) finding Malay young adults between 18 and 30 years of age specifically, to have a higher odds of utilising nutritional information.

Older consumers, in comparison, have also been reported as more frequent users of nutritional information (Dumanovsky et al., 2011; Brissette et al., 2012:406; Morley et al., 2013:12; Cha et al., 2014:336). Across the latter studies, individuals between the age of 18 years (Dumanovsky et al., 2011; Morley et al., 2013:12) and 34 years (Chen et al., 2012:765) were found to be the least likely to report use of nutritional labels. Morley et al. (2013:13), in contrast however, did report that individuals below the age of 45 years were most likely to make use of nutritional information. Bosman et al. (2014:35) though, found no significant association between individuals below, and above the age of 45 years and consumers' use of health information on nutritional labels.

2.2.3.2 Predictors of infrequent utilisation of nutritional information provision

Todd et al. (2010:10) suggested that nutritional information provision on fast food, together with education strategies, would not contribute an appreciable solution for eating healthier, unless consumers were motivated to utilise the information. Bosman et al. (2012:39) reported other inhibitors of food-label use to be, in addition, a lack of time, a lack of interest, price concerns and habitual purchasing. Research published by GrubHub (2014) showed that, despite the increased number of restaurants now offering healthier menu options, as well as providing nutritional information to the consumers at the point-of-purchase, ultimately, consumers still purchase according to what they crave. The factors seemingly linked to an infrequent utilisation of nutritional information therefore, include a lack of knowledge and understanding, time constraints along with habit, taste and price.

2.2.3.2.1 Lack of knowledge and understanding

Coinciding with the previous section, a lack of, or limited knowledge and understanding of nutritional information was shown to inhibit the ability of consumers to be able to interpret nutritional information (Jacobs et al., 2010:516). In support of this, Chen et al. (2012:764) reported factors associated with an increased frequency of nutritional label use to be associated with an ease of understanding of the label. According to Graham and Laska (2012:418), accurately understanding nutritional information is one of the many contributors to dietary intakes, thus highlighting the need for accurate, readily accessible and understandable nutritional information to be presented to consumers. Similarly, according to Jacobs et al. (2010:517), consumers' understanding of food label information depends on their ability to study and interpret the information provided, thus, emphasising education as the most crucial factor influencing consumers' understanding and utilisation of food label information. Furthermore, the researchers recommended presenting food label information in a way that assisted those consumers with inadequate reading abilities to be able to gain an understanding of all details required around the labeled products.

Christoph et al. (2015:2145) noted that consumers, who were identified as regular users of nutritional information, were able to understand some of the terms contained on the labels but were still confused by other types of information, i.e. predominantly technical and numerical information, which was consistent with the findings of the study by Jacobs et al. (2010:516). In this study, respondents identified having insufficient background knowledge (63%), and finding the terms used in ingredients listing confusing (51%), as the major reasons for never reading food labels. In addition, interpreting numerical information seems to be a big challenge among individuals, especially among those not *au fait* with those kinds of numbers, according to Hess et al. (2011:411). In the Christoph et al. (2015:2146) study, the majority of the individuals were seemingly capable of understanding and utilising facts from the labels, and were able to make simple calculations based on the numerical information contained; however, their ability and accuracy declined as the difficulty of the analysis increased.

2.2.3.2.2 Time constraints

Research by Campos et al. (2011:1502) highlighted the need for label simplicity by consumers, by balancing the complexity of nutritional information provision with consumers' ability to be able to process the information in a quick and meaningful manner. This further highlighted the need of consumers for nutritional information that is not too time-consuming to construe. This is consistent with earlier studies (Cowburn & Stockley, 2004:24; Rasberry et al., 2007:80) that identified a lack of time as a predictor for infrequent label use. Rasberry et al. (2007:80) identified

time constraints as one of the significant predictors of infrequent label use and having the most practical implication for young adult consumers; that is, students in the study felt that the reading of nutritional information was time-consuming, and that even having the knowledge of nutritional information did not counteract the loss of time experienced in doing so. In the Jacobs et al. (2010:516) study, many (65%) of the respondents identified the reading of food labels as being too time-consuming, hence their reason for never reading them.

Stender et al. (2007:888) theorised that while most fast food establishments provide nutritional information in the form of total energy, energy provided by macronutrients, and the fibre content, they did not envisage the average consumer eating at a fast food establishments having the time or ability to make a reasonable estimate of the provided nutritional information and the health consequences incurred in choosing fast food meals, or the contribution of the chosen meals toward the day's total energy intake.

2.2.3.2.3 Taste

A further inhibitor of nutritional label use found among studies was taste (Jacobs et al., 2010:516; Mulvaney-Day et al., 2012:359). Research published by GrubHub (2014) shows that despite the increased number of restaurants now offering healthier menu options, as well as providing nutritional information to the consumers at the point-of-purchase, ultimately consumers will still purchase according to what they crave. Mulvaney-Day et al. (2012:359) found that young adults enjoyed the taste of fast food, and that even where nutritional information was provided for fast food options, that nutritional information was ignored. Similarly, when asked why they did not read nutritional labels in the Burton et al. (2009:264) study, the respondents indicated a lack of interest in that they didn't care what was contained in the product; that if they liked the product, they purchased it for taste. A large proportion (75%) of the individuals in the Jacobs et al. (2010:516) study also identified taste as an inhibitor for the utilisation of food labels (i.e. "taste of the food products are more important").

2.2.3.2.4 Lack of interest, habit, price

Significant predictors of infrequent food-label use cited in an early study by Rasberry et al. (2007:79) were as a result of a yearning to purchase foods desired regardless of nutritional content, and simply a "don't care" attitude. These results are comparative to later results by Bosman et al. (2012:39) where individuals indicated that "I do not take notice of them" (i.e. food labels) or "I'm not interested in them". Habit also seems to be an inhibiting factor. That is, individuals who often purchased the same products and who associated eating with a positive experience, were less likely to make use of nutritional information during their purchases in the Hess et al. (2011:411) study; consistent with the Jacobs et al. (2010:517) study where individuals

indicated routine food purchasing (e.g. “pick what I want”, “past experience”, “know what the product contains”) as a reason for not reading food labels. A large proportion (73%) of the respondents in the study indicated that they “purchase food products out of habit”.

In addition, ‘price’ was identified as both a factor inhibiting (Jacobs et al., 2010:516; Bosman et al., 2012:39) and promoting (Hess et al., 2011:411) the use of food labels. In the prior study (Jacobs et al., 2010:516), a large proportion (74%) of the respondents indicated that they “choose food products on the basis of price” and their reasons provided for never utilising food labels were price concerns (e.g. “usually go for the cheapest product”, “purchase basic food products”, “have a large household”). Similarly, Bosman et al. (2012:39) found price to be significantly associated with being unconcerned with the use of food labelling information, as food purchases were related to the “cheapest” and “favourite brand”, and food labelling itself was considered “an excuse for making products more expensive”. In contrast, Hess et al. (2011:411) actually found that although predicted to be an inhibitor of label use, when consumers viewed price as important during shopping, food label use was, in fact, higher.

2.2.4 Regulatory guidelines and industry practices

In 2003, the Centre for Science in the Public Research (2003:16) in the U.S. advised that nutritional information of restaurant (which included fast food establishments) foods be visibly presented at the point-of-purchase, as this would likely allow consumers to make informed food-purchasing choices. At the time of publication, the Nutrition Labelling and Education Act (NLEA) exempted all restaurants from mandatory nutritional labelling, unless the food or meal claimed a health benefit, or a particular nutrient content. Thus, nutritional information provision to the public at restaurants at that time was voluntary (Centre for Science in the Public Research, 2003:15). Since then, however, several efforts have been undertaken to motivate the fast food industry to adjust its menus to provide healthier alternatives to consumers (Hearst, 2013:589). According to Seo et al. (2011:170), there is a growing demand for nutritional education around correct fast food usage. The researchers added, however, that understanding the factors affecting the use is important in the design of an appropriate nutritional education programme.

Although some restaurant chains these days offer nutritional information in the form of brochures or posters, these have been cited as being either inaccessible or difficult to understand, the latter, stemming from restaurant chains often presenting the information in large tables that contain an overwhelming amount of information around the macro- and/or micronutrient content in fine print, which consumers find hard to decipher. Many restaurants, especially those having franchise chains, offer nutritional information via their websites. However, while this may be useful to the consumer, it is neither convenient nor accessible at the time that the consumer is

making his or her food choice, which is usually at the restaurant (Centre for Science in the Public Research, 2003:15). While information presented in this way may assist consumers in pre-planning their food choice, or assist them when repurchasing, is not helpful at the point of purchase, which is where many consumers make their actual choice, followed by the consumption of the purchase.

2.2.4.1 U.S. regulatory guidelines and industry practices

Chopra et al. (2002:953) noted that obesogenic dietary trends might be revoked, if the environment is altered for the pricing of food, together with better public food and nutritional education efforts and comprehensive food labelling. Thus, the use of nutritional information is an important approach for reducing the obesity occurrence and safeguarding the health of individuals. This led to the U.S. convention and/or state or local legislatures recommending that food-service chains, with ten or more entities, list the following nutritional information on their menus: energy, combined saturated and trans-fat, and sodium contents of common menu items. Where restaurants made use of only menu boards and where space was restricted, the energy content information of foods being served should at least be available upon request to consumers (Centre for Science in the Public Research, 2003:7). Eight years later, it seemed this recommendation was closer to being legislated, as Larson et al. (2011:1702) made reference to the fact that chain restaurants would be required to list food energy (kcal) content information on their menus in the near future. In this regard, Larson et al. (2011:1703) specifically noted the importance of assessing whether food energy content labelling would assist in persuading young adults to select menu options that are nutrient-dense. Although it seemed that the soon-to-be legislated law, would be less strict regarding the requirements around mandatory labelling. That is, Cohen and Bhatia (2012:622) one year later, made reference to franchises with 20 or more outlets requiring mandatory menu labelling.

Despite the increasing pressure around mandated menu labelling legislation of the fast food industry, and to improve their offerings through providing healthier fast food options, together with messages from the fast food industry itself around their increasing attempts to provide healthier food to consumers, overall, the energy levels among these food-types proved to have not lowered since the late 1990's among leading fast food chains in the study by Bauer et al. (2012:495), which investigated the U.S. fast food energy contents. In addition, the researchers found that although there were changes within some categories at specific restaurants, these changes may be counterbalanced by subsequent increases in the energy content of additional items offered, as well as an increase in the entire number of menu offerings. This may, in turn, motivate an increased purchase by consumers.

Cohen and Bhatia (2012:622), in their study of nutrition standards of FAFH in the U.S., reported that despite the expanding proof for the relation with diet-related diseases, very little regulatory efforts have been aimed at the nutritional content or portion sizes of fast food. These efforts include: energy menu labelling at point-of-sale which, according to the researchers, has now become a national requirement under the federal legislation in the U.S.; the ban on trans-fats in FAFH in some cities of the U.S.; and the rules around the addition of free toys in ‘kids meals’ in some cities. However, these interventions are still inadequate in addressing the problem of diet-related diseases on a broad spectrum. As a result, the researchers recommended the following standards for restaurants to be able to reach this requirement: supply one or more meal alternatives providing one-quarter (25%) to one-third (35%) of the daily nutrients as recommended by the DGA; standardised portion sizes consistent with the recommended serving sizes as per the DGA; the labelling of all foods (including foods that don’t require mandatory labelling) complying with quantity and quality standards with accompanying icons and symbols as per the DGA; the placing of information regarding the healthiest food options at establishments on both menus and menu boards, in places where the attention of consumers would be directed first; and the pricing of healthier meal options that meet optimal nutritional standards, at a price no higher than the average price of less-healthy meal options within the same food establishment.

2.2.4.2 SA regulatory guidelines and industry practices

In SA, there is very little, if any, literature published pertaining to fast food nutritional information labelling. In 2010, the SA government changed the regulations of food product labelling, and in March of 2012, the Regulations relating to the Labelling and Advertising of Foodstuffs, No. R. 156 of the Foodstuffs, Cosmetics and Disinfectants Act, 1972, came into effect. Under the regulations, mandatory nutritional information is only required where a claim is made (SA DOH, 2010:29). Furthermore, the regulations require a standardised format for product labels restricting the use of specific terminology (‘nutritious’, ‘healthy’, ‘healthful’, ‘wholesome’, etc.), and only permitting the use of certain terminology, unless specific criteria are met. Fast food hence does not carry any nutritional information on its food labels. However, a few “Big Food” entities (a term used to describe large commercial bodies that continuously dominate the food and beverage industry, e.g. Tiger Brands, Spar, and Coca-Cola) have voluntarily opted to make use of Guideline Daily Amount (GDA) labelling, which detail the specific nutrient quantities and the RDA contained of these specific nutrients within the products. Many of the Big Food entities have also provided the nutritional information available on their websites (Igumbor et al., 2012).

In an article by Igumbor et al. (2012), however, the authors theorised that several strategies employed by Big Food entities to increase the availability, affordability and acceptability of their

products, have contributed towards dietary changes in SA, and therefore to the increased burden of obesity and health-related diseases. These Big Food entities are perceived to be at least partially responsible for these health-related consequences, due to the strategies employed to promote their products. According to an article by Moorad (2014) published in the South African Financial Mail newspaper, the government should take the responsibility of assisting consumers to assume an increased responsibility for what they consume, through educating consumers about nutritional information. This recommendation seems to have been taken on board as according to Igumbor et al. (2012), the South African government has established a number of limited policy responses around product labelling, product marketing targeted at children, and the reformulation of products. The South African Minister of Health, Dr. A. Motsoledi, was also quoted as saying that “South Africans are eating more and more junk-processed foods, instead of their traditional diet” in the article by Lawrence (2011). As a result, he recommended the regulating of ‘junk’ food, beginning with the reduction of salts usage in breads, and the elimination of trans-fats. In response to this, “Big Food” entities (i.e. Shoprite, Pick n Pay, Spar and Woolworths) have started to introduce corporate social responsibility programmes to promote better health, through focusing predominantly on nutritional education programmes; whereas fast food entities are focusing more on the funding of local sports teams and sports tournaments (Lawrence, 2011).

The Food Division Head of *Taste Holdings* was quoted as saying that, while the food industry does hold some responsibility for providing nutritional education, to be able to make the choice of which food to consume, based on its nutritional content, is also a “basic life skill” that consumers should have. He added that “our responsibility is to provide the necessary nutritional analysis, as in: ‘This Spur burger contains x, y and z’. Then, as a consumer, you have to look at that list and decide if it’s okay for you. We each have a responsibility towards ourselves” (Moorad, 2014). On the other hand, the Big Food giant Nestlé views the company as “providing products that are healthier, safe and affordable for consumers wherever they are”. A Nestlé spokesperson indicated that the company provides consumers with the information needed to be able to make healthier food choices, through its labelling and funded education programmes and that “Our range of products in South Africa and Brazil is wider than that offered by many of our competitors. We are always looking for ways to improve both the taste and nutritional value of our products” (Lawrence, 2011).

2.2.5 Section summary

In judgement of the above literature, research shows that increased nutritional label use and healthier dietary intakes are interrelated, with significant predictors of frequent nutritional label use to be for health reasons, weight control, and looking for specific nutrient information. User

characteristics predicting frequent utilisation of nutritional information provision include: being more health-conscious, the female gender, an increased nutritional knowledge, a positive attitude towards nutrition, a healthier bodyweight status, risk of diet-related diseases, not smoking, and higher SES. Younger age was a further use characteristic associated with an increased nutritional label usage, although the results were found to be inconsistent across the studies. In contrast, predictors of infrequent nutritional information use include: a lack of knowledge or understanding, time constraints, food taste, a lack of interest, habit and food price.

Research furthermore, confirms a demand for intervention to assist habitual young adult fast food consumers, and particularly those frequenting burger-and-fries or sandwich/subs, to choose healthier fast food options, especially for those who are more conscious of eating healthier or trying to lose weight. Traditionally, nutritional information provision at fast food outlets has not been mandatory, but rather, the usual trend is one based on a 'right-to-know' premise. In SA specifically, this provision is only mandatory when a health claim is made for the product and fast food hence, does not carry any nutritional information on its food labels. More recently, the U.S. government legislated the mandatory provision of energy information for all fast food menu items, to address the limited knowledge of consumers around the nutrient content of fast food items. It was however, unknown whether this provision would predict a lowered consumption of energy-dense foods, predominant at these outlet-types. As a result, numerous studies investigated the effects of the energy provision at point-of purchase as fast food outlets on the consumer purchase of fast food, with the majority of the studies finding the energy information provision to have a positive influence on the purchase of a healthier (lower in energy density) fast food choice, particularly among individuals who were less health-conscious (as these individuals would in theory, be aware of the energy information of these foods). There is still limited literature available however, on the influence of a more extended (beyond energy information alone) nutritional information provision on the choice of a healthier fast food alternative.

2.3 Dietary intakes, behaviours and adequacy among young adults

The third theme of this chapter, explores the dietary intakes and behaviours and the dietary adequacy among young adults through two major sections. The first section, which covers the detrimental dietary intakes and behaviours promoting dietary inadequacy among young adults, firstly focuses on the Westernised diet, by looking at its major components contributing to the dietary inadequacy of young adults; i.e. their fruit and vegetable, whole grain (which includes dietary fibre) and energy-dense food (represented by fast food) intakes. The section additionally includes the major dietary, lifestyle and other behaviours associated with young adults prompting their dietary inadequacy, that is, own responsibility for food preparation and purchasing, irregular meal patterns, binge drinking and utilisation of environmental and social inducements. The last

section focuses on the traits promoting dietary adequacy among young adults, via investigation of young adults' awareness, interest and knowledge of the topic 'food, nutrition and health'.

2.3.1 Introduction

Young adulthood, more specifically, the transitional phase between adolescence and young adulthood has been identified as a critical age for development (Surujlal et al., 2012:281; Pendergast et al., 2016). This period is traditionally a period where individuals move out of their family homes, start living on their own, and start adopting behaviours, which may influence both their impending lifestyles and health (Szoboszlai, 2013:46). More specifically, these individuals become more independent. In this progression, both food purchasing and preparation becomes an added responsibility. This period therefore becomes a time of stress for young adults (represented by students in the majority of the studies), as they adapt to new social, environmental and economic pressures (Edlin & Golanty, 2012:16). According to Nani (2016:45), the busy schedules of young adults mean that they are required to balance many different activities and responsibilities. As a result, young adults engage in many unhealthy dietary habits, such as meal skipping and fast food consumption. An increase in fast food consumption specifically, has been associated with young adulthood (Ayranci et al., 2010:775; Lachat et al., 2012:340; Steyn et al., 2012; Fryar and Ervin, 2013; Smith et al., 2013:2370; Pelletier et al., 2014:148).

Research shows that young adults practice unhealthy dietary behaviours (Ayranci et al., 2010:775; El Ansari et al., 2012; Pelletier et al., 2014:148). These unhealthy behaviours by young adults influence their dietary intakes through their adoption of the Westernised diet (Ayranci et al., 2010:775), leading to a poor quality of the consumed diet. Accompanied by their lowered rates of physical activity this age is, according to Pelletier et al. (2014:148), the most critical life-stage period for weight gain. An investigation into the dietary intakes and lifestyle behaviours promoting the dietary inadequacy, as well as healthier behaviours promoting dietary adequacy among these individuals, may provide an understanding as to why the transition period of young adulthood negatively affects the diets of these individuals and ultimately, influences an increased consumption of unhealthy food-types, such as fast food.

2.3.2 Detrimental dietary intakes and behaviours promoting dietary inadequacy among young adults

In terms of the dietary intakes associated with young adults, and therefore the Westernised diet, the dietary and food intakes of concern include a lowered intake of fruits, vegetables (Chourdakis et al., 2010:724; Todd et al., 2010:5; Graham et al., 2013:1366; Pelletier et al., 2014:148; Gresse et al., 2015:156; Wolfson & Bleich, 2015:5), and whole grains (Larson et al., 2010:230; Todd et al.,

2010:5; Napier & Oldewagen-Theron; 2011:5; Quick et al., 2013), and an increased intake of FAFH, predominantly fast food (Pelletier et al., 2014:148). The latter is associated with increased intakes of total energy, total fat, saturated fat, and sodium (Larson et al., 2011:1701), as well as poor dietary quality (Smith et al., 2009; Larson et al., 2011:1701; Thorpe et al., 2013:1771). The dietary, lifestyle and other behaviours impacting this age group negatively, predominantly include having to be responsible for own food preparation and purchasing, irregular meals (which includes meal skipping and snacking patterns), binge drinking and utilisation of environmental and social inducements.

2.3.2.1 Detrimental dietary intakes

According to Ayranci et al. (2010:775), a typical student diet resembles that of a Westernised diet. Thus, the diet of young adults may be represented as a poor quality diet, typically characterised as being high in fat and energy intakes, and low in fruit and vegetable intakes, predominantly contributed through the intake of less healthy foods, such as fast food. According to Janse van Rensburg et al. (2011:249), an increase in these 'Western' lifestyle habits being adopted has led to an increase in both unhealthy lifestyles and diseases akin, worldwide. Todd et al. (2010:iii), when investigating the dietary intakes of individuals over the age of 20 years, found that the majority of these individuals consumed amounts of fruits, vegetables and whole grains that are too low; and consumed too much saturated fat, added sugar and sodium, predominant among fast food; consistent with the El Ansari et al. (2012) study on undergraduate students in Europe.

Studies focusing on the dietary intakes of young adults, represented as students' eating patterns, revealed that this demographic group predominantly consumes 'less healthy' items, i.e. sweets, cakes, snacks and fast food (El Ansari et al., 2012). According to Dickson-Spillman and Siegrist (2011:58), it remains interesting that sugary drinks, poor vegetable intake and fast food consistently contribute towards young adults dietary habits. Vegetables are one food that decreases the overall energy density of a diet, while sugary drinks and fast food substantially increase it (Dickson-Spillman & Siegrist, 2011:58). In support of this, Staser et al. (2011) furthermore, linked inadequate intakes of fruit and vegetable to diminished health.

2.3.2.1.1 Fruit and vegetable intakes

Numerous studies (Chourdakis et al., 2010:724; Todd et al., 2010:5; Graham et al., 2013:1366; Pelletier et al., 2014:148; Gresse et al., 2015:156; Wolfson & Bleich, 2015:5) have identified that young adults consume far less fruit and vegetables per day than the dietary guideline of five servings (400 g collectively, or five portions of 80 g) per day (Ungar et al., 2013:203; Naude, 2013:S52; WHO; 2014:97). Across all age groups, the USDA/USDHHS (2010:35) found that very few Americans consumed the daily-recommended amounts of fruit and vegetables. This was

supported by Ungar et al. (2013:201), who found that only 2.5 servings of fruit (at least two servings/day recommended) and vegetables (at least 3 servings/day recommended) collectively, per day, was consumed by young adults, represented by university students. Less than one-quarter of both the males (24.2%) and the females (24.6%) reported daily consumption of vegetables in the Chourdakis et al. (2010:724) study. The study by Todd et al. (2010:5) found a much larger achievement of the recommendation; that is, a high percentage (80.9%) of the average U.S. young adult achieved the daily recommendation for total vegetable intake. Intakes of dark green and orange vegetables (being highly nutritious in micronutrient provision), however, were well below the consumption guideline (35% of the recommended intakes). Fruit intakes were less positive (66% of the recommended intakes) in achieving the guideline versus the intake for total vegetables; not consistent with the Chourdakis et al. (2010:724) study, which found the daily fruit intakes to be slightly more positive than the vegetable intakes; with the daily fruit intakes also being higher (36%) among the females. The latter results were consistent with the study by El Ansari et al. (2012), where women were found to report a higher consumption of fruits and vegetables in comparison to men.

On a local level, South African studies and reports (Napier & Oldewagen-Theron, 2011:8; Naude, 2013:S52; Pengpid & Peltzer, 2013:149; Gresse et al., 2015:156; Steyn et al., 2016) indicated that fruit and vegetable intakes were inadequate, and lower in comparison to international intakes. Gresse et al. (2015:156) found both fruit and vegetable intakes to be inadequate in comparison to the consumption guideline, with two-thirds of the combined sample of students in the study reporting consumption of less than one serving of fruit (66%) and vegetables (67%) per day. Similar to these findings, Pengpid and Peltzer (2013:149) found that the majority (81%) of the students in their study did not achieve the guideline of five servings per day. In contrast to the results reported by Chourdakis et al. (2010:724), Napier and Oldewagen-Theron (2011:8) found women to consume much lower levels of fruit and vegetables (169.1 g/day) in comparison to the WHO (2014:97) and South African food-based dietary guidelines (SAFBDGs) (Naude, 2013:S52) recommendations of greater than 400 g per day.

2.3.2.1.2 Whole grain and dietary fibre intakes

National data of the U.S. revealed that few young adults consumed whole grains in the recommended levels to prevent chronic disease and to maintain a healthy body weight (Larson et al., 2010:230). The USDA/USDHHS dietary recommendation for grains for most people nine years of age and older, is to consume at least six servings (ounce-equivalents) of grains per day. A further recommendation is to “consume at least half of all grains as whole grains”, which translates to a minimum of three servings of whole grains per day, equating to around a

minimum of 48g of whole grains per day (based on a calculation of one oz.-equivalent equating to 16 – 28 g) (USDA/USDHHS, 2010:51).

Todd et al. (2010:5) found that only one-quarter (24.6%) of U.S. young adults achieved dietary intakes meeting the recommended level for whole grain consumption; it was also found to be the highest (75.6%) reported dietary deficiency in terms of the recommended intake level. The USDA/USDHHS (2010:36) findings, however, reported far lower intakes, where less than 5% of all individuals over the age of 2 years, reportedly consumed the minimum recommendation reporting a consumption of 1 oz.-equivalent (28 g) per day. Consuming more whole grains from adolescence to young adulthood was associated with a decreased incidence of overweight in the study by Quick et al. (2013). The researchers found that while whole grain intakes increased during the 10-year transition period among the females (0.9 to 1.1 serving/day), it decreased slightly among the males (1.1 to 0.9 serving/day). However, the intakes were still far below the recommended intake of at least three servings per day. Larson et al. (2010:234) found far lower intakes among young adults, with the males (0.68 servings/day) also consuming slightly more than the females (0.58 servings/day). In the South African study by Napier and Oldewagen-Theron (2011:5), dietary fibre intakes were found to be insufficient, with the mean intakes for young adult women to be around 13.8 g per day, and a large prevalence (94%) of inadequate median intakes of dietary fibre reported among young adult women. Kolahdooz et al. (2013), however, found dietary fibre intakes for both genders of their young adult respondents to be above the adequate intake (AI) of 25 g.

Dietary fibre is present in legumes, fruits, vegetables, whole grains and nuts. All these food sources are consumed below the level recommended to be able to obtain the amount of required dietary fibre (AI of 14 g/1 000 kcal (4 200 kJ), or 25 g and 38 g/day for women and men, respectively). An AI of dietary fibre is linked to decreasing the risk of Type 2 diabetes, CVD and obesity (USDA/USDHHS, 2010:40). According to the USDA/USDHHS (2010:40), most Americans greatly under-consume this important nutrient, with a reported average of around 15 g per day contributed substantially by refined grains such as flour, present in bread, rolls, buns and pizza crust. As refined grains are not a considered source of dietary fibre, the recommendation thus is to increase consumption of foods rich in its natural occurrence sources, such as peas, beans, fruits, vegetables, whole grains and nuts. Research by Larson et al. (2010:234) shows, however, that the taste and preference for whole grains was the greatest correlate of increased whole grain intakes. That is, greater preferences for whole grain breads together, as well as the availability of whole grain breads at home, together with the self-efficacy to consume the three daily recommended servings, was positively associated with increased intakes among both genders. Whole grain intakes were also found to be positively associated with health concerns

and a greater involvement in food preparation and purchasing, and negatively associated with fast food consumption.

2.3.2.1.3 Fast food consumption

More frequent fast food consumption has been associated with poorer dietary quality (Smith et al., 2009; Larson et al., 2011:1701; Thorpe et al., 2013:1771). An increased fast food consumption intake, furthermore, has been associated with moving out of home (Niemeier et al., 2006:842). In the study of Niemeier et al. (2006:847), the fast food consumption of about two days per week of the respondents as adolescents, increased to about two and a half days per week as young adults. In the Smith et al. (2009) study, young adults who consumed fast food at a rate of twice or more per week were significantly less probable to achieve the suggested dietary intake recommendations for fruit, vegetables and milk and milk products. For men and women separately, the same association was found for bread and cereals, and lean meat and alternatives, respectively. These results suggest that fast food is not just a food addition to an already unhealthy diet, but is associated with numerous other unhealthy eating behaviours, potentially by displacing healthier items from the diet. Similarly, in the Larson et al. (2010:1701) study, a higher frequenting of burger-and-fries outlets was linked to a lower intake of fruits, vegetables, whole grains, fibre, milk products, calcium, and a higher intake of sugar-sweetened beverages (Larson et al., 2011:1701). Lachat et al. (2011:343) also found FAFH to be associated with lower intakes of micronutrients, specifically vitamin C, iron and calcium.

Larson et al. (2011:1701) established that a higher frequency of burger-and fries and sandwich/sub outlet occasions was associated with increased total energy, total fat, and saturated fat and sodium intakes. These results were consistent with the study by Lachat et al. (2011:340), which found that an increase in FAFH led to increased fat intakes and, further, had an increased energy contribution from fats. Similarly, an increase in FAFH was associated with increased intakes of trans fat, soft drinks, juices, alcohol, red meat, fast food and processed meat and lowered intakes of monounsaturated fat, fibre, CHO, fruit, vegetables, legumes, and low-fat dairy products in the study by Bes-Rastrollo et al. (2010:1358).

Niemeier et al. (2006:842), in an important earlier study around fast food consumption and breakfast skipping, found that both of these eating behaviours are associated with an increased weight gain during the crucial transition period of adolescence to young adulthood; presumably, because at this age, young adults become more independent. Therefore, the responsibility for food purchasing and preparation is increased, coinciding with the previously mentioned section. The responsibility for both food purchasing and preparation may further lead to the purchasing of fast food and failing to consume breakfast. A further possible explanation for these increased

weight gain associations is that where energy intake is not controlled per eating occasion, or when meal frequencies exceed the upper recommended limit of six meals per day, it is then that appetite is dysregulated and individuals are at an increased risk for weight gain (McCrorry & Campbell, 2011:146).

The consumption of fast food is an attractive meal option for young adults, and particularly students, due to its convenience as previously highlighted. In the study by Monsivais et al. (2014:799), healthier food consumption patterns, characterised by more frequent consumption of fruits and vegetables, less money spent on FAFH, and fewer visits to fast food restaurants, were all significantly associated with more time spent preparing, cooking, and cleaning up from meals. Although this study indicated that healthier food consumption patterns might have an associated time cost, preparing a higher number of foods at home has been associated with a lowered frequency of fast food consumption (Larson et al., 2006:2001). The young adult students in the study of Mulvaney-Day (2012:359) though stated that regardless of the known nutritional value of fast food, that the time needed for the preparation of food, versus the immediate availability of fast food at a fast food establishment, made the choice of fast food an attractive food option for them, as their busy lives often did not allow them enough time to eat, which fast food did provide as these foods can be eaten “on the run”. The study by Pelletier and Laska (2012:483) found corresponding results, where one-third (37.1%) of the young adults actually found it difficult to be able to physically sit down and consume a meal, and almost half (45.1%) found it difficult to regularly consume scheduled meals, as a result of their busy schedules. Many (44.9%) of the young adult respondents in the study of Pelletier and Laska, (2012:483) also indicated that they would be willing to eat healthier, if their schedules were not so busy. Similarly, Mohr et al. (2007:1461) found a higher affinity for the consumption of fast food associated with the allocation of less time required for its consumption. Thus, an increased attraction towards and support for fast food, as fast food establishments were described in this study by Mohr et al. (2007:1461) as being fast-paced and not requiring the action of actually sitting down to eat as at restaurants. College or university, in particular, is therefore a critical period for establishing unhealthy changes in the eating behaviour of students as young adults (Deliens et al., 2014).

2.3.2.2 Detrimental dietary, lifestyle and other behaviours

The transition period associated with young adulthood is also associated with many detrimental or ‘unhealthy’ dietary and lifestyle behaviours. Many students engage in lifestyle behaviours and adopt lifestyles that may even be classified as risky (Edlin & Golanty, 2012:16). Janse van Rensburg et al. (2011:258), in their study on university students residing in SA, found that these individuals experienced increased social pressures compared to earlier years when they were at high school, which may influence conformity with new perceived and acceptable behaviours and

lifestyle patterns (Goga, 2010:46). Some of these behaviour and lifestyle patterns include alcohol consumption (Deliens et al., 2014), smoking, substance abuse, physical inactivity, less sleep (Edlin & Golanty, 2012:16) and unhealthy dietary practices (Ayranci et al., 2010:775; El Ansari et al., 2012; Pelletier et al., 2014:148), which have further shown continuation into adulthood (Edlin & Golanty, 2012:16; Takomana & Kalimbira, 2012:132). Similarly, Spanos and Hankey (2010:102), added that the media, their peers, and the availability of vending-machines and access to fast food on their premises, has greatly influenced the eating behaviours of students at university.

2.3.2.2.1 Utilisation of environmental and social inducements

Young adult respondents in the study by Mulvaney-Day (2012:359) identified restaurant policies as hurdles to eating healthier. When questioned, they felt that the menus at these establishments were inflexible with regard to healthier options in their choice of food, as well as the ability to adapt current offerings to a healthier option. Students in the Deliens et al. (2014) study indicated wanting to see healthier menu options available to them, and actually indicated not wanting always to be offered only common French fries as a side order. Allman-Farinelli (2015:815) recommended that to prevent obesity among young adults, nutrition promotion should not be targeted at the individual only, but should also include the food environments in which they mingle. These changes should occur within colleges, universities and places of work, as well as within the retail sector, in cafes, supermarkets and food malls which, in the latter circumstances, according to the researcher, would benefit both young adults and the community at large, in their entirety.

Furthermore, the influence that friends and family had on the dietary behaviours of young adults affecting their intakes of fruits and vegetables indicates the importance of taking into account the unique life circumstances and social influences that these groups of individuals pose. Friends also seemed to have a stronger influence on young adults, as opposed to their families, which may be as a result of this age group spending more time with friends in social environments (Graham et al., 2013:1372). Brindal et al. (2010:86) observed a “matching norm” theory among individuals, whereby individuals have been shown to match the behaviours of the individuals surrounding them, along with “social facilitation”, whereby the amount of food consumed has shown to increase based on the number of people present at the eating occasion and, in combination, have shown to increase the amount of meals and snacks consumed. This was supported by the results from the Deliens et al. (2014) study, which found that students indicated being influenced by both healthy and unhealthy behaviours of students around them during student residency. In the latter case, students indicated that when residing in a self-catering dwelling and cooking together with their peers, they would take more time preparing their own meals, which increased the probability of them preparing a healthier meal.

2.3.2.2.2 Responsibility for food preparation and purchasing

Young adulthood is associated with becoming more independent, with the responsibility for both food purchasing and preparation at this age shown to increase (Niemeier et al., 2006:847). Adopting these behaviours has been linked to healthier dietary habits among young adults (Monsivais et al., 2014:801). Time constraints have been identified as one of the major barriers to these behaviours (Mulvaney-Day, 2012:359; Pelletier & Laska, 2012:483) and therefore have a direct influence on the healthfulness of the diets of young adults (Pelletier & Laska, 2012:484). In support of this, Larson et al. (2006:2204), in their earlier study, found that greater than one-third of the young adult respondents revealed that they experienced time constraints (40.6%), and did not have a healthy balance in life (40.7%); with up to nearly half (46%) reporting that they experienced time constraints specifically affecting diet-related behaviours.

Eating healthier consistently proved to be associated with time, and was further reported to be a very crucial issue when referring to student eating habits (Deliens et al., 2014). More than half (57.9%) of the students felt that their schedules were often too preoccupied with school or other pressures, to be able to eat healthily in the study by Pelletier and Laska (2012:483). Similarly, young adults in the Mulvaney-Day (2012:359) study also indicated that they would be able to make healthier food choices if their work environments were not as busy, and if their respective workplaces allowed for an extended or more flexible lunch break and/or more regular breaks. However, the fact that Larson et al. (2006:2004), in their earlier study, found that near two-thirds (65.4% of males and 62.8% of females) of the students indicated that they had either an adequate, or a very adequate amount of time available to them for the preparation of foods, indicates that time constraints are clearly not the only barrier towards healthier eating behaviours. The other near-half (46.4%) of the students in the Pelletier and Laska (2012:483) study, revealed their concerns for the time they felt they would lose, allocated for other activities they wanted or needed to do, if more time was to be spent on preparing healthier meals. This latter factor of time 'wasted' was consistent with the study by Deliens et al. (2014), where the respondents indicated that instead of cooking (especially when only for themselves), they would much rather spend their time on other activities (e.g. watching TV).

Consistent with the previous section on time, 'time' is also related to convenience. Monsivais et al. (2014:798) found that among adults and young adults, individuals who spent the least amount of time on food behaviours, placed the most amount of importance on convenience in food choices. Consistent with these findings, Deliens et al. (2014) reported that students indicated wanting something 'quick' and 'easy' to prepare, as it freed up more time for them to engage in other activities (e.g. watching TV), thus further driving them towards the purchase of convenience foods. Students in the study, indicated wanting to "grab something that can be

warmed up quickly”, and further indicated that they always had something else to do instead of cooking.

Results from a study by Graham et al. (2013:1371), suggest that the food environments of young adults are complicated, in that the areas, in which these young adults live, attend classes and purchase foods, may indicate unique relationships with dietary outcomes. Research (Van Zyl et al., 2010:276; Graham et al., 2013:1371) suggests that the environments in which university students engage, may worsen their dietary habits due to the convenience of FAFH consumption, versus the preparation of their own meals; the decisions that students make around purchasing of foods; the restricted food-choices available; the healthfulness of the food choices; and food costs. In support of this, Pelletier and Laska (2012:483) identified cooking skills among young adults, and money available to buy food, as being either inadequate or very inadequate, and thus further barriers to the preparation of food.

2.3.2.2.3 Irregular meal patterns

‘Meal patterns’, used to describe individuals’ consumption patterns of meals, are usually comprised of main meals (i.e. breakfast, lunch or dinner), or smaller-sized meals (i.e. a snack, or supper). The use of the word ‘eating occasion’ incorporates all food or drink occasions (Leech et al., 2015:2). ‘Irregular’ meal patterns then, refer to the action of skipping meals (commonly reported as a change to ‘usual’ eating patterns) (Brindal, 2010:109), and frequent snacking (referred to as unstructured eating events commonly consumed in-between meals) (Ovaskainen et al., 2006:494). McCrory and Campbell (2011:146), recommend eating somewhere between three and six times per day, provided the eating occasion energy intake is controlled to not exceed the daily energy allowance. In cases where not, or when meal frequencies exceed the upper recommended limit of six meals per day, appetite is then dysregulated and individuals are at an increased risk for body weight gain (McCrory & Campbell, 2011:146). Both behaviours, i.e. meal skipping and snacking, have been blamed for their contribution toward weight gain (Sebastian et al., 2011; McCrory & Campbell, 2011:145; Nicklas et al., 2014; Kant & Graubard, 2015:58). According to Nicklas et al. (2014), eating patterns may pose a greater metabolic risk than any single food, food group or nutrient in isolation.

i. Meal skipping and frequency

According to Pendergast et al. (2016), meal skipping rates may be highest during young adulthood. The bulk of the literature though, is focused around breakfast skipping, presumably because young adults were found to skip breakfast meals more than any other meals (Nani, 2016:19; Pendergast et al., 2016). Niemeier et al. (2006:847) found that where adolescents reported breakfast consumption of around four to five days per week (frequent), this proportion

dropped to around three breakfast eating occasions per week (infrequent) by adulthood (Odegaard et al., 2013:3100). Although Kant and Graubard (2015:58) in a recent study found that while the number of reported main meals by adults showed no change over time, fewer adults reported consumption of all three meals in a 24-hour period. Instead, individuals reported a higher duplicate meal (repeat of either of the main meals breakfast, lunch or dinner) frequency.

There are various reasons behind the skipping of meals among young adults. Various studies reported time constraints as a barrier to more frequent meal consumption. In the Pendergast et al. (2016) systematic review, nine of the ten studies reviewed rated time as the biggest factor predicting meal skipping. Consistent with time constraints found to be prevalent among young adults (Larson et al., 2006:2004; Mulvaney-Day, 2012:359; Pelletier & Laska, 2012:483), Niemeier et al. (2006:847) in their earlier study, found that at this age, young adults become more independent and therefore both their food-purchasing and preparation responsibilities are increased and may lead to the failing of breakfast consumption, and an increased consumption of fast food as a result. This study was not the only to find a positive association between breakfast-skipping and fast food consumption. Brindal (2010:102) found around one-fifth (21%) of individuals in their study reporting fast food consumption on the day they had skipped a meal; although total energy intakes of the respondents who reported skipping a meal versus those who did not, did not differ significantly. Odegaard et al. (2013:3102), however, found more frequent instances of breakfast skipping to be associated with an increased frequency of fast food consumption. Similarly, studies show the skipping of breakfast to be positively associated with increased energy intakes and therefore, with weight gain (Larson et al., 2009:1869; Niemeier et al., 2006:847; Pendergast et al., 2016); ironic, since another reason for breakfast skipping found in similar studies (Nani, 2016:19; Quick et al., 2013) was as a weight-control mechanism, through restricting energy intake. In support of this, Odegaard et al. (2013:3100) found individuals who reported regular consumption of breakfast to gain less weight (1.9 kg less over an 18-year period).

As a possible explanation to the weight gain association with breakfast skipping, healthier ('quality') breakfast meals are notoriously higher in fibre and whole grains than other meals which may, as a result, assist with daily appetite control and insulin resistance, and prevent weight gain (Pereira et al., 2011:167). Consequently, breakfast skipping has been associated with poor dietary quality. Both Leech et al. (2015:17) and Odegaard et al. (2013:3102) found an inverse association between breakfast skipping and nutrient intakes or dietary quality. In support of this, Pendergast et al. (2016) found breakfast skipping to be associated with an increased prevalence of not meeting the recommended micronutrient intakes for calcium, vitamins C and A, folate and magnesium, in comparison to regular consumers of breakfast. Pereira et al. (2011:167) reported that quality breakfasts (i.e. fruit, fibre and nutrient-rich whole grain foods and low fat dairy)

might have important causal repercussions for the risk of obesity and Type 2 diabetes. Odegaard et al. (2013:3102) also found increased rates of breakfast skipping to be significantly associated with an increased risk of abdominal obesity, metabolic syndrome, hypertension, and Type 2 diabetes.

ii. Snacking

Sebastian et al. (2011) reported significant increases in snacking frequencies over the past four decades, among adults over the age of 20 years. In the 70's, where almost three-quarters (73%) of adults reportedly snacked once or not at all per day, 30 years later, two-thirds (65%) of adults snacked twice or more per day. The consequence of snacking on dietary intakes has been investigated in several studies, with the results showing inconsistent findings, with snacking contributing both positive and negative health-implications. Snacks for example, nowadays, contribute a significantly larger proportion of the macronutrient intake and total daily energy in comparison to their contribution in the late 1970s (Zizza et al., 2012:295). Sebastian et al. (2011) found that, on average, nearly one-quarter (24%) of adults' (older than 20 years) total daily energy was obtained via snacking. Snacking therefore has been in the spotlight for its association with overweight and obesity, as a result of contributing higher energy intakes (Chapelot et al., 2011:161; Sebastian et al., 2011; McCrory & Campbell, 2011:145; Nicklas et al., 2014; Kant & Graubard, 2015:58), as well as saturated fat and sugar contributions (Nicklas et al., 2014).

Research has also shown possible benefits attributed towards snacking behaviour (Zizza et al., 2012:293). Snacking has shown to contribute towards a diet that might not compromise the energy balance, and be shifting towards a reduced fat content (Sebastian et al., 2011). Regardless of snack macronutrient composition, the consumption of snacks can lead to overeating and, potentially, weight gain, according to McCrory and Campbell (2011:145). Nicklas et al. (2014) found snacking to actually also be associated with a nutrient-dense diet. The researchers identified 12 snacking patterns to include: miscellaneous snacks (includes fruit juices and drinks, meat or poultry or fish, cheese, low-fat milk, cakes or cookies or pastries, and crackers or salty snacks); no snacks; cakes or cookies or pastries; sweets; vegetables or legumes; alcohol; milk desserts; crackers or salty snacks; soft drinks; other grains; whole fruit; and coffee or tea. The five snacking patterns 'miscellaneous snacks', 'vegetables or legumes', 'crackers or salty snacks', 'other grains', and 'whole fruit' all contributed a higher HEI-2005 score than a snacking pattern which included no snacks. Further, total intakes of nutrients of public concern (i.e. potassium, calcium, vitamin D, and fibre) and those usually under-consumed (i.e. vitamins A, C and K, folate, and magnesium), as defined according to the 2010 DGA (USDA/USDHHS, 2010), were actually increased in many of the snacking patterns, in comparison to where no snacking was present. However, across the board, the average HEI-2005 scores for all of the snacking patterns were

low, which may indicate that the simple act of consuming a snack may not prove overall dietary quality but, rather, that the specific choices of snacks are important (Nicklas et al., 2014).

The strategy of 'snacking' therefore may have the potential for increasing food and nutrient diversity in the diet, without compromising the energy balance, while shifting towards reduced fat intakes (Sebastian et al., 2011). Research shows however, that although snacking may contribute possible benefits, where snacking behaviours were adopted, individuals did not compensate for the increased energy intakes by reducing energy intakes during later meals (Brindal, 2010:249; Chapelot et al., 2011:161; McCrory & Campbell, 2011:145). As a result, energy balances were impacted. More specifically, Kant and Graubard (2015:58) found snacks, particularly, those consumed between lunch and dinner, and more especially, when consumed in addition to skipping a meal, to contribute an increased amount of energy towards the diet. Nicklas et al. (2014) found that in comparison to where a 'no snacks' pattern was adopted, the majority of the snacks patterns were associated with an increased total energy intake, with the exception of the 'alcohol', 'whole fruit', and 'tea and coffee' snacking patterns. Total energy intake of the snacking patterns ranged from 7 939 kJ (no snacks) to 10 153 kJ (other grains). Chapelot et al. (2011:161) hypothesised that eating occasions between the three main meals may not always have the same effects, provided the consumption of snacks is at a time of hunger prior to eating, and therefore eaten for the purpose of satiety which would, in theory, not lead to overeating and ultimately obesity. The researchers found however, that regardless of the consumption occasion, that snacks failed to significantly delay dinner occasions, nor did their energy contributions reduce satiety in terms of duration, perception or consumption. This weak effect on satiety is thought to be as a result of the high CHO content of most snacks, and the resultant increased levels of insulin secretion on consumption.

2.3.2.2.4 Binge drinking

Riddell et al. (2011:728) found that residing away from home compared to when residing at home, was associated with a higher consumption of alcohol among young adults. Similarly, George et al. (2013:96) found excessive alcohol consumption among university students, commonly referred to as 'bingeing', or 'binge drinking', to be a universal problem. 'Binge drinking', a common social term used to describe the alcohol consumption behaviour most prevalent among young adults, has been investigated in several studies (Courtney & Polich, 2009:153; Naimi et al., 2010:202; Ferriter & Ray, 2011:99).

i. Binge drinking patterns

The term 'binge' can be defined as "a period of uncontrolled or excessive", and/or "unrestrained, immoderate self-indulgence" (Ferriter & Ray, 2011:99), and is frequently used to characterise either food or alcohol consumption (Ferriter & Ray, 2011:99). Binge drinking itself implies periods of regular intake, or patterns of copious drinking, followed by intervals of abstinence, and withdrawals from large quantities of alcohol (Courtney & Polich, 2009:147). It is extensively used to define a drinking pattern in which "four or five or more drinks for women and men, respectively, are consumed in a single occasion" (Gresse et al., 2015:156). As an extension, 'frequent binge drinkers', can then be classified as "consuming greater than this 4/5 allotment, greater than three times within the last month (30 days)", versus 'infrequent binge drinkers' consuming this allotment less than three times within the past month (30 days) (Courtney & Polich, 2009:147). Individuals drinking below this 4/5 threshold can be classified as 'non-binge' drinkers. Likewise, 'heavy binge' drinkers can be classified as "individuals drinking greater than seven, or six drinks during a typical occasion for men and women, respectively, within the past three months (90 days)" (Read et al., 2008:229).

Where 'non-drinkers' can be defined as individuals consuming alcohol at a rate of less than twice per year, 'heavy' drinkers are defined as "individuals binge drinking on a daily basis, or at a rate of three or four times per week". High-frequency binge drinking can then be defined as "binge drinking at a rate of four to eight times per month", versus low-frequency binge drinking defined as "binge drinking once or twice per month" (Morawska & Oei, 2005:206). At the other extreme, it is important to distinguish alcohol-dependence from binge drinking, although alcohol-dependent individuals are often found to indulge in binge drinking behaviours. In the former, individuals regularly consume an amount greater than 10 drinks in succession (Courtney & Polich, 2009:148).

'Moderate' drinking, on the other hand, has been found to have positive associated outcomes (Courtney & Polich, 2009:147); in comparison to 'social' drinking, in which individuals have a usual drinking frequency of "three or four times per week or year below the 4/5 binge drinking frequency" (Morawska & Oei, 2005:206); or 'regular' drinking, defined as "drinking alcohol at least once a week, over a period of three months" (Read et al., 2008:227). Not all binge drinkers, however, have the same drinking patterns, are equally inebriated, or experience identical consequences (Read et al., 2008:233).

ii. Consequences of binge drinking

Binge drinking has been linked to a deterioration in life quality and health according to Read et al. (2008:229), as well as raised stress levels and degrees of suffering, and has been associated with,

among other disorders, alcohol poisoning, accidental injuries, hypertension, meningitis, pancreatitis, sexually-transmitted diseases and suicide (Courtney & Polich, 2009:142), increased risk of liver disease, nervous-system damage, and cancer (George et al., 2013:96). Frequent binge drinkers have been found to be more prone to have fair to poor health, as opposed to infrequent binge drinkers, as well as a higher percentage of sick days (Read et al., 2008:229).

Associations between both binge eating and binge drinking have been found, and have frequently been described as addictive behaviours, in that both are repetitive and uncontrollable in nature and, in particular, when combined with negative social, academic, physical and occupational circumstances. Both behaviours (i.e. binge drinking and binge eating) are portrayed and defined by preoccupation with, and excessive consumption of the substances in relation, and individuals adopting these behaviours have shown consequences of further bingeing behaviours, and resulting associated comorbidity (Ferriter & Ray, 2011:104). Pereira et al. (2005:39) found a positive relation between the frequency of fast food and alcohol consumption. This was supported by a recent study (Bushak, 2014), which found that binge drinking led to overeating, and that a night out could contribute more than 25 200 kJ (6 000 kcal). In the study, approximately half of the people who drank “booze” reported that the alcohol intake had led to binge eating of fast food. As a result, these individuals also then cancelled their plans for exercise the following day due to the associated next-day hangover and spent the day in bed watching TV and consequently, increased their energy intake further to compensate for their hangovers (Bushak, 2014). These latter results were consistent with a study conducted by Yeomans (2010:85), which found that alcohol consumption is associated with an enhanced short-term appetite, and increased voluntary food intake, which may also have a longer-term effect on both food intake and appetite.

In SA, Gresse et al. (2015:157) found that the majority (83%) of the students in their study, both health-science students and non-health-science students, reported alcohol usage, with no significant difference reported between the frequencies of consumption between the two groups. Nearly two-thirds (64%) of the sample also indicated that they had begun drinking before starting university. A low proportion of the sample group (2% of the Health-Science students, vs. 6% of the non-Health-Science students) reported a frequency of alcohol consumption greater than twice per week (twice per week identified as the norm among the students going out during the semester). Half (52%) of the Health-Science students and greater than half (60%) of the non-Health-Science students indicated an alcohol consumption frequency of less than twice per month; and although students were not asked about the number of binge incidents they had had during the past year, more males (42%) versus females (28%) reported at least one episode of binge drinking over this time period.

2.3.3 Traits promoting dietary adequacy among young adults

Although awareness, interest and knowledge of either of the topics of ‘food, nutrition and/or health’ are traits believed to promote dietary adequacy, these traits on their own do not always provide for achieving dietary adequacy. This can be gathered from the limited information available and sourced in this regard in relation to young adults; discussed below.

2.3.3.1 Awareness of food, nutrition and health

Regarding the awareness around the topic of ‘food, nutrition and health’, there is notably a gap in the body of literature available according to Alkerwi et al. (2015:2834). These researchers hence conducted a study around nutritional awareness, defined as the “self-perception of the importance of balanced meals” and therefore the “perceived importance of dietary balance” to maintain good health, among German young adults. The researchers noted that nutritional education efforts alone may not necessarily induce healthier dietary changes and that assessing the nutritional awareness of individuals may serve as an indicator of “nutritional knowledge and self-perception of dietary balance” and may provide an indication of willingness and intent to stay healthy among individuals. Further research according to the researchers, however, is required to standardise the term ‘nutritional awareness’ and to address a broader definition.

In the Alkerwi et al. (2015:2824) study, both women and individuals above the poverty threshold, were found to be nutritionally aware, whereas individuals who were younger and reported an increased consumption intake of energy-dense and less diverse foods, attached little importance to the consumption of balanced meals and thus, were less nutritionally aware. Similarly, Dumanovsky et al. (2011), associated the awareness of energy information among consumers with lower intakes of high-energy foods, and found consumers in high-poverty areas to utilise the energy information on nutritional labels less; supporting the findings by Alkerwi et al. (2015:2824) that poverty was linked to nutritional inattentiveness.

The latter results, in that consumers of increased intakes of energy-dense foods are less nutritionally aware however, may not be entirely accurate; both Mulvaney-Day (2012:359) and Chourdakis et al. (2010:724) found that young adults were aware of the health implications of fast food consumption, in that they were unhealthy (Chourdakis et al., 2010:724; Mulvaney-Day, 2012:359) and were conscious of the long-term consequences of dietary behaviours on health status (Chourdakis et al., 2010:724). Respondents in the Mulvaney-Day et al. (2012:359) study made apologies for eating these foods, commenting that they were just “used to” eating them, or that they enjoyed the taste of these foods and that even where nutritional information was provided for fast food options, the energy information was ignored; comparative to the earlier study by Dumanovsky et al. (2010:2523) where only one-fifth (19%) of young adults who

reported noticing the energy information at point of purchase at the fast food establishments, actually utilised this information in their purchase. As a result, the researchers highlighted the importance of strengthening efforts around increasing awareness and understanding of food energy (cal) among young adults.

A negative association was also found between nutritional awareness and energy density of the diet, and a positive association found between food diversity and adequately meeting national recommendations (promoting food diversity together with reduced intakes of energy dense foods, i.e. those high in fat and/or refined CHO) (Alkerwi et al., 2010:2827). Similarly, Peltzer (2004:26) in their earlier South African study found that the majority of the respondents indicated that health experts recommend eating more fruits (95%) and vegetables (90%), and less fatty (85%), salty (77%) and sugary (75%) foods as their responses, which may indicate that individuals do have some awareness around some healthy eating habits. Awareness around the lowered intake of saturated fats and starchy foods seemed to be low, as only one-quarter (25%) each of the participants respectively indicated that health experts recommend eating less saturated fat and starchy foods.

In a later South African study (Van der Merwe et al., 2012:405), although almost all (95%) of the respondents agreed or strongly agreed that eating healthier, or more ‘nutritiously’ would prevent certain diseases, only a quarter (24%) made an attempt to adjust their diets accordingly for themselves, or their family. A high percentage (93%) of these respondents indicated making these changes for reasons of health. Despite the respondents’ awareness and consciousness of the link between diet and health, there seems to be a clear indication that consumers are less prone to make dietary adjustments, as more than half (56%) of the respondents in the study of Van der Merwe et al. (2012:405) reported: “I eat what I want regardless of what is good for me”. It also seems that students seem to be aware of and know what is good for their health and may put this into practice as can be deduced from a student statement “Actually, I don’t like vegetables, but I know that I need them and that’s why I eat vegetables” provided in the study of Deliens et al. (2014).

2.3.3.2 Interest in food, nutrition and health

The body of literature around young adults’ interest in the topic of ‘food, nutrition and health’ is evidently very limited. One such study by Szoboszlai (2013:46) could be sourced, which investigated the interest in health among young adults between the age of 18 and 30 years, at a university in Hungary. The study revealed that the minority (8.1%) of the young adults perceived their health as being excellent; therefore, presumably, the majority of young adults need to learn how to improve their health. The largest proportion and approximately three-quarters (76.6%) of

the individuals also indicated 'health' as being valuable in their lives. Where health was concerned, the respondents regarded their physical and mental health as most important, followed by social relations associated with health. A high proportion (70.27%) of the young adults in the study indicated that they would be willing to participate in some learning process related to health; of these respondents, and where the individuals could choose more than one response, the highest proportion and just over half (53.7%) indicated that they would be interested in learning about nutrition; followed by exercise and sport (28.4%), mental health and coping with stress (25.4%), and health protection, lifestyle and consultancy (20.9%). The largest motivations behind wanting to acquire knowledge by the individuals, and where the individuals could also choose more than one response, was trying to maintain their health status (70.6%), wanting to protect the health of their family and loved ones, change of lifestyle (36.7%) and that they would like to be informed (34.9%).

2.3.3.3 Knowledge of food, nutrition and health

An increased knowledge around food, nutrition and/or health among young adults, has been associated with healthier eating habits (Mulvaney-Day, 2012:360; Wie & Giebler, 2012:64, Nani, 2016:66; Yahia et al., 2016). Nutritional knowledge is vital since it has an influence on healthy dietary choices and practices according to Nani (2016:63). In support of this, an early study by Buttriss (1997:1988S) identified that a lack of knowledge around healthy food choices was suspected to be a barrier to healthier eating. Nani (2016:65) reported that nutritional knowledge alone, however, was not enough to predict healthier eating behaviours. This is supported by the research of both Misra (2007:2133) and Cooke and Papadaki (2014:300), where nutritional knowledge needs were mediated by attitude, predicting healthier eating behaviours.

In addition to attitude, education is fundamentally linked to knowledge (Wie & Giebler, 2012:64; Nani, 2016:64; Yahia et al., 2016). According to Wie and Giebler (2012:64), nutritional education is important for students in affecting their food choices. According to Yahia et al. (2016), nutritional knowledge and/ or education has the likely ability to improve students' eating habits and enable them to make healthier food choices. Numerous studies have assessed this education-knowledge link, through the use of students taking nutrition as a subject major, as part of their study discipline (Wie & Giebler, 2012:64; Nani, 2016:64), or similarly, science as a subject major (Yahia et al., 2016). Nani (2016:64) established that the students, who were involved in a nutrition course, scored higher in terms of nutritional knowledge questions and had a better quality of diet. Comparative to these findings, were the study results of Wie and Giebler (2012:63), which found that nutritional education had an influence on the awareness of the role of energy in the diet; although converting perceptions into healthier eating habits, was not evident. In the Yahia et al.

(2016) study, students who majored in science as a subject, had significantly lowered intakes of total fat, saturated fat and cholesterol in comparison to non-science major students.

Mulvaney-Day (2012:360) in their study assessing the eating behaviours among young adults, found that personal knowledge regarding food ingredients, based on own food preparation know-how, often gained from family surroundings, reinforced better eating choices. Nutritional knowledge regarding the intake of fat, fruits and vegetables more specifically, was also found to be significantly related to healthier eating practices, with the strongest link found for fruits and vegetables in the much earlier study by Wardle et al. (2000:274).

The two factors, namely nutritional education and the nutritional knowledge gained from it, were thought to help students in making the conscious decision to transform to healthier eating habits (Wie & Giebler, 2012:64). As a result, research recommends implementing or enhancing nutritional education programmes, particularly among students, to promote healthy eating patterns (Wie & Giebler, 2012:64; Nani, 2016:64; Yahia et al., 2016) as this stage of life have been cited as an important stage for the development of lifestyle skills and behaviour (Nani, 2016:64). Continued education is, moreover, recommended as a means of increasing and maintaining perceptions of healthier eating habits, and ultimately, transforming these habits into action (Wie & Giebler, 2012:64). Support for this can be found in the student statement: “When I would follow a health class tomorrow, it doesn’t necessarily mean I would suddenly change my eating behaviour”, provided in the study of Deliens et al. (2014), which implies that knowledge alone is only a first step, which will not spontaneously lead to food choices that are healthier.

2.3.4 Section summary

In view of the above literature, young adulthood, and more specifically the transitional phase between adolescence and young adulthood, represents a critical stage for development. Young adults during this phase, encounter a new period of stress as they adapt to new social, environmental and economic pressures through their new found independence as a result of them transitioning from moving out of their homes towards living on their own. During this progression phase, young adults adopt new responsibilities such as the purchasing and preparation of food, leading them towards an increase in the purchase of fast food, and failing to consume breakfast. Young adulthood is particularly associated with an increase in fast food consumption, due to it being an attractive meal option to young adults (particularly students), due to its’ convenience – ever-desirable at this life-stage due to increasing time constraints experienced by this age group – but forming a major barrier to adopting a healthier diet. Thus, the young adulthood phase is associated with the adoption of unhealthy dietary behaviours such as irregular meal consumption patterns (predominantly meal skipping and snacking) and alcohol

consumption (as well as binge drinking) in addition to consuming a more Westernised diet – thus, lowered intakes of fruits, vegetables and whole grains, and an increase intake of FAFH (predominantly fast food), resulting in increased intakes of total energy, total fat, saturated fat and sodium. Further behaviour and lifestyle patterns adopted at this stage include smoking, substance abuse, physical inactivity and less sleep which in turn, negatively influences both the lifestyles and health of these young adults. Accompanied by lower rates of physical activity, this young adult phase becomes the most critical life-stage period for weight gain; attributed greatly by meal skipping, snacking and fast food consumption.

Despite the unhealthy lifestyles frequently associated with young adulthood, and consistently elevated consumption levels of fast food throughout the literature however, young adults (students) are seemingly not ignorant of the unhealthy implications of fast food consumption, and were conscious of the long-term consequences of these dietary behaviours on health status. Rather, the time needed for the preparation of food versus the immediate availability of fast food, makes the choice of fast food more attractive and ultimately, young adults reportedly still eat what they want, regardless of what's more prudent for them. Research shows however, that young adults would like to see healthier fast food menu alternatives, but that healthier fast food choices are limited. Furthermore, the increased food costs associated with healthier foods makes them less accessible to young adults, especially students. When asked about the importance of health in their lives, the majority of young adults in such studies regarded their physical and mental health as very important. Traits promoting dietary adequacy among young adults investigated were awareness, interest and knowledge in either of the topics of 'food, nutrition and/or health', although literature around these traits is limited. While these traits alone do not always provide for achieving dietary adequacy, the literature sourced on these traits do show cause for an increase in nutritional knowledge to be linked to an increase in adopting healthier eating habits; thus, driving an increased demand for continued nutritional education programmes.

CHAPTER 3 RESEARCH DESIGN AND METHODOLOGY

The purpose of this research, and supported by its major and subsidiary objectives, was to identify whether the provision of nutritional information on fast food would influence the fast food choice or purchase of young adults within the professional and clerk occupational classifications as consumer group, in the City of Cape Town, SA, using a beef burger as the fast food exploratory item. The chapter provides the detail to accomplish this and pertains to: the study type and the study method (as 3.1), the selection of the research subject (i.e. the beef burger as the exploratory item, as 3.2), the respondent sample (i.e. young adults), sample size and sample recruitment (as 3.3), the ethical considerations (as 3.4), the research design - which encompasses the questionnaire as the research tool underlining its construction and methodology for the nutritional information calculations (as 3.5) - the pilot study, undertaken with the modifications to the questionnaire (as 3.6) and, lastly, the data analysis (as 3.7).

3.1 Type of study and the study method

Quantitative research methods are used when something needs to be measured (Shields & Twycross, 2003:24). The process tests or verifies a specific theory (Creswell, 2003:7) by observing and/or measuring information numerically and employing statistical procedures (Creswell, 2003:19). The quantitative approach adopts either an experimental or non-experimental design, respectively employing strategies of inquiry such as experiments or surveys, with the latter based on methods either completed by the recipients (i.e. through questionnaires) or through observations or structured interviews undertaken by the researcher (Creswell, 2003:8). It collects data via predetermined instruments, as the data collection method, to yield numeric and statistical data (Creswell, 2003:18).

Thus, the study lent itself to a quantitative research approach. The study made use of a quantitative cross-sectional survey design, in the form of a self-administered questionnaire. Questionnaires are documents that contain questions and other types of items designed to elicit information appropriate for the purpose of the research (Babbie, 2007:246). When using questionnaires in a study, a descriptive research strategy is employed in which respondents are self-reporting on their own actions and choices (Bickman & Rog, 1998:297).

3.2 Selection of the fast food exploratory item

For the purpose of this study, beef burgers were chosen as the fast food exploratory item. Fast food consumption is, in the main, associated with an increased consumption of hamburgers, French fries and soft drinks (Krishnan et al., 2010:470; Van Zyl et al., 2010:126; Oddy et al., 2013:782; Smith et al., 2013:2370; Kirkpatrick et al., 2014:927). Numerous studies (Elbel et al., 2009:w1117; Roberto et al., 2010:314; Dumanovsky et al., 2011; Dowray et al., 2013:177; Ellison et al., 2013; Morley et al., 2013:8) have investigated the influence of energy provision on the choice of a FAFH (both from restaurant and fast food outlets) by consumers, with some finding the energy provision to positively influence consumers' food choice of a less energy-dense meal (Roberto et al., 2010:316; Dowray et al., 2013:177; Morley et al., 2013:14), as well as a reduced purchase of energy-dense foods (Dumanovsky et al., 2011; Brissette et al., 2013:406; Dowray et al., 2013:177). Dumanovsky et al. (2011), in investigating the influence of nutritional information provision on fast food and the measured energy intakes after the introduction thereof, found that one in six individuals purchased, on average, more products of lower energy at the point of purchase, with this difference being the highest among hamburger chains. Larson et al. (2011:1703) also specifically noted the importance of assessing whether food energy content labelling would assist in persuading young adults to choose nutrient-dense menu options. To date, there is still limited literature available on the influence of extended nutritional information provision on the choice of a fast food, presumably because only the energy information provision of fast food outlet items are now mandatory (Ellison et al., 2013). Burgers also provided an opportunity for ingredient and nutritional labelling content manipulation.

This study focused on four major leading fast food franchises, as per the Franchise Association of South Africa (FASA) (Franchise Association of South Africa, n.d.) located within the Western Cape, and specifically those based in the City of Cape Town, that are competitive in the beef burger category. These establishments were used to obtain information pertaining to their beef burger ingredients and the individual ingredient weights, to be able to compile a representative beef burger in ingredients and in ingredient weights to be presented in the questionnaire.

3.3 Respondent sample as young adults, the sample size and sample recruitment

Purposive and convenience sampling (described in section 3.3.2) below, was used to specifically obtain young adults between the ages of 20 and 34 years, who are consumers of fast food, and specifically beef burgers, and are employed in the City of Cape Town within the professional and clerk occupational classification as consumer group. Details of the respondent sample classification, sample size, and sample recruitment are outlined below.

3.3.1 Respondent sample

The occupational classification groups delineated and used as part of this study were according to the International Standard Classification of Occupations (ISCO-88) for major, minor and unit groups (ILO, 2015). The study made use of the major occupational classifications as professionals (group 2), technicians and associate professionals (group 3) and clerks (group 4) (International Labour Organisation [ILO], 2015) to overall represent the professional and clerk occupational classifications as consumer group. The major occupation classification group as legislators, senior officials and managers (group 1), was not included in the sampling, as it was assumed that individuals in this group would be difficult to gain access to, and would more likely be over the age of 34 years.

These groups were chosen to fulfil the young adult sample, as it was recognised that individuals in these groups would have obtained higher educational achievements. Individuals with a higher level of educational achievement (Ollberding et al., 2010:1234; Brissette et al., 2012:406; Chen et al., 2012:764; Cheah et al., 2015:2780; Jacobs et al., 2010:514), have been proven to be the most likely readers of nutritional information on food product labels, in addition to both employment status (Cheah et al., 2015:2782) and higher income levels (Ollberding et al., 2010:1234; Chen et al., 2012:764; Cheah et al., 2015:2782). In support of this, findings from the South African Jacobs et al. (2010:514) study suggested that where individuals' level of education was lower, the less frequently they read nutritional labels. Fast food was identified as being most popular among young adults between the age of 18 and 34 years (Mohr et al., 2007:1458). In addition, across studies, individuals between the age of 18 (Dumanovsky et al., 2011; Morley et al., 2013:12) and 34 years (Chen et al., 2012:765) were found to be the least likely to report on their use of nutritional labels in comparison to older individuals, thus, providing support for the respondent sample selection.

3.3.2 Sample size

Considering the characteristics of the employed population within the City of Cape Town, approximately 34% are employed within the professionals (85 815 persons or 9.1% of the employed population), technicians and associate professional (100 641 persons or 10.7% of the employed population) and clerks (131 482 persons or 14% of the employed population) major occupational classifications (City of Cape Town, 2013). With a population of 1 112 850 young adults between the ages of 20 and 34 years (20-24, 25-29 and 30-34 age groups) in the City of Cape Town (City of Cape Town, 2013) (see Table 3.1), an average occupational distribution of 34% was calculated across these three major occupational classifications. This provided an estimated population of 378 369 employed within these three occupational classifications for this

young adult age grouping (see Table 3.1), to represent the professional and clerk occupational classifications as consumer group. A minimum respondent sample size of 150 respondents was calculated from the estimated population size of 378 369. The sample calculation used is as follows:

$$n = \frac{Z^2 p q N}{e^2 (N-1) + Z^2 p q}$$

Where: p (probability of success) = 0.5; q (probability of failure) = 0.5; Z (z-value for 95% confidence interval) = 1.96; e (precision) = 0.08; N (population size) = 378 369.

Table 3.1: Young adult population distribution estimation within the City of Cape Town employed within the three selected major occupational classifications

Age group (Years)	Population size (n)	Estimated employment within selected major occupational classifications (%)	Employed population within selected major occupational classifications (n)
20 - 24	385 488	34.0	131 066
25 - 29	400 698	34.0	136 237
30 - 34	326 664	34.0	111 066
	1 112 850		378 369

(Source: City of Cape Town, 2013)

3.3.3 Sample recruitment

Purposive sampling is a form of non-probability sampling, whereby the researcher samples participants in a strategic way, so that those sampled are appropriate to the research questions presented (Bryman, 2012:714). The non-probability sampling method adopted in the current study is a specific sampling strategy referred to as ‘snowball sampling’. Snowball sampling is a form of convenience sampling, whereby the researcher makes initial contact with a small group of people, relevant to the research topic, and then uses them to establish contact with further individuals (Neuman, 2006:222). In this sampling method, the researcher starts by identifying one or more individuals, as ‘cases’ (Neuman, 2006:222) or ‘informants’ (Bernard, 2000:178), meeting the inclusion criteria to be considered as part of the research sample. These individuals are then requested to recommend others who may fit the inclusion criteria (Bernard, 2000:178) and, based on the interrelations surrounding the case, further cases are identified, and the process starts again (Neuman, 2006:222). A critical element in this sampling method is that each individual is connected with another individual through either a direct, or indirect association, or ‘linkage’, and thus most individuals become part of an ‘interconnected web of linkages’. Thus, as the name suggests, ‘snowball’ begins with a small network (one or a few individuals), and slowly becomes larger as it spreads out via the links forming a ‘multistage technique’ (Neuman, 2006:222).

Although the above approach will not result in representative samples, according to Trochim (2006), there are instances when this may be the most appropriate method available, and it is also an effective way to build an exhaustive frame (Bernard, 2000:179). This purposive approach of sampling is useful, and especially convenient when attempting to reach populations that are inaccessible, difficult to locate or where specialised populations are necessary (Bernard, 2000:179; Neuman, 2006:222; Trochim, 2006). In the current study, the population was young adults represented by individuals working in the professionals, technicians and associate professionals, and clerks occupational classifications, who may not have been accessible to the researcher, had it not been for the contact and snowball sampling method adopted through the researchers' contacts and subsequent informants/cases. As the research focused specifically on small- to medium-sized companies and working individuals, the approach was to task one informant/case - or for the purpose of this study, 'recruiter' – among the researchers' primary contacts (direct linkage) who could then identify individuals that fit the criteria of the study, and to then liaise the questionnaires to their primary contacts (indirect linkage) (Neuman, 2006:222). As Bryman (2012:428) suggests, purposive sampling often involves more than one approach. For instance, the sampling of the initial participants may be done without a snowball approach, and these initial contacts may then be used to broaden out into a network, through the snowballing method.

Active data collection occurred over a period of seven months in 2014, ending in October of 2014. To recruit the respondents, the researcher identified and approached 72 primary contacts (via either physical contact and/or the social media) working across 61 small- to medium-sized companies located within the City of Cape Town, who were identified as either fitting the requirements to form part of the study (i.e. between the age of 20 and 34 years, and being a consumer of beef burgers), to form a primary network (direct linkages); and/or who could possibly be considered a 'recruiter' of additional respondents (through either their working circles or friendships), to form a secondary network (indirect linkages). In some instances, primary contacts were able to fulfil a dual-role, as both respondent and recruiter. At the first information stage, primary contacts were informed (either in written form or verbally) of the study (brief introduction), the number of respondents required to take part in the study (minimum of 150) and the demographic (young adults employed within the professionals, technicians and associate professionals and clerk major occupational classifications, of the City of Cape Town between the ages of 20 and 34 years) and eating practice (consume beef burgers) respondent inclusion requirements. In this preliminary phase, contacts were only informed and if they were willing to partake in the study, indicated whether they would partake as recruiter or respondent, or recruiter and respondent (dual) and were then requested to indicate an approximate number of secondary contacts accessible by them, for distribution of the questionnaires if not electronic.

Out of a total of 72 primary contacts contacted for participation in the study, 15 contacts (20.8%) did not respond, leaving a total of 57 (79.2%) primary contacts that agreed to participate in the study. Of these primary contacts, 21 (36.8%) later withdrew from the study, leaving a final pool of 36 primary contacts who agreed to participate as either a recruiter, respondent, or fulfil both roles. Of these 36 primary contacts, half (50%, $n = 18$) were able to fulfil a recruiter role, with two-thirds (61.1%, $n = 11$) of this group able to fulfil both a recruiter and respondent role, and the remaining one-third (28.9%, $n = 7$), able to only fulfil the role as recruiter only, as they either did not fulfil the criteria (21.1%, $n = 4$), or previously had assisted in the pilot testing of the questionnaire (15.8%, $n = 3$). The remaining half (50%, $n = 18$) of these primary contacts, then fulfilled a respondent role only, contributing towards the researchers network (primary linkage), which in addition to the individuals who contributed a dual-role (i.e. both recruiter and respondent) ($n = 11$), formed a total network of 29 individuals as respondents (see Figure 3.1 below). Thus, the final sample encompassed 19 networks, of which one was through the direct linkage to the researcher (primary network), and the remaining 18 through secondary networks (indirect linkages) contributed by the recruiters. These indirect linkages, contributing towards the secondary network, spanned from as low as one individual (where the recruiter could only find one respondent to fit the criteria of the study and complete the questionnaire), to as high as 29 individuals contributing towards the secondary network, and final respondent sample as a respondent role.

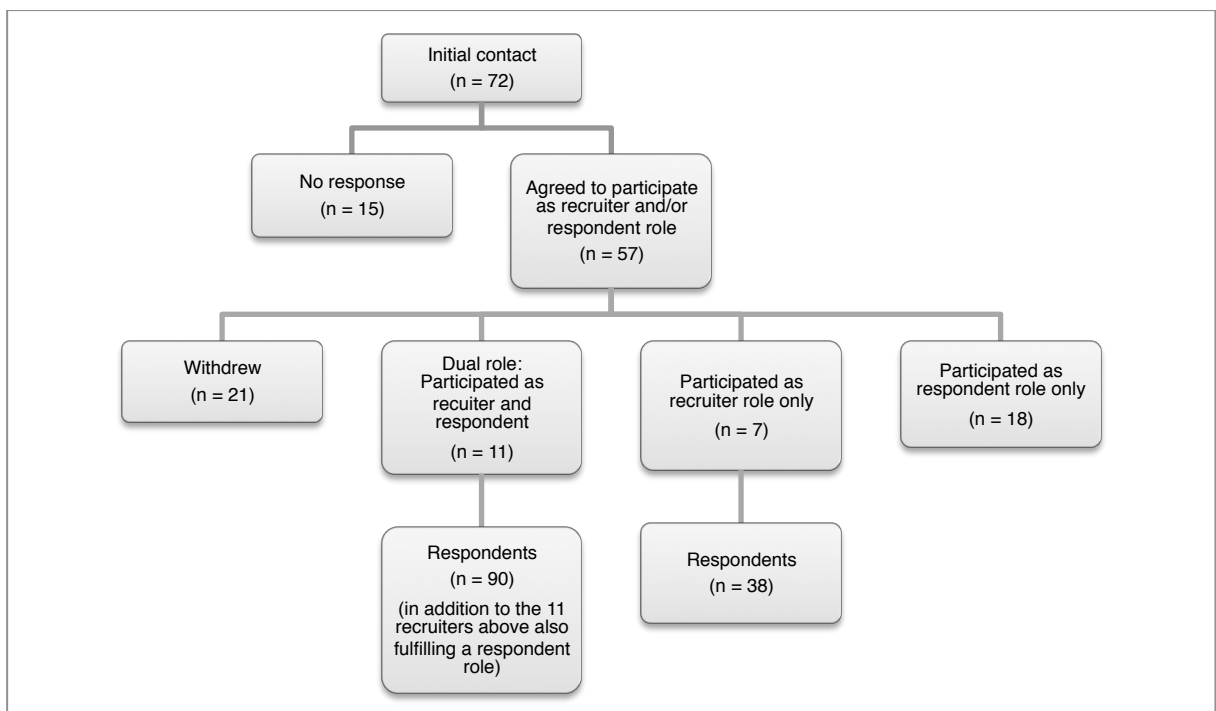


Figure 3.1: Schematic presentation of the snowball sampling method from initial contact ($n = 72$) to obtaining the final number of recruiters ($n = 18$) and the respondent sample ($n = 157$)

3.4 Permission to conduct the study

Following the approval of the research proposal for this study by the institutional Faculty of Applied Sciences Research Committee, ethics approval was granted by the Faculty of Applied Sciences Research Ethics Committee of the Cape Peninsula University of Technology (CPUT) (Ref. 10/2012) (Addendum A).

A respondent information leaflet and consent form (Addendum B) was provided to each prospective respondent, which included contact information for enquiries, a brief introduction to the research topic, its objectives, the respondent's involvement which would comprise completion of the questionnaire, brief references to any potential benefits and risks involved while participating in the study (though none was anticipated), and assured all respondents of information confidentiality. All the respondents participated voluntarily and anonymously and were issued this consent form to verify their participation, but with an added proviso that they could withdraw from the study at any time.

3.5 Questionnaire compilation as research tool

A survey was conducted, using a self-administered 15-page questionnaire (Addendum C) that comprised closed-ended multiple-choice questions, distributed as three major sections, to obtain information on: respondent fast food consumption (as Section A), respondent fast food consumption on nutritional information provision using a beef burger as the fast food exploratory item (as Section B), and respondent demographic, biographic and lifestyle information (as Section C). The questionnaire took approximately 15 minutes to complete and was distributed according to the each respondent's preference for ease of use, as either a hard printed copy or an electronic questionnaire.

Both versions of the questionnaire were replacements for each other, in that there were no formatting or design differences (besides the inclusion of tick boxes on the electronic version for ease of use by the respondent), or changes in the questionnaire construction to accommodate each administration method. Thus, it is important to note that the electronic version of the questionnaire was not a web survey, but rather, exactly the same questionnaire was administered to respondents via two administration methods, i.e. either via paper (printed copy) or via email (electronic version). Studies (Gwaltney et al., 2008:328; Marsh et al., 2014:673) have found no significant differences between using paper and electronic versions of a questionnaire. These researchers reviewed substantial literature that compared these methods of question administration. The data gathered from these comparisons consistently yielded the same result; i.e. questionnaires via paper and computerised questionnaires produced equivalent results. Coons et al. (2009:426) noted that although it is typically not favourable for two methods of

administration to be utilised within the same study, there are situations occurring in which this does occur, and where it may be advisable. These researchers suggested that in studies where the sample participants may be difficult to reach, that more than one manner of administration might improve the overall response rate (Coons et al., 2009:426), as adopted in the current study.

In quantitative research, evidence of validity is crucial (Creswell, 2003:8) and especially when employing a questionnaire as the research or data collection tool. Content validity, as a combined definition, refers to how well-utilised items measuring a concept, represents or covers the content domain, or range of meanings being measured, within a concept (Gronlund 1993:163; Babbie, 2013:146) and is evaluated by careful logical analysis (Gronlund 1993:163) through the use of professional judgment (Thorndike et al., 1991:145; Babbie, 2013:146); that is, as subject-matter experts (Thorndike et al., 1991:145) or researchers about whether or not the subject matter covers the array of possible facets comprising the concept (Babbie, 2013:146). Thus, the questionnaire was compiled with input from the research supervisor, and an expert panel consisting of four higher education lecturers at CPUT in the Faculty of Applied Sciences in the Programme Consumer Science: Food and Nutrition, and qualified experts in the field of food and food science and nutrition. They were utilised to support content- and face-related evidence of the validity of the questionnaire. According to Babbie (2013:84), content validity includes many elements of face validity. Thus, the expert panel considered the questionnaire items for face-related evidence of validity, at the same time that they considered the content-related evidence of validity of the included items. The questionnaire items were assessed for their reasonableness from the respondents' point of view, as representation of the face validity (Thorndike et al., 1991:145). For the content validity evaluation, the items were reviewed in terms of accuracy, appropriateness or relevancy, representing the topics being covered, suitability of the items and their responses (answers), as well as the mutual exclusivity of answers, together with item clarity according to earlier publications by Babbie (1975:107) and format (Nunnally, 1972:29; Huysamen, 1986:40).

3.5.1 Section A of the questionnaire: Respondent fast food consumption

The first part of the questionnaire covered the preferences and popular choices of fast food and the factors affecting its consumption. The factors found to influence the consumption of fast food among the literature and from the investigations, respectively, are listed in Table 3.2 below, together with their associated references.

Table 3.2: Factors found to influence the consumption of fast food among the fast food literature

Factors supporting fast food consumption	Supporting references
Convenience	Stewart et al., 2006:iii; Bryant & Dundes, 2008:329; Harnack et al., 2008:68; Lucan et al., 2010:633; Brindal, 2010:18; Todd et al., 2010:5; Van Zyl et al., 2010:127; Anderson et al., 2011.
Time constraints	Bava et al., 2008:487; Brindal, 2010:234; Todd et al., 2010:5; Van Zyl et al., 2010:127; Bezerra et al., 2012:77; 2008; Cohen & Bhatia, 2012:622; Freeland-Graves & Nitzke, 2013:311; Deliens et al., 2014; Monsivais et al., 2014:796.
Availability	Inagami et al., 2009:691; Moore et al., 2009:34; Bonne-Heinonen et al., 2011:1165; Burgoine et al., 2014.
Preference/taste/ flavour	Driskell et al., 2006:525; Bryant & Dundes, 2008:328; Harnack et al., 2008; Jacobs et al., 2010:518; Lucan et al., 2010:633; Van Zyl et al., 2010:127; Seo et al., 2011:169; Temple & Steyn, 2011:505; Mulvaney-Day et al., 2012:360.
Assumed nutritional content	Stewart et al., 2006:6; Driskell et al., 2006:527; Harnack et al., 2008, Lucan et al., 2010:633; Oni & Matiza, 2014:806.
Advertising/media messages	Fields, 2004:A821; Driskell et al., 2006:252; Mohr et al., 2007:1461; Van Zyl et al., 2010:127.
Influence of friends	Mohr et al., 2007:1461; Brindal, 2010:107; Seo et al., 2011:171; Pelletier et al., 2014:148,
Influence of family	Brindal, 2010:107; Pelletier et al., 2014:148.

The further included questions relating to this section pertained to eating occasions (i.e. “How often do you eat fast foods?”; “When do you usually eat fast foods?”; “With whom do you mostly eat fast foods?”), eating patterns and meal skipping patterns (both during the week and on weekends), and the respondents’ interest in and knowledge of the topic of ‘food, nutrition and health’ as two biographic and lifestyle questions, but related to this section of the questionnaire.

3.5.2 Section B of the questionnaire: Respondent fast food consumption on nutritional information provision

The second part of the questionnaire covered beef burgers as a fast food choice. Here, the section began by delineating the components of a regular beef burger for the purpose of the study; i.e. one white bread roll with one beef patty, a sauce of choice, lettuce, one slice of tomato, one tablespoon of fried onion and three slices of gherkin.

3.5.2.1 Included questions

The respondents were firstly asked (Question B1) to select, out of a choice of two types of burgers, whether they would choose a ‘regular beef burger with additions (extra items)’, or a ‘regular beef burger with no additions (no extra items)’. If the respondent selected ‘with additions’, they were instructed to continue onto the next question (Question B2) to indicate the items (with the option to select more than one typical addition [extra item]) that they would choose (namely ‘cheese’, ‘fried egg’, ‘bacon rasher’ or an ‘extra beef patty’). These typical additions to beef burgers were identified as high constituents of cholesterol (mg), energy (kJ), total fat (g) and/or saturated fat (g), and were chosen as the representative ingredients contributing the ‘added’ nutritional value for each burger choice.

Those respondents who selected the beef burger ‘with no additions’ were instructed to continue onto Question B3 (skipping Question B2), and then to continue with the questionnaire. Thus, both respondent types (those choosing beef burgers with additions versus those choosing beef burgers without additions) answered Question B3, where respondents were asked to indicate the one factor influencing their beef burger choice most out of a list of possible factors (‘familiarity/habit/favourite [*the one I usually buy*]’, ‘taste [*the one that tastes the best*]’, ‘price [*cheapest*]’, ‘assumed nutritional content [*being a healthier choice*]’, ‘availability [*available at my nearest fast food outlet*]’, or ‘other [*with the opportunity to indicate*]’).

In Question B4, respondents were posed with the question: “If nutritional information was provided for beef burgers, would this influence your choice of beef burger?” Similar to Question B1, if respondents answered ‘No’ to this question, they were redirected to continue onto the following question (Question B5) to indicate why the inclusion of nutritional information on beef burgers would not influence their beef burger of choice, and to then continue onto Section C of the questionnaire. If the answer to Question B4 was ‘Yes’, then Question B5 was skipped and the respondents redirected to Question B6, before continuing answering the questionnaire as sequenced.

Since the U.S. Government legislated the Menu-Labeling Law requiring all chain restaurants to provide the energy information for all menu items (Ellison et al., 2013) in 2010, energy labelling at the point of purchase has been promoted to address the limited knowledge of consumers around the nutrient content of fast food (Cohen & Bhatia, 2012:622), contribute towards improving dietary choices, and reduce the amount of energy being purchased and consumed at restaurants (Brissette et al., 2013:404). Researchers theorised (Cohen & Bhatia, 2012:622; Martinez et al., 2012:321), that if consumers are made aware of the energy content of foods offered at these establishments, then they might be able to make healthier food choices. As a

result, numerous U.S. studies (Elbel et al., 2009:w1117; Roberto et al., 2010:314; Dumanovsky et al., 2011; Dowray et al., 2013:177; Ellison et al., 2013; Morley et al., 2013:8), have investigated the effects of energy provision at point-of-purchase at fast food outlets on the purchase of fast food.

Thus, in Question B6, respondents were asked to indicate from a list of 16 possible beef burger alternatives (listing the various previously mentioned typical additions to beef burgers), showing and considering only the energy content (kJ) per beef burger, their beef burger of choice. The question to follow (Question B7) then listed the energy content (in kJ), in combination with the total fat content (in g), saturated fat content (in g) and cholesterol content (in mg), and asked respondents “Which one of the beef burgers would be your (new) beef burger of choice considering the energy, total fat, saturated fat and cholesterol content per burger?” Thus questions B6 and B7 were targeted only at those respondents who indicated their susceptibility to the influence of nutritional information present, followed by Question B8 targeted at the same respondent group, where respondents were asked, firstly, to indicate on which nutritional content (i.e. energy, total fat, saturated fat, cholesterol or a combination of the aforementioned) they based their change of beef burger choice; then, Question B9 (with sub-Questions B9.1 to B9.4) lastly asking respondents to indicate “If the nutritional content of beef burgers are provided, how likely is it that you will buy a beef burger?”: ‘with lower energy content’ (Question B9.1), ‘lower total fat content’ (Question B9.2), ‘lower saturated fat content’ (Question B9.3), or ‘lower cholesterol content’ (Question B9.4), with the guidance to carefully study the nutrient contents per question previously provided (in Question B7) and with respondent categories on a 4-point likeliness rating (i.e. ‘extremely unlikely’, ‘unlikely’, ‘likely’ or ‘extremely unlikely’).

3.5.2.2 Beef burger ingredients and ingredient weights

For section B, Questions B6 and B7, where respondents were asked to indicate their beef burger choice based on the nutritional information provision, it was necessary to calculate these nutritional values as opposed to using the Internet to obtain the values. It was thought that the latter would lead to franchise and or/or burger bias surrounding the nutritional values. To do this, various beef burger types - which were chosen based on a combination of their popularity and on their unique contribution to the nutritional information - were purchased across the selected leading fast food franchises. For example, an egg and cheese burger was chosen to represent a ‘high cholesterol’ burger. To determine the franchises, the FASA website (Franchise Association of South Africa, n.d.) was consulted to establish the fast food franchises in SA supplying beef burgers. The four resulting franchises, utilised for the purpose of this study, were represented as franchise A, B, C and D (Addendum D), which represents the approximate

weights of beef burger ingredients from these leading fast food franchises that specifically supply beef burgers.

Targeted beef burgers across the four franchises were: a) regular burger (expected to contain one beef burger patty, raw tomato, fried onion, gherkin and a standard sauce; although variances across the franchises occurred), b) cheese burger (regular burger with a cheese addition), c) cheese and bacon burger (regular burger with cheese and Macon [strictly halaal franchises] or bacon additions) and d) regular burger with egg addition. Unfortunately, franchise A sold neither a regular beef burger nor any beef burgers with the Macon or bacon addition. To obtain the weight value of an egg, it was also necessary to purchase beef burgers and requesting an egg (fried) addition as a side order at each franchise, as burger options, including eggs, are usually more commonly available as breakfast options.

The beef burger purchasing took place over a period of approximately six months. Burgers were dissected one by one, and each burger ingredient was weighed twice (in g) using a RADWAG PS 4500/C/1 electronic, 2 decimal point scale, and documented with Microsoft® Excel® 2011, (Microsoft Corporation, 2010) to obtain an ingredient average (portion size) across the burger franchises and burger types. If a difference in weight was found in the second weighing, the specific ingredient was then weighed again and the mean value obtained from the three results documented. This ensured precision and eliminated human error. In addition to this, each beef burger was purchased twice for purposes of standardisation. A total of 28 burgers was purchased, of which the individual ingredients were dissected and weighed (Addendum D). The specific dimensions of the beef burger ingredients were not measured for the purpose of this study; neither were they included in the description of the regular beef burger and its components but, rather, the ingredient weights were considered for each individual ingredients' nutritional composition. The researcher considered and made the decision that the inclusion of dimensions would not make a valuable contribution to the questionnaire and may have influenced how the respondent would have answered, as it may have diverted the respondents' focus unnecessarily, and added needless complexity to this section of the questionnaire.

3.5.2.3 Beef burger nutritional information calculations

To calculate the nutritional information per beef burger ingredient, and ultimately, per compiled beef burger of choice, nutritional values (per 100 g) were documented using the Medical Research Council (MRC) FoodFinder 3.0 (FF3) Dietary Analysis Software Program, 2002 (FoodFinder3 Dietary Analysis Software and Program, 2002) (Table 3.3) and via the Microsoft® Excel®, 2011 (Microsoft Corporation, 2010) software. From here, the nutritional information per beef burger ingredient according to the approximate portion size was established (Table 3.4).

Table 3.3: Nutrient content (energy, total fat, saturated fat and cholesterol) of beef burger ingredients per 100 gram

Food code	Grams (g)	Beef burger Ingredient	Nutrient content			
			Energy (Kilojoule)	Total fat (gram)	Saturated fat (gram)	Cholesterol (milligram)
2984	100	Beef, patty, frozen, grilled	1 145.00	19.70	7.72	94.00
3723	100	Lettuce, raw	67.00	0.10	0.01	0.00
2728	100	Cheese, processed, full fat	1 368.00	27.00	17.02	85.00
3755	100	Onion, raw	192.00	0.10	0.02	0.00
2906	100	Bacon, cured, pan-fried/grilled	2 339.00	49.20	17.42	85.00
2869	100	Egg, fried in sunflower oil	763.00	14.60	3.47	399.00
3115	100	Sauce, barbeque, commercial	315.00	1.80	0.27	0.00
3139	100	Sauce, tomato	480.00	0.30	0.05	0.00
3285	100	Bread/rolls, white	1 102.00	1.80	0.41	1.00
3730	100	Onion, sautéed in sunflower oil	893.00	16.60	2.11	0.00
3750	100	Tomato, raw	91.00	0.20	0.03	0.00
3768	100	Gherkins/cucumber, dill, pickled	87.00	0.20	0.05	0.00
3488	100	Salad dressing, mayonnaise	2 165.00	54.00	6.84	28.00

Source: FoodFinder3 Dietary Analysis Software and Program, 2002

Table 3.4: Nutrient content (energy, total fat, saturated fat and cholesterol) of beef burger ingredients per average calculated portion size

Food code ^a	Mean calculated portion size (grams) ^b	Beef burger ingredient	Nutrient content per beef burger ingredient ^a			
			Energy (Kilojoule)	Total fat (gram)	Saturated fat (gram)	Cholesterol (milligram)
2984	82.07	Beef, patty, frozen, grilled	939.72	16.17	6.34	77.15
3723	11.18	Lettuce, raw	7.49	0.01	0.00	0.00
2728	20.13	Cheese, processed, full fat	275.31	5.43	3.43	17.11
3755	7.00	Onion, raw	13.44	0.01	0.00	0.00
2906	32.17	Bacon, cured, pan-fried/grilled	752.38	15.83	5.60	27.34
2869	38.50	Egg, fried in sunflower oil	293.76	5.62	1.34	153.62
3115	6.33	Sauce, barbeque, commercial	19.95	0.11	0.02	0.00
3139	12.67	Sauce, tomato	60.80	0.04	0.01	0.00
3285	70.82	Bread/rolls, white	780.45	1.27	0.29	0.71
3730	8.42	Onion, sautéed in sunflower oil	75.16	1.40	0.18	0.00
3750	17.75	Tomato, raw	16.15	0.04	0.01	0.00
3768	4.83	Gherkins/cucumber, dill, pickled	4.21	0.01	0.00	0.00
3488	8.33	Salad dressing, mayonnaise	180.42	4.50	0.57	2.33
3115, 3139 & 3488	8.88	Sauce	89.31	1.69	0.22	0.84

^a Source: FoodFinder3 Dietary Analysis Software and Program, 2002

^b Source: Addendum D

After establishing nutritional values per ingredient, per calculated average portion size, the final step was to calculate the nutritional information (cholesterol, total fat, saturated fat and energy) per compiled burger. The nutritional information was calculated per beef burger according to the ingredient inclusions forming the different burger options for selection (Table 3.5).

Table 3.5: Nutrient content (energy, total fat, saturated fat and cholesterol) per provided beef burger selection

Beef burger option	Nutrient content per beef burger option ^a			
	Energy (Kilojoule)	Total fat (gram)	Saturated fat (gram)	Cholesterol (milligram)
Regular beef burger	1 879.15	19.84	6.93	78.70
Regular beef burger with cheese	2 154.46	25.27	10.36	95.81
Regular beef burger with fried egg	2 172.90	25.46	8.27	232.32
Regular beef burger with bacon rasher	2 631.53	35.66	12.54	106.04
Regular beef burger with cheese & fried egg	2 448.21	30.89	11.69	249.42
Regular beef burger with cheese & bacon rasher	2 906.84	41.10	15.96	123.15
Regular beef burger with fried egg & bacon rasher	2 925.28	41.28	13.87	259.66
Regular beef burger with cheese, fried egg & bacon rasher	3 200.59	46.72	17.30	276.76
Regular beef burger with extra beef patty	2 818.87	36.00	13.27	155.85
Regular beef burger with extra beef patty & cheese	3 094.18	41.44	16.69	172.95
Regular beef burger with extra beef patty & fried egg	3 112.62	41.62	14.61	309.46
Regular beef burger with extra beef patty & bacon rasher	3 571.24	51.83	18.87	183.19
Regular beef burger with extra beef patty, cheese & fried egg	3 387.93	47.06	18.03	326.57
Regular beef burger with extra beef patty, cheese & bacon rasher	3 846.55	57.26	22.30	200.30
Regular beef burger with extra beef patty, fried egg & bacon rasher	3 865.00	57.45	20.21	336.80
Regular beef burger with extra beef patty, cheese, fried egg & bacon rasher	4 140.31	62.88	23.63	353.91

^a Nutrient content calculated using values obtained in Tables 3.3 and 3.4

As per the explanation for a “regular beef burger” in the questionnaire (see section B, Addendum C), each beef burger was calculated to contain the nutritional values for a regular or standard beef burger as: one white bread roll (71 g), one beef patty (82 g), a sauce of choice (9 g), one leaf of lettuce (11 g), one medium tomato slice (18 g), one level household tablespoon of fried onion (8 g) and two medium gherkin slices (5 g). The above provision for a regular beef burger was established, as it was found that all beef burgers purchased contained one white bread roll, one beef patty and a sauce (tomato sauce, mayonnaise or barbeque (BBQ) sauce). Although lettuce, fried onion and gherkin were not found on all the beef burgers purchased, these ingredients were included as part of the regular beef burger compilation, as they were found on at least half (50%) of all the beef burgers purchased. Tomato was a further chosen addition for the regular beef burger, as it was included on all beef burgers purchased at two out of the four (50%) franchises, and thus on more than half (57%, n = 8) of the burger types purchased across the four

franchises. To obtain nutritional values for “a sauce of your choice” in the description, the mean content of the combination of the nutrient content for tomato sauce (FF3 food code: 3139), mayonnaise (FF3 food code: 3488) and BBQ sauce (FF3 food code: 3115) were used. This regular beef burger composition was utilised across all variants as the base for each burger, before additions were added and calculated.

3.5.3 Section C: Respondent demographic, biographic and lifestyle information

The final section of the questionnaire (Section C, Addendum C) related to the respondent demographic, biographic and lifestyle information. Considering the respondent occupational status, categorised according to the ISCO (ISCO-88) major occupational classifications as professionals (group 2), technicians and associate professionals (group 3) and clerks (group 4) (ILO, 2015) (representing the professional and clerk occupational classifications as consumer group), the response options for Question C1 were delineated as 14 occupational classification groups for ease of read and understanding for the respondents as: a) physicists, mathematical and engineering science, b) life science and health, c) other scientists and technologists, d) teaching, e) business, f) legal, g) archivists, librarians and related occupations, h), social science, i) writers, artistic, creative, entertainment and sports, j) religious and related professionals, k) finance and sales, l) administrative, m) clerks and n) other (with the prompt to indicate), with occupational examples listed underneath each option.

The next questions following in Section C targeted further profiling of the respondent demographic characteristics through establishing respondent gender (Question C2) and living situation as “With whom do you live?” (Question C3). Similarly, to profile and compare the respondent biographic and lifestyle characteristics, Question C4 related to the respondent’s own perceived body weight status (with selections as ‘underweight’, ‘optimal/normal body weight’, ‘slightly overweight/overweight’, or ‘obese’), and Questions C9 to C11 to their alcohol consumption over the past month (30 days). Where Question C9 was dichotomous in nature, to establish whether respondents had drunk alcohol within the last month or not, Questions C10 and C11 focused on identifying binge drinking behaviour (Question C10) and binge drinking frequency (Question C11), as fast food consumption has been linked to an increased consumption of alcohol (Bas-Rastrollo et al., 2010:1361; Krishnan et al., 2010:467; Ganasegeran et al., 2012; Bushak, 2014; Dominguez et al., 2014) and a strong association has been found between binge drinking and young adults (Courtney & Polich, 2009:153; Naimi et al., 2010:202; Ferriter & Ray, 2011:99). The term ‘binge drinking’ is a common term used to describe a drinking pattern in which five or more (or four or more for woman) drinks are consumed within one occasion (Naimi et al., 2010:201). Therefore, respondents who had consumed more than four or

five (depending on their gender) drinks within one occasion could be classified as 'binge drinkers'. To further assess binge drinking patterns, the consumption frequency, in terms of number of occasions, and number of binge drinking days, over the past month (30 days) were assessed, to potentially ascertain the frequency of binge drinking as 'infrequent binge drinking', 'low-frequency binge drinking' or 'frequent binge drinking' and 'high-frequency binge drinking'.

Question C12 assessed the respondent smoking status through response categories as 'non-smoker', 'current smoker', or 'former smoker' and Question C13 ascertained whether the respondent was physically active. Current smokers can be defined as "individuals who smoked tobacco in the last 12 months" and includes those who had quit within the past year. Former smokers are then defined as "those who had quit more than a year ago". Being physically active was defined as "regular involvement of moderate (walking, cycling or gardening) or strenuous exercise (jogging, football and vigorous swimming) for four hours or more a week" (Liu et al., 2011:406).

To assess the respondent eating practices, questions relating to how many days of the week fruit and/or vegetables are consumed (Question C5), along with servings per day of fruit (Question C6), vegetables (Questions C7) and whole grains (Question C8) were asked, to be able to differentiate between individuals who represented healthier dietary intakes, versus those who did not. Health concerns (Jacobs et al., 2010:515; Hess et al., 2011:411; Bosman et al. 2012:39; Graham & Laska, 2012:418; Ellison et al., 2013; Dingman et al., 2014:569) and a more positive attitude towards nutrition (Misra, 2007:2133; Cooke & Papadaki, 2014:300) have been shown to predict more frequent use of nutritional labels. These questions addressing the respondent eating practices (Questions C5 to C8) along with the questions related to their perception of their own body weight status (Question C4), their smoking habit (Question C12) and physical activity (Question C13) therefore, were used to judge whether the respondent group tended to be a health-conscious respondent group (or not).

3.6 Pilot study

Pilot studies are a crucial part of any good study design. Although they do not guarantee success in the main study, it is reported that they increase the likelihood (Van Teijlingen et al., 2001:289) as they improve the internal validity of the final questionnaire to be administered (Peat et al., 2002:123). For the purpose of this study, a pilot study was carried out using a smaller sample of subjects (10% of the final study group), as recommended by Hertzog (2008:180). Fifteen young adults were approached in the same manner, and based on the same inclusion or exclusion criteria as required for the final study, as advised by Thabane et al. (2010:5), according to the three main filter questions: a) aged between 20 and 34 years, b) consumers of beef burgers, and c)

working within the professional and clerk occupational classifications in the City of Cape Town, SA.

The pilot participants were briefed to ascertain whether any problems or issues had been encountered in the questionnaire. The questionnaire was then adjusted, based on the respondents' suggestions for response inclusions, and improved 'flowability', where applicable. As some features of the questionnaire were not preserved, once it had been adjusted after the piloting, the participants utilised for the purpose of the pilot study were excluded from the main study, as proposed by Peat et al. (2002:123).

For the pilot study administration, it was important that specific procedures of the final study were adhered to; thus, the questionnaire was administered to the pilot participants in exactly the same way that it was going to be administered in the final study. As it was intended to make use of both hard copies and electronic versions of the questionnaire, the pilot study was administered in both manners (47%, n = 7 for hard copies, and 53%, n = 8 for electronic versions). The participants were asked to provide feedback on the questionnaire by identifying any possible ambiguities and difficult questions (e.g., if rerouting questions, i.e. where respondents were redirected to one question based on their answer, were confusing, or if any wording was difficult to understand). For a time indication as to the questionnaire completion, five of the participants used for the pilot study were asked to re-pilot the adjusted questionnaire for time only. The respondents, in total, averaged a time between 15 and 20 minutes for completion. It was decided, before piloting the questionnaire, that any unnecessary, difficult or ambiguous questions would be discarded. However, none of them was found to be too difficult or ambiguous and thus, questions were rather adapted, where applicable, according to the respondent suggestions. Each question was assessed as to whether an adequate range of responses was provided, and where not, or where more than one respondent indicated a response category that was not included and seemed viable to be included, this response category was added. All questions were checked for completion and any questions not answered as expected, were re-worded. It was not necessary for the questionnaire to be shortened and/or considerably revised and, as a result, re-piloted based on such occurrence as advised by Peat et al. (2002:123).

For ease of understanding of the comments made by the respondents participating in the pilot study, and changes subsequently made, the changes (formatted questions and responses) are tabulated below per questionnaire section as Table 3.6 for Section A: Participant fast food consumption, Table 3.7 for Section B: Participant fast food consumption on nutritional information provision, and Table 3.8 for Section C: Participant demographic, biographic and lifestyle information. In the 'comments/suggested changes' column, the researcher team (R) suggested change, or pilot participants (P) comment, was noted. The type of change then

subsequently made based on these, was categorised according to seven different change types or reasons, namely: a) emphasis, b) continuity, c) clarity, d) discards, e) additions and g) formatting. Each of these change-types or reasons is discussed in further detail below the tables.

Table 3.6: Summary of the pilot study comments and the resultant changes and formatted questions and responses within Section A: Participant fast food consumption of the questionnaire

Question (Q) and response / answer (A)	Piloted question / response	Comments / Suggested changes by research team (R) and pilot respondents (P)		Change type / Reason	Formatted question / response
QA1	On average, how often do you eat fast foods?	R	Bold the word 'often'	Emphasis	On average, how often do you eat fast foods?
QA2	When do you usually eat fast foods?	R	Bold the word 'When'	Emphasis	When do you usually eat fast foods?
AA2	c. Special occasions	R	Incorporate 'When'	Continuity	c. When it is special occasions
	d. When hungry	R	Rephrase and add assisting text	Continuity	d. When I am hungry (<i>not a mealtime</i>)
				Clarity	
	e. Out of habit	R	Inconsistent	Delete	
	f. When it is mealtime	R	Add assisting text	Clarity	e. When it is mealtime (<i>eaten as a meal</i>)
	g. When you have extra money to spend	R	Change 'you' to be first person 'I'	Continuity	f. When I have extra money to spend
	h. Other	P	"When it is late and I don't have time to cook"	Addition (as g)	g. When I lack the time to prepare foods/meals
		P	"Usually when drinking"	Integrated within 'h'	
		P	"Weekday lunches"	Integrated within 'f'	
		P	"Convenience"	Addition	
		P	"When I lack the time to prepare foods/meals"	Addition (as g)	
P	"Friday nights"	Integrated within 'c'			
QA3	Who do you mostly eat fast foods with?	R	Rephrase and bold the word 'who'	Formatting and emphasis	With who do you mostly eat fast foods?
AA3	a. Family	R	Incorporate 'With'	Continuity	b. With family
	b. Friends	R			a. With friends
	d. Nobody (alone)	R	Incorporate 'With'	Continuity	d. With nobody (alone)
QA4	Of the food choices below, which is your favourite/most preferred fast food?	R	Add and bold the word 'ONE'	Emphasis	Of the fast food choices below, which is your ONE favourite/most preferred?
AA4	a. Burgers (beef/chicken)	P	p. Other: "fish burgers"	Addition	a. Beef burgers
	p. Other (please specify):	P	"Turkish kebab"	Integrated within 'p'	b. Other burgers (chicken/fish)

Question (Q) and response / answer (A)	Piloted question / response	Comments / Suggested changes by research team (R) and pilot respondents (P)		Change type / Reason	Formatted question / response
QA5	Which of the factors below mostly influence your eating of fast foods? (You may indicate more than one answer).	R	Bold and italicise the words ' you may indicate more than one answer '	Emphasis	Which of the factors below influence your eating of fast foods? <i>You may indicate more than one answer.</i>
		R	Remove the word 'mostly'	Delete	
AA5	a. Time constraints (lack of time)	R	Rephrase and italicize assisting text	Formatting and emphasis	a. Time constraints (<i>I lack the time to prepare food/meals</i>)
	b. Convenience (lack of facilities to prepare food)	R			b. Convenience (<i>I lack the facilities to prepare food/meals</i>)
	c. Taste	R	Add assisting text	Clarity	c. Taste (<i>I like the taste of fast foods</i>)
	d. Price (relatively inexpensive)	R	Rephrase and italicise assisting text	Formatting and emphasis	d. Price (<i>fast foods are relatively inexpensive</i>)
	e. Nutritional content	R	Rephrase, add and italicise assisting text	Formatting, clarity and emphasis	e. Assumed nutritional content (<i>being 'healthier' choices</i>)
	f. Availability	R	Add and Italicise assisting text	Clarity and emphasis	f. Availability (<i>fast foods are easily accessible and readily available</i>)
	h. Influence of family/friends	R	Split into two responses	Addition	h. Influence of friends
					i. Influence of family
i. Other (please indicate):	P	"Luxury: not having to use one's own time"	Integrated within 'i'		
QA6	Which of the choices below best describe your way of eating during the week (<i>Monday to Friday</i>)?	R	Bold the word ' week '	Emphasis	Which of the choices below best describe your way of eating during the week (<i>Monday to Friday</i>)?
AA6	n/a	R	Add 'other' as a response option	Addition and continuity	h. Other (please indicate)
QA7	Which meal do you most often skip during the week (<i>Monday to Friday</i>)?	R	Bold the word ' week '	Emphasis	Which meal do you most often skip during the week (<i>Monday to Friday</i>)?
AA7	n/a	P	"None"	Addition	a. None/No meal
QA8	Which of the choices below best describe your way of eating during the weekend (<i>Saturday and Sunday</i>)?	R	Bold the word ' weekend '	Emphasis	Which of the choices below best describe your way of eating during the weekend (<i>Saturday and Sunday</i>)?
AA8	n/a	R	Add 'other' as a response option	Addition and continuity	h. Other (please indicate)
QA9	Which meal do you most often skip during the weekend (<i>Saturday and Sunday</i>)?	R	Bold the word ' weekend '	Emphasis	Which meal do you most often skip during the weekend (<i>Saturday and Sunday</i>)?
AA9	n/a	P	"None"	Addition	a. None/No meal
		P	"Usually have brunch instead of breakfast/ lunch"	Integrated within 'b' (as breakfast)	

Question (Q) and response / answer (A)	Piloted question / response	Comments / Suggested changes by research team (R) and pilot respondents (P)		Change type / Reason	Formatted question / response
AA10	a. Consume types of foods/beverages popular with and consumed by most young adults of your age (<i>similar food and beverage intake as most of your friends, family and/or colleagues</i>)	R	Change 'your' to be in the first person and rephrase as "my"	Continuity	a. Consume types of foods/beverages popular with and consumed by most young adults of my age (<i>similar food and beverage intake as most of my friends, family and/or colleagues</i>)
	b. Consume foods/ beverages considered healthier choices than those consumed by most young adults of your age (<i>or most of your friends, family and/or colleagues</i>)				b. Consume foods/ beverages considered healthier choices than those consumed by most young adults of my age (<i>or most of my friends, family and/or colleagues</i>)
AA11	a. Very interested (<i>will regularly obtain/read information on the topics</i>)	R	Change the word 'topics' to singular 'topic'	Formatting	a. Very interested (<i>will regularly obtain/read information on the topic</i>)
	b. Somewhat interested (<i>will occasionally read/obtain information on the topics</i>)				b. Somewhat interested (<i>will occasionally read/obtain information on the topic</i>)
	c. Not interested (<i>will not obtain/read information on the topics</i>)				c. Not interested (<i>will not obtain/read information on the topic</i>)

Table 3.7: Summary of the pilot study comments and the resultant changes and formatted questions and responses within Section B: Participant fast food consumption on nutritional information provision

Question (Q) and response / answer (A)	Piloted question / response	Comments / Suggested changes by research team (R) and pilot respondents (P)		Change type / Reason	Formatted question / response
QB1	Of the two beef burger choices below, which would be your beef burger of choice?	R	Add and bold the word ' ONE '	Emphasis	Of the two beef burger choices below, which would be your ONE beef burger of choice?
QB2	Indicate the items you would add to the regular beef burger (<i>see above</i>) to make it your beef burger of choice. You may indicate more than one addition (<i>item</i>).	R	Rephrase, bold and add the words ' with additions ', ' extra item(s) ', and bold assisting text.	Formatting, clarity and emphasis	If your answer was ' with additions ' for question B1, indicate the extra item(s) you would add to the regular beef burger (<i>see above</i>) to make it your beef burger of choice. You may indicate more than one addition (item).
QB3	Considering your beef burger choice, which ONE of the factors below would you say had the most influence on your choice?	R	Rephrase	Clarity	Considering your beef burger choice, which ONE of the factors below would you say influenced your choice of beef burger the most ?

Question (Q) and response / answer (A)	Piloted question / response	Comments / Suggested changes by research team (R) and pilot respondents (P)	Change type / Reason	Formatted question / response	
AB3	a. Familiar/Habit (<i>the one you usually buy</i>)	R	Rephrase	Formatting and continuity	a. Familiar/Habit/ Favourite (<i>the one I usually buy</i>)
	b. Taste		Add assisting text	Clarity	b. Taste (<i>the one that tastes the best</i>)
	c. Price (<i>Cheaper</i>)		Rephrase	Formatting	c. Price (<i>Cheapest</i>)
	d. Favourite choice		Combine with a.	Delete	a. Familiar/Habit/ Favourite (<i>the one I usually buy</i>)
	e. Assumed nutritional content (<i>Healthiest</i>)		Rephrase	Clarity	d. Assumed nutritional content (<i>being a 'healthier' choice</i>)
	f. Available at the nearest fast food outlet		Rephrase and add assisting text	Formatting and clarity	e. Availability (<i>available at my nearest fast food outlet</i>)
	g. Other	P	"When I do not have time"	Discarded	
QB4	If nutritional information was provided for beef burgers, would this influence your choice?	R	Add 'of beef burger' at the end of the question	Clarity	If nutritional information was provided for beef burgers, would this influence your choice of beef burger?
<p>CONTINUE ONTO SECTION C ON ANSWERING QUESTION B5 AFTER B4</p> <p>CONTINUE ONTO QUESTION B6 ON ANSWERING QUESTION B4 (as 'Yes')</p>		P	Rephrase (confusing) and move to after Question B4	Clarity	<p>CONTINUE ONTO QUESTION B5 IF "No" WAS ANSWERED FOR QUESTION B4</p> <p>CONTINUE ONTO QUESTION B6 IF "Yes" WAS ANSWERED FOR QUESTION B4</p>
AB5	e. Other (please indicate):	R	<p>"More or less know what the nutritional content of fast food is. This is not eaten for a healthy snack but purely out of convenience/availability"</p> <p>"I know that it's probably unhealthy but I like it, so I eat it"</p> <p>"Even if I knew the information, I would still buy it. I already know they are not very nutritional"</p> <p>"If I feel like a burger I would have it. Not worried about the nutritional info"</p>	Addition	e. I am aware/have an idea of the nutritional content of beef burgers, but will still buy my original choice even if nutritional information was available (<i>i.e. knowing the nutritional information would not affect my choice</i>).

Question (Q) and response / answer (A)	Piloted question / response	Comments / Suggested changes by research team (R) and pilot respondents (P)		Change type / Reason	Formatted question / response
QB6	If your answer was 'Yes' to Question B4, please indicate which ONE of the beef burgers would be your new beef burger of choice considering the energy content per burger . <i>Please study the choices carefully before making your selection.</i>	R	Add the word '(new)' and unbold 'B4'	Clarity and formatting	If your answer was 'Yes' to Question B4, please indicate which ONE of the beef burgers would be your (new) beef burger of choice considering the energy content per burger . <i>Please study the choices carefully before making your selection.</i>
QB7	If your answer was "Yes" to Question B4, please indicate which ONE of the beef burgers would be your new beef burger of choice considering the energy, total fat, saturated fat and cholesterol content per burger . <i>Please study the choices carefully before making your selection.</i>	R	Add the word '(new)' and unbold "B4"	Clarity and formatting	If your answer was 'Yes' to Question B4, please indicate which ONE of the beef burgers would be your (new) beef burger of choice considering the energy, total fat, saturated fat and cholesterol content per burger . <i>Please study the choices carefully before making your selection.</i>

Table 3.8: Summary of the pilot study comments and the resultant changes and formatted questions and responses within Section C: Participant demographic, biographic and lifestyle information

Question (Q) and response / answer (A)	Piloted question / response	Comments / Suggested changes by research team (R) and pilot respondents (P)		Change type / Reason	Formatted question / response
QC1	Based on the listed occupations below, into which occupational group do you fall? <i>(if your occupation is not indicated under a specific group, please select 'other', and indicate your occupation)</i>	R	Bold the words 'occupational group'	Emphasis	Based on the listed occupations below, into which occupational group do you fall? <i>(if your occupation is not indicated under a specific group, please select 'other', and indicate your occupation).</i>
AC1	Other (please specify):	P	"R&D"	Addition	Other Scientists & Technologists <i>Food/Food Science; Biology; Biotechnology; Ecological; Environmental; Horticultural; Landscaping; Nature conservation; Wildlife conservation; Oceanography; Veterinary; Other related professionals & associate professionals.</i>
		P	"Food technologist"		
		P	"Food industry"		
		P	"Food technologist"		
		P	"Food Science"		
QC3	Where do you live?	R	Rephrase for better understanding and an easier read. Bold the addition 'whom'	Format	With whom do you live?

Question (Q) and response / answer (A)	Piloted question / response	Comments / Suggested changes by research team (R) and pilot respondents (P)		Change type / Reason	Formatted question / response
AC3	a. At home (with my parents)	R	Rephrased	Format	a. With my parents
	b. On my own (in an apartment/ house)				f. On my own
	c. With a partner (in an apartment/ house)				c. With a partner
	d. With roommates (in an apartment/ house)				b. With roommates
	e. Other:	P	“With a partner and children”	Addition	d. With a partner and children
		“With my children”	e. With my children		
QC4	How would you describe your body weight status?	R	Rephrase to include the word ‘estimate’	Clarity	How would you describe/estimate your body weight status?
		P	“Is it possible to include BMI?”	Discarded	
QC5	How many days of the week do you eat fruit and/or vegetables? ^a	P	Bold the words ‘week’ and ‘fruit and/or vegetables’	Emphasis	How many days of the week do you eat fruit and/or vegetables ? ^a
QC6	How many servings of fruit do you usually consume per day (one serving = <i>one medium sized fruit OR ½ cup cut-up fruit or fruit juice</i>)? ^a	P	Bold the word ‘day’	Emphasis	How many servings of fruit do you usually consume per day ^a (<i>one serving = one medium sized fruit OR ½ cup cut-up fruit or fruit juice</i>)? ^b
AC6	c. 3 to 5 servings d. More than 5 servings	R	“What about 4 servings?”	Delete and formatting	c. More than 4 servings
QC7	How many servings of vegetables do you usually consume per day ^a (<i>one serving = ½ cup raw or cooked vegetables OR one cup raw leafy vegetables</i>)? ^b	R	Bold the word ‘day’	Emphasis	How many servings of vegetables do you usually consume per day ^a (<i>one serving = ½ cup raw or cooked vegetables OR one cup raw leafy vegetables</i>)? ^b
AC7	b. 2 to 4 servings	P	“Ambiguous. If my answer is ‘4 servings’, I could choose either option b, or c”	Clarity	b. 2 servings
	c. 3 to 5 servings	R	Reformat	Format	c. 3 – 5 servings
QC8	How many servings of whole grains do you consume per day ^a (<i>one serving = 1 slice whole grain bread, ½ cup cooked brown rice, ½ cup whole wheat pasta or about 1 cup ready-to-eat whole grain cereal</i>)? ^b	R	Bold the word ‘day’	Emphasis	How many servings of whole grains do you consume per day ^a (<i>one serving = 1 slice whole grain bread, ½ cup cooked brown rice, ½ cup whole wheat pasta or about 1 cup ready-to-eat whole grain cereal</i>)? ^b
		P	“Does it have to be daily?”	Discarded	

Question (Q) and response / answer (A)	Piloted question / response	Comments / Suggested changes by research team (R) and pilot respondents (P)		Change type / Reason	Formatted question / response
QC9	Have you had any alcohol to drink within the past month (30 days)? ^c	R	Bold the words 'alcohol' and 'month'	Emphasis	Have you had any alcohol to drink within the past month (30 days)? ^c
AC11		P	"None?"	Addition	a. 0 days/None
		P	"No option for having less than 5 drinks"		
		P	"Add an answer for 'none'. I have 1 / 2 most days, but never more than 3".		
		P	"Lacks a response for 'none'"		
		P	"0 days?"		

^aSource: Pollard et al., 2008:316

^bSource: USDA, 2010:83

^cSource: Hutton et al., 2008:2010

3.6.1 Emphasis

The research team elected to emphasise specific words within questions through use of the bold-type font. These included words such as 'often' (Question A1), 'when' (Question A2), 'usually' (Question A2), 'ONE' (Questions A4 and B1), 'day' (Questions C6, C7 and C8), 'week' (Questions A6, A7, and C5), 'weekend' (Questions A8 and A9), 'month' (Question C9), 'with additions' and 'extra item(s)' (Question B2), 'whom' (Question C3), and 'alcohol' (Question C9) to reduce question misapprehension. Further emphasis was placed on bolding and italicising whole sentences in the question, where the respondent was allowed to choose more than one response as an answer (Questions A5 and B2), whereas the rest of the questionnaire allowed for only one response to be chosen. Table 3.6 presents the emphasis changes made to questions A1, A2 and A4 to A8, Table 3.7 the emphasis changes made to Questions B1 and B2 and Table 3.8 the emphasis changes made to Questions C3 and C5 to C9.

3.6.2 Continuity

For purposes of continuity, where possible, all responses to a question were structured in a similar way, i.e. through the use of starting the responses with the same word (as in the answers for Questions A2 and A3, where responses were all changed to start with the word 'When' or 'With', respectively) (see Table 3.6). In responses where the answer originally referred to the second person, for example, in Questions A2 (see Table 3.6) and B3 (see Table 3.7), the word 'you', was changed to read 'I', to be consistent throughout the questionnaire. Similarly, in Question A10, the use of the word 'your' in the response options was changed to 'my'. In

Question A3, responses ‘a. family’, and ‘b. friends’ were also swapped to be consistent in the response ordering of the previous question (Question A2) (See Table 3.6).

3.6.3 Clarity

In instances where it was felt that clarity was needed to avoid ambiguity between the various responses, assisting text was added by way of brackets and providing the aiding text in italics. For example, one respondent suggested that all the provided responses correlated around hunger and that the response: “When hungry” for Question A2, could be phrased better. This response was changed to read, “When I am hungry”, and the text as “(not a mealtime)” added as the aiding text in brackets (see Table 3.6).

For Question A5, assisting text was rephrased to be written in the first person, i.e. ‘lack of time’ was rephrased to read ‘I lack the time’, to aid in better understanding by the respondent (see Table 3.6). Similarly, for Question B3 the responses ‘taste’, ‘price (cheap)’, and ‘assumed nutritional content’ were adapted to include, in brackets as assisting text, ‘taste (the one that tastes the best)’, ‘price (cheapest)’, and ‘assumed nutritional content (being a ‘healthier’ choice)’, respectively (see Table 3.7). In Questions B6 and B7 (see Table 3.7) the word ‘(new)’ was added for clarity around respondents needing to indicate an option different to their previous beef burger choice, and the word ‘estimate’ added to Question C4 (see Table 3.8) as this question (originally, “How would you describe your body weight status?”) was considered as possibly being challenging for some respondents to answer. The inclusion of the word ‘estimate’ could facilitate the respondents’ response choice.

In Section B, respondents were prompted to a) either skip the question following and continue onto the next section, or b) to continue answering the questions, as sequenced, based on their answer to the current question (Question B4) as either ‘Yes’ or ‘No’. This was perceived as confusing and possibly misplaced by being put alongside the question. The instruction section was therefore moved to directly below Question B4, and not alongside it, to avoid confusion (see Table 3.7).

3.6.4 Discards

Some question responses provided were found to be inconsistent, as no respondents in the pilot study chose the response as an answer. In one instance, a response was identified as being unnecessary to be included as a possible answer, for example, in question A2 where “out of habit” was provided as a response selection. This answer was identified as not being a ‘when’ answer consistent with the other responses, and was therefore removed (see Table 3.6).

Various respondent comments were not considered, as they weren't found to be applicable or concrete enough to be added as a possible response, for example, in Question B3 where a pilot respondent indicated, "When I do not have the time" as an 'other' response. This answer was not considered as consistent with the other responses, and thus ignored as a response inclusion (see Table 3.7). Similarly, in Question C4, the pilot respondents' comment was discarded as the suggestion for including the BMI (see Table 3.8) would possibly not be known or correctly by some respondents and thus would not serve a purpose by being included. As a consideration that perhaps the respondents may find describing their body weight status perplexing, the word 'estimate' was included in the question, so that those respondents who were unsure of how to describe their body weight status would know that providing an estimation would be satisfactory.

One pilot respondent also queried whether the question pertaining to whole grain consumption (Question C8) should be based on a daily intake. This suggestion was not considered (see Table 3.8), as research and literature around this topic justified the formation of this question to be structured around the daily consumption of whole grains (USDA, 2010:36). Other response options that were suggested under 'other' responses, but not incorporated as responses, were: "usually when drinking", "weekday lunches", and "Friday nights" (Question A2); "Turkish kebab" (Question A4), "luxury – not having to use one's own time", and "usually have brunch instead of breakfast/lunch" (Question A9). These comments could be integrated within the provided response options (see Table 3.6) and did not justify being further included response options.

3.6.5 Additions

In contrast to the previous section of discarding, where the pilot respondents suggested possible responses to be included as an option in the questionnaire and where the provided response options were not found suited to be added, some provided response options were considered useful to add. Such suggestions were thus added as additional responses. For example, in Question A2, where there was a common theme of the pilot respondents identifying a "lack of time", or a "need for more convenience", the response "When I lack the time to prepare food/meals" was added as an additional response option (see Question A2 in Table 3.6).

In addition, as one respondent had indicated that her most preferred fast food choice was "fish burgers", it was decided to split the response as 'Burgers (beef/chicken)' to be two response options to differentiate between beef burgers, and 'other' burgers (see question A4 in Table 3.6). Similarly, in Question A5, the use of 'friends/family' was split to correspond with previous response options, where these were separated to be two response options. Thus, an additional response was added, where the original combined answer now became two answers, as 'with

friends' and 'with family' (see Table 3.6). In some questions, an oversight was made where the response category 'other' was not included as an answer (Questions A6 and A8). This response was then added as an option where appropriate, to ensure continuity throughout the questionnaire (see Table 3.6). Similarly, the response category 'none/no meal' was added, where relevant (see Questions A7 and A9 in Table 3.7).

For Question B5, four of the pilot respondents had identified one of the most important considerations overlooked as to why nutritional information provision on beef burgers would not influence their choice of beef burger. Pilot respondents who had answered 'No' to the previous question, where they were asked if nutritional information would influence their choice of beef burger, had indicated that their main reason for not being influenced was that they already knew the nutritional content of fast foods (that fast foods were considered 'unhealthy/not very nutritional') and were not concerned with the nutritional load, as they purchased beef burgers purely because they wanted to eat a beef burger, regardless of the nutritional contribution. An additional response was, as a result, added to allow for this choice as a response (see Question B5 in Table 3.7).

In Question C1 (see Table 3.8), six of the pilot respondents - who were employees within the food industry - all indicated their occupations as "Food scientist", "Food technologist" and other such job titles, in the 'other' response option. The category 'Food Science & Technologists' was, as a result, included within the 'Other Scientists & Technologists' occupational group, as a response option.

3.6.6 Formatting

In Question C6 (see Table 3.8), the response 'more than 4 servings' was added to replace and condense both the responses '3 to 5 servings', and 'more than 5 servings', to provide one answer that would satisfy both criteria, and allow for the response for four servings identified as lacking in the piloted questionnaire by one respondent. In some cases, sentences were simply restructured or simplified for an easier read (see Questions A3, Table 3.6 and C3, Table 3.8). The word 'to' was also removed in a response that covered a range, and replaced with a hyphen for continuity. For example, in Question C7, the response '3 to 5 servings' was adapted to read '3-5 servings' (see Table 3.8).

The largest formatting of the piloted questionnaire was Question C1 (Table 3.8) due to concern that this question as it was structured may be confusing and overwhelming to the respondents to answer. Thus the provided response categories were reworded and restructured to provide easier apprehension. Although it was not identified as being confusing by the pilot respondents, the response categories were reviewed and the decision made to rather split and eliminate the three

separate category response options (professionals, technicians and clerks) and categorise these according to their occupation consistent with type (allowing for both professionals and technicians to choose the same answer according to their occupational group sector, as opposed to choosing their answer based on whether they considered themselves as either a professional or associate professional in either occupational category). It was thought that it might be confusing for respondents to identify whether they were either a technician or professional (associate professional) per occupational group. It was also not important to make the distinction between these groups for the purpose of the study, but rather, that it may be more important to segregate occupational groups according to the category sector (see Question C1, Table 3.8).

3.7 Data analysis

Analysis of the data was carried out using numbers as the response to each question of the questionnaire was numerically coded. Data from the questionnaires was entered into the IBM® SPSS® Statistics Version 21 (IBM, 2012) and Version 22 (IBM, 2013) software computer program, through which the statistical analysis of the data took place. Descriptive statistics, in the form of frequency tables, was applied for the analysis of the data. Response options were combined wherever possible to avoid response categories that would have a very low cell count within the data analysis. This was for example applied where some respondents had indicated their own answers under the response option 'other' for questionnaire items. These 'other' or own responses were included wherever they could be combined with existing and already established response options.

Via the Pearson's chi-squared analysis, contingency tables were utilised to compare the data obtained from the respondent group to determine associations/ differences (at a significance level of $p < 0.05$) between the respondents who on the nutritional information provision would change their beef burger choice and those who would not and their fast food and beef burger consumption, eating practice, demographic, biographic and lifestyle information. Response combinations to some questions were additionally made where response categories in the data analysis were found to have empty cells and low cell counts. The Fisher's exact test was furthermore utilised in the above analysis to compare data where two-by-two (2x2) tables represented the data provision.

Logistic regression, as a categorical-data regression method (Al-Ghamdi, 2002:729) and at a 0.05 significance level, was additionally carried out to determine the contribution of the factors found within the respondent fast food and beef burger consumption, eating practice, demographic, biographic and lifestyle information to significantly influence the respondents, via the Pearson's chi-squared and Fisher's exact analyses, to change their beef burger choice on the nutritional

information provision. It was thought that of these factors found within the respondent fast food and beef burger consumption, eating practice, demographic, biographic and lifestyle information to significantly influence the respondents' to change their beef burger choice on the nutritional information provision, some would have a higher potential to do so. Regression methods form a fundamental measure in the analysis of data concerned with the association between a response variable as the outcome or dependent variable and one or more explanatory or independent variables (Al-Ghamdi, 2002:729) and determines the variables that make the observed outcome (dependent variable) most likely (Al-Ghamdi, 2002:732). In logistic regression, the outcome or dependent variable is binary, i.e. the number of available categories are two (Wuensch, 2014:13), which in this study formed the respondent change or not, in beef burger choice on the nutritional information provision. In logistic regression the Wald chi-square statistic, applied in this study, is among the tests used to determine the contribution or significance of each predictor variable (Wuensch, 2014:13).

CHAPTER 4 RESULTS

The findings of the study are presented in six sections with the first section (as 4.1) describing the sample size and profile of the respondents. The next two sections cover the respondent fast food consumption (as 4.2) and selected aspects of their eating practices (as 4.3). The following two sections cover the respondent beef burger choice (as 4.4) and the influence of the nutritional information provision on their beef burger choice (as 4.5). The last section (as 4.6) presents the respondent factors found to influence the beef burger choice on the nutritional information provision.

4.1 Sample size and respondent profile

The section to follow details the sample size, incorporating the number of respondents and the questionnaire distribution, as well as the respondent demographic, biographic and lifestyle characteristics.

4.1.1 Sample size

A total of 304 questionnaires were distributed, with 200 (65.8%) as printed hard copies and 104 (34.2%) as electronic copies, to allow for participation withdrawal, incomplete questionnaire data, or incorrectly completed questionnaires. Out of the 163 respondents who completed the questionnaire (53.6% response rate), six questionnaires (3.7%) had to be discarded, as they were returned incomplete ($n = 1$, i.e. multiple answers were completely omitted), were completed incorrectly ($n = 3$, i.e. where more than one answer was chosen for responses where only one answer was required and could be recorded) or, in some instances, ($n = 2$), it seemed that the recruiter did not adequately screen their respondents as one respondent indicated being a vegetarian and therefore did not eat meat, and the other did not work within the occupational groups defined (two crucial requirements for being able to partake in the study). The remaining questionnaires of 157 respondents were captured and provided the study data, with just over one-third as electronic versions (36.9%, $n = 58$), and the remaining two-thirds (63.1%, $n = 99$) as hard copies.

4.1.2 Respondent demographic characteristics

All the respondents were aged between 20 and 34 years, representing the young adult age grouping, and were screened by the recruiters to ensure that they met the criteria of this age range. A large percentage (93.6%, $n = 147$) of the respondents' occupations fell within the professional and clerk occupational classifications and, in descending order, included occupations

in the categories of: finance and sales (19.7%); physicists, mathematical, and engineering science (14%); teaching (14%); administrative (12.7%); business (9.6%); writers, artistic, creative, entertainment and sports (8.3%); other scientists and technologists (7.6%); life science and health (4.5%); social science (1.9%); and legal (1.3%). There were no reported individuals in the categories of archivists, librarians and related information, or religious and related professionals. Just more than half (56.1%) of the respondents were female, with approximately three-quarters (75.5%) of the respondents representing living circumstances as ‘away from home’ (i.e. either with a partner [27.1%], with a partner and/or with children [17.4% and 3.2%, respectively], on their own [17.5%], with roommates [9.0%] or with family [1.3%]). The remaining quarter (24.5%) of these young adults hence can be considered as still living at home, as defined by Riddell et al. (2011:727), who delineated ‘at home’ individuals as those individuals still residing with their parents. The respondents’ demographic characteristics are presented in Table 4.1.

Table 4.1: Demographic characteristics of the respondents

Respondent demographic characteristics (n = 157)		%	n
Occupation^a	Physicists, mathematical & engineering science	14.0	22
	Life science & health	4.5	7
	Teaching	14.0	22
	Business	9.6	15
	Legal	1.3	2
	Social science	1.9	3
	Writers, artistic, creative, entertainment & sports	8.3	13
	Other scientists & technologists	7.6	12
	Finance & sales	19.7	31
	Administrative	12.7	20
	Clerks	6.4	10
	Gender	Male	43.9
Female		56.1	88
Living circumstance^b	With parents	24.5	38
	With roommates	9.0	14
	With partner	27.1	42
	With partner and children	17.4	27
	With children	3.2	5
	On own	17.5	27
	With family	1.3	2

^a ISCO as professionals, technicians and associate professionals and clerks (ILO, 2015) as sample groups

^b n = 155 as respondent sample (2 missing respondent answers)

4.1.3 Respondent biographic and lifestyle characteristics

Most of the respondents perceived their own body status to be either of an optimal/normal body weight (56.4%), or being slightly overweight or overweight (36.5%), with very few of them viewing themselves as either obese (2.6%) or underweight (4.5%). Just more than half of the respondents indicated that they were non-smokers (53.5%), somewhat interested in the topic of ‘food, nutrition and health’ (56.1%), while nearly two-thirds (64.3%) of them indicated that they engaged in regular physical activity. Where the respondents’ own perceived knowledge of the topic of ‘food, nutrition and health’ was concerned, slightly more than a third (38.9%) indicated their own perceived knowledge as ‘about similar to most’ when compared to fellow young adults. Most of the respondents, however, and a near half (44.6%) indicated having ‘more’ perceived knowledge of the topic of ‘food, nutrition and health’ when compared to fellow young adults, through the responses ‘somewhat more than most’ (33.8%) and ‘much more than most’ (10.8%). Where the respondents’ alcohol consumption was reported, three-quarters (75.8%) of the respondents indicated that they had consumed alcohol in the past month, with the largest proportion of the respondents (38.7%) indicating that they had had at least one drink of alcohol on three to five occasions within the past month. Likewise, among those respondents who indicated that they had consumed alcohol in the past month, a pattern of binge drinking (defined as “5 drinks of alcohol in a row, i.e. within a couple of hours”) (Naimi et al., 2010:201) emerged over the past month with the highest occurrence reported for the greater than three days per month range (30.2%); a higher proportion (43.7%) of the respondents though indicated a pattern of non-binge drinking over the past month. The respondents’ biographic and lifestyle characteristics are presented in Table 4.2

Table 4.2: Biographic and lifestyle characteristics of the respondents

Respondent biographic and lifestyle characteristics (n = 157)		%	n
Own perceived body weight status^a	Underweight	4.5	7
	Optimal/Normal body weight	56.4	88
	Slightly overweight/Overweight	36.5	57
	Obese	2.6	4
Alcohol consumption	Consumption within past month		
	Yes	75.8	119
	No	24.2	38

Respondent biographic and lifestyle characteristics (n = 157)		%	n	
Alcohol consumption	<i>Number of consumption occasions during past month (n = 119)</i>			
	1-2 occasions	24.4	29	
	3-5 occasions	38.7	46	
	6-9 occasions	13.4	16	
	10-19 occasions	18.5	22	
	20-39 occasions	5.0	6	
	<i>Binge drinking occurrence^b (days) during the past month (n = 119)</i>			
	0 days/None	43.7	52	
	1 day	16.0	19	
	2 days	10.1	12	
	3 or more days	30.2	36	
	Smoking status^c	Non-smoker	53.5	84
		Current smoker	29.3	46
		Former smoker	17.2	27
Level of physical activity	Physically active ^d	64.3	101	
	Not physically active	35.7	56	
Own perceived interest in the topic of 'food, nutrition and health'	Very interested	31.8	50	
	Somewhat interested	56.1	88	
	Not interested	12.1	19	
Own perceived knowledge of the topic of 'food, nutrition and health' compared to other young adults	Much less than most	3.8	6	
	Somewhat less than most	12.7	20	
	About similar to most	38.9	61	
	Somewhat more than most	33.8	53	
	Much more than most	10.8	17	

^a n = 156 as respondent sample (one missing respondent answer)

^b Binge drinking was defined as "5 drinks of alcohol in a row, that is, within a couple of hours" (Naimi et al., 2010:201).

^c Current smoker included those who smoked any tobacco in the past 12 months and those who had quit within the past year. Former smoker included those who had quit more than a year ago (Liu et al., 2011:406).

^d Physically active was defined as "regular involvement in moderate exercise (walking, cycling or gardening) or strenuous exercise (jogging, football and vigorous swimming) for four hours or more a week" (Liu et al., 2011:406).

4.2 Respondent fast food consumption

Fast food consumption among the respondents was assessed based on the frequency of consumption (i.e. reported weekly and monthly consumption frequencies), when respondents reported usually eating fast food, and with whom they mostly ate fast food, their preference of fast food from a populated list compiled through available literature, and the factors found to most influence the consumption of fast food.

4.2.1 Fast food consumption behaviour

Where the frequency of fast food consumption of the respondents was concerned, the highest proportion (40.1%) of the respondents reported consumption of fast food as ‘at least two to three times per month’. The weekly consumption of fast food reported among the respondents (39.5%), though, was comparative to this monthly figure. Nearly half (46.8%) of the respondents indicated that they usually consumed fast food when they lacked the time to prepare food or meals. Although a low proportion (13.0% in combination) indicated that they consumed these food types when meeting friends and family, these groups of individuals, in combination, contributed three-quarters (76.3%) towards the individuals with whom the respondents indicated that they mostly consumed fast food. The respondent fast food consumption behaviours are reported in Table 4.3.

Table 4.3: The respondent fast food consumption behaviour

Respondent fast food consumption behaviour (n = 157)		%	n
Consumption frequency	Less than once a month	20.4	32
	At least 2-3 times per month	40.1	63
	At least once a week	26.1	41
	2-3 times a week	7.0	11
	More than 3 times per week, but not daily	3.8	6
	Daily	2.6	4
When usually consumed^a	When meeting friends	9.7	15
	When meeting family	3.3	5
	When it is special occasions	11.7	18
	When hungry	5.8	9
	When it is mealtime	13.6	21
	When having extra money to spend	9.1	14
	When lacking the time to prepare food/meals	46.8	72
With whom mostly consumed^b	With friends	37.8	59
	With family	38.5	60
	With work colleagues	7.7	12
	With nobody	16.0	25

^a n = 154 as respondent sample (three missing respondent answers)

^b n = 156 as respondent sample (one missing respondent answer)

4.2.2 Preferred fast food

In terms of preference for fast food, the most popular fast food choices of the respondents were pizza (31.8%) and beef burgers (22.3%) which, together, provided the popular fast food choice of slightly more than half (54.1%) of the respondents. The other most popular fast food choices of the other half (45.9%) of the respondents in order of preference, and to a much lower preferred fast food choice than pizza and beef burgers, were: Thai food (8.3%); French fries/hot chips (7.0%); grilled fish or chicken (5.1%); Chinese foods (4.4%); chicken or fish burgers (3.8%); pasta (3.2%); shwarmas or wraps (3.2%); toasted or freshly prepared sandwiches (1.9%); pies (1.9%); sushi (1.9%); deep-fried doughs or pastries such as vetkoek, doughnuts, spring rolls or samoosas (1.3%); fried fish or chicken (1.3%); hotdogs, frankfurters, salami, Russians or sausage (1.3%); and curries (1.3%). These preferred fast foods are listed with their popularity frequencies in Table 4.4.

Table 4.4: Favourite/Most preferred fast food choices of the respondents

Respondent preference of fast food (n = 157)		%	n
Favourite/most preferred fast food choice	Beef burgers	22.3	35
	Other burgers (chicken/fish)	3.8	6
	Deep fried doughs or pastries (vetkoek/doughnuts/spring rolls/samoosas)	1.3	2
	French fries/Hot chips	7.0	11
	Pizza	31.8	50
	Pasta	3.2	5
	Grilled fish/chicken	5.1	8
	Fried fish/chicken	1.3	2
	Sandwiches (toasted/freshly prepared)	1.9	3
	Shwarma/Wrap	3.2	5
	Hotdogs/Frankfurters/Salami/Russians/Sausage	1.3	2
	Pies	1.9	3
	Chinese foods	4.4	7
	Thai food	8.3	13
	Curries	1.3	2
	Sushi	1.9	3

4.2.3 Factors influencing fast food consumption

Where respondents were asked to indicate the factors found to influence their eating of fast food and were able to indicate more than one factor, the top four factors having the highest influence were time constraints (52.9%, n = 83), availability (47.1%, n = 74), taste (39.5%, n = 62) and convenience (33.8%, n = 53). Other factors cited, but to a much lower extent were: influence of friends (10.2%, n = 16) and family (7.6%, n = 12); price (5.7%, n = 9); assumed nutritional content (5.7%, n = 9); ‘other’ (2.4% in total, n = 4), as ‘cravings’, ‘need to keep my mind sane’, ‘no food/kitchen facilities’, and ‘social convenience’; and advertising or media messages (0.6%, n = 1). These factors, as influencing the fast food consumption of the respondents, are represented in Figure 4.1.

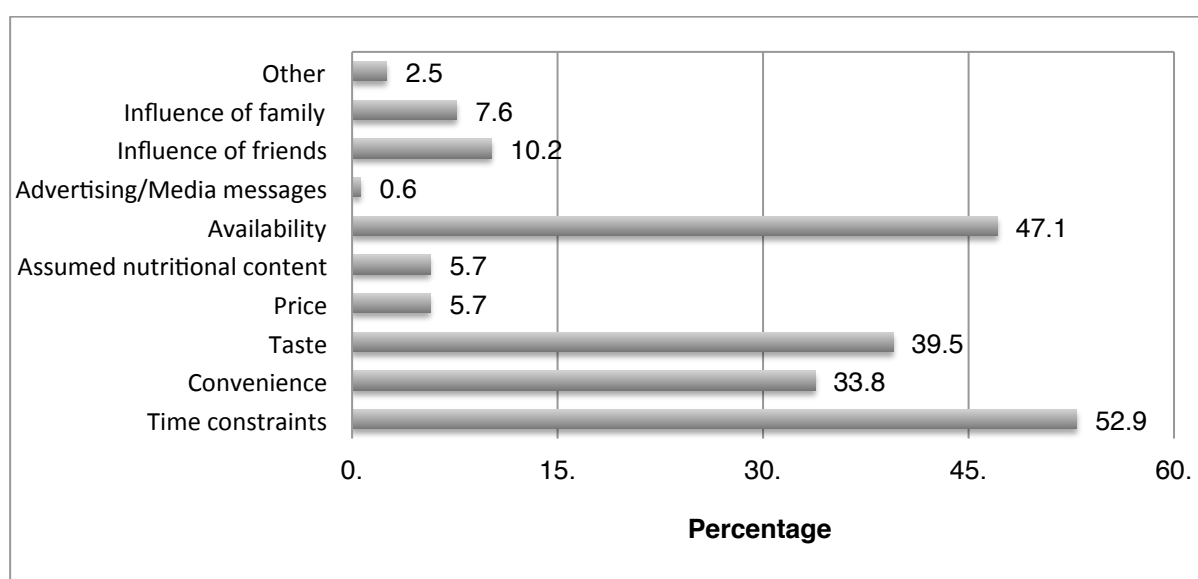


Figure 4.1: Factors found to influence the eating of fast food among the respondents (n = 157)

4.3 Some respondent eating practices

The respondent eating practices were assessed according to their usual meal consumption patterns (i.e. number of meals consumed per day with or without snacks, and meals most often skipped, both during the week and on weekends); daily and weekly fruit and vegetable intakes along with the number of daily servings, daily wholegrain serving intakes; and own perceived dietary intakes according to whether they thought they consumed types of food or beverages popular with and consumed by young adults of their age, or consumed ‘healthier’ choices.

4.3.1 Meal consumption pattern

A higher meal frequency pattern during the week was reported among the respondents, in comparison to on the weekends. Where, during the week, the highest frequency of meal consumption among the respondents was for the uppermost meal limit as ‘three or more meals per day plus snacks’ (41.4%), this meal consumption pattern halved (21.0%) over the weekend.

Virtually the same frequency proportion for the upper-most meal limit as during the week (of 41.4%) was for the meal consumption pattern of ‘two meals per day, plus snacks (40.8%), over the weekend. A substantial difference was not noticed between the week and weekend consumption patterns among the respondents reporting meal consumption patterns of ‘one meal per day’ (1.9% and 2.5%, respectively), or ‘one meal per day plus snacks’ (7.0% and 8.9%, respectively). However, the findings do showcase the popularity of snacking, as respondents showed on both occasions (i.e. during the week, and during the weekend), an increased tendency to consume a meal pattern that included snacks. Meals were also more often skipped on the weekends (80.6%, n = 125), versus during the week (64.1%, n = 100). Although not much difference was seen between breakfast-skipping where, in both instances, it was reported as the meal most frequently skipped during the week (46.1%) and on the weekend (41.9%), the incidence of skipping the other meals was higher on the weekend compared to during the week (i.e. by 28.4% vs. 15.4% of the respondents for lunch and by 10.3% vs. 2.6% of the respondents for supper). These findings are presented in Table 4.5.

Table 4.5: Meal consumption patterns of the respondents

Respondent meal consumption pattern during the week and weekend (n = 157)		%	n
During the week^a	<i>Meal consumption pattern</i>		
	One meal per day	1.9	3
	One meal per day plus snacks	7.0	11
	Two meals per day	10.2	16
	Two meals per day plus snacks	22.3	35
	Three meals per day	16.6	26
	Three or more meals per day plus snacks	41.4	65
	Snacks with no actual meals	0.6	1
	<i>Meal most often skipped^c</i>		
	None/No meal	35.9	56
	Breakfast	46.1	72
	Lunch	15.4	24
	Supper	2.6	4
	During the weekend^b	<i>Meal consumption pattern</i>	
One meal per day		2.5	4
One meal per day plus snacks		8.9	14
Two meals per day		15.9	25
Two meals per day plus snacks		40.8	64
Three meals per day		9.6	15

Respondent meal consumption pattern during the week and weekend (n = 157)	%	n
Three meals per day plus snacks	21.0	33
Snacks with no actual meals	1.3	2
<i>Meal most often skipped^d</i>		
None/No meal	19.4	30
Breakfast	41.9	65
Lunch	28.4	44
Supper	10.3	16

^a Week delineated as Monday to Friday in the study

^b Weekend delineated as Saturday and Sunday in the study

^c n = 156 as respondent sample (one missing respondent answer)

^d n = 155 as respondent sample (two missing respondent answers)

4.3.2 Daily fruit, vegetable and whole grain serving intakes

The largest proportion, and being just over a third (39.5%), of the respondents, reported a consumption of zero (never) (2.6%), or a few (three or less) days per week (36.9%) of fruit and vegetable consumption. Yet, a near similar proportion (34.4%) of the respondents reported consumption of these foods most (four or more) days per week, with only about one quarter (26.1%) who reported a daily consumption. A higher proportion and just more than half (52.9%) of the respondents reported intakes of none to one serving of fruit per day, versus just more than a third (35.7%), who reported intakes of none to one serving for vegetables per day. Similarly, for both food groups, a minimum of two servings per day was indicated to be consumed by nearly half of the respondents, with the indicated daily servings of vegetable intakes as ‘2 servings’ (47.1%) being indicated by slightly more respondents than the indicated daily fruit intakes as ‘2-4 servings’ (45.8%) (See Table 4.6).

Table 4.6: Selected dietary intake aspects of the respondents

Respondent consumption of fruits, vegetables and whole grains, and own perceived dietary intake (n = 157)		%	n
Fruit and vegetable intake	<i>Weekly consumption of fruit and vegetables</i>		
	Never	2.6	4
	A few days (3 days or less) of the week	36.9	58
	Most days (4 or more days) of the week	34.4	54
	Every day of the week	26.1	41
	<i>Daily servings of fruit</i>		
	None to 1 serving	52.9	83
	2-4 servings	45.8	72

Respondent consumption of fruits, vegetables and whole grains, and own perceived dietary intake (n = 157)		%	n
	More than 4 servings	1.3	2
	Daily servings of vegetables		
	None to 1 serving	35.7	56
	2 servings	47.1	74
	3-5 servings	16.6	26
	More than 5 servings	0.6	1
Whole grain intake^a	None	25.0	39
	1 serving per day	45.5	71
	2 servings per day	24.4	38
	3 servings per day	1.9	3
	More than 3 servings per day	3.2	5
Own perceived food and beverage intake^b	Consume types of foods/beverages popular with and consumed by most young adults of own age	51.6	80
	Consume foods/beverages considered healthier choices than those consumed by most young adults of own age	48.4	75

^a n = 156 as respondent sample (one missing respondent answer)

^b n = 155 as respondent sample (two missing respondent answers)

Where wholegrain intake was assessed, the largest proportion and nearly half (45.5%) of the respondents reported consumption of one serving per day, followed by one quarter each (25.0% and 24.4%) reporting no intake, or two servings per day. The minority (5.1%) of the respondents reported an intake of three, or more than three servings per day (see Table. 4.6)

4.3.3 Own perceived dietary intake

By reporting their own perceived food and beverage intakes, there seemed to be an even split between the respondents who perceived themselves consuming ‘healthier’ foods (48.4%) than most young adults of their age, and those who perceived their consumption of foods and beverages to be those considered popular (51.6%) among their peers (see Table 4.6).

4.4 Respondent beef burger choice

The respondents’ choice of a beef burger was assessed according to the type of beef burger they would choose (i.e. with or without additions), and then the additions or extra items that the respondents who chose a beef burger with additions would choose from a given list (either as a singular addition, or in combination). The respondents were then asked to indicate from a pre-defined response list, the one factor that influenced their beef burger choice.

4.4.1 Type and additions

Where respondents were asked to indicate whether they would choose a regular beef burger with or without additions, nearly three-quarters (71.3%) indicated that they would choose a beef burger with additions, with ‘cheese’ as an addition fairing as the most common addition/extra item, as a single item addition (42.0%) and together with bacon (23.2%). Together, these extra item options, as ‘cheese’, and ‘cheese & bacon rasher’, comprised two-thirds (65.2%) of the additions/extra items selected (see Table 4.7).

Table 4.7: Beef burger choice of the respondents

Respondent beef burger choice (n = 157)		%	n
Beef burger choice	Regular beef burger with additions	71.3	112
	Regular beef burger with no additions	28.7	45
Additions/extra items^a	Cheese	42.0	47
	Fried egg	1.8	2
	Bacon rasher	3.6	4
	Extra beef patty	5.3	6
	Cheese & fried egg	1.8	2
	Cheese & bacon rasher	23.2	26
	Cheese & extra beef patty	5.3	6
	Cheese & fried egg & bacon rasher	5.3	6
	Cheese & fried egg & extra beef patty	3.6	4
	Cheese & fried egg & bacon rasher & extra beef patty	4.5	5
	Fried egg & bacon rasher	1.8	2
	Bacon rasher & extra beef patty	0.9	1
	Cheese & bacon rasher & extra beef patty	0.9	1

^a n = 112 as respondent sample (based on respondents indicating “regular beef burger with additions” for beef burger choice)

4.4.2 Factors influencing choice

Among the factors found to influence the respondents’ choice of beef burger, ‘taste’ (55.8%, n = 86) was found to be the number one factor, followed by ‘familiarity’ (28.6%, n = 44) and then the ‘assumed nutritional content’ to a much lower extent (8.4%, n = 13). Both ‘price’ (3.9%, n = 6), and ‘availability’ (3.2%, n = 5) were not rated as factors most likely to influence whether the respondents chose a beef burger with or without additions (see Figure 4.2).

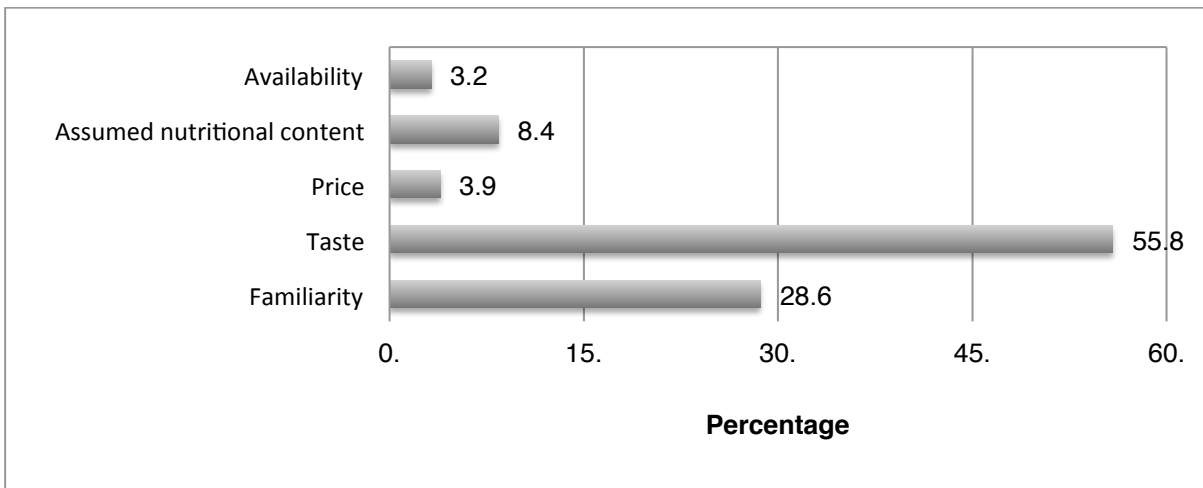


Figure 4.2: Factors influencing the choice of a beef burger by the respondents (n = 154)

4.5 Influence of nutritional information provision on the respondent beef burger choice

The influence of nutritional information provision on the respondent beef burger choice was assessed by asking respondents firstly, whether they would be influenced or not. The respondents in the latter case (indicating that they would not be influenced) then indicated their reasons for not being influenced. Where respondents indicated that they would be influenced by nutritional information provision, these respondents were presented with beef burger options, presented in two nutritional information provision formats detailing quantities of the nutrients [i.e. energy only (shown as a first format), and then cholesterol, total fat and saturated fat content, together with energy (shown as a second format)] per beef burger option, and asked whether or not they would change their choice from being provided with the first to the second format. This was then followed by questions on what nutrient the respondent based their change in choice on (where respondents changed their choice, otherwise indicating ‘no change’), and lastly, the likeliness (from ‘extremely likely’ to ‘extremely unlikely’) of respondents to opt for a beef burger that was lower in each of the nutrient indications. The respondent responses on the above are detailed in the sections to follow.

4.5.1 Influence of nutritional information provision

When asked about whether the nutritional information provision would influence their choice of a beef burger, a large difference was not reported between the respondents who indicated ‘no’ (47.8%, n = 75), and those who indicated ‘yes’ (52.2%, n = 82), although slightly more respondents (n = 7) indicated that they would be. Unfortunately, seven of the respondents who indicated ‘no’ as to whether the nutritional information provision would affect their choice of a beef burger, and who should have provided their reason for not being influenced in their choice by the provision of the nutritional information of beef burgers in a further question, did not

answer but skipped the question altogether. Thus, the total number of respondents answering this question was only 68, versus an expected 75. Of the respondents who indicated that they would not be influenced (now represented by a total of 68), slightly more than half (54.4%, n = 37) of them gave their reason for not being influenced as even though they were aware, or had an idea of the nutritional content of burgers, that they would still purchase their original beef burger of choice even if the nutritional information was available (i.e. knowing the nutritional information would not affect their choice). In addition, one-quarter (25%, n = 17) of these respondents indicated that they did not understand nutritional information. The remaining proportion in combination (20.6%, n = 14) indicated that they ‘do not have time to read and study the nutritional information’ (8.8%, n = 6), that ‘nutritional information is not important to me’ (7.4%, n = 5), or were ‘not interested in nutritional information’ (4.4%, n = 3). The reasons as to why the nutritional information provision would not influence the respondent choice of a beef burger are presented in Figure 4.3.

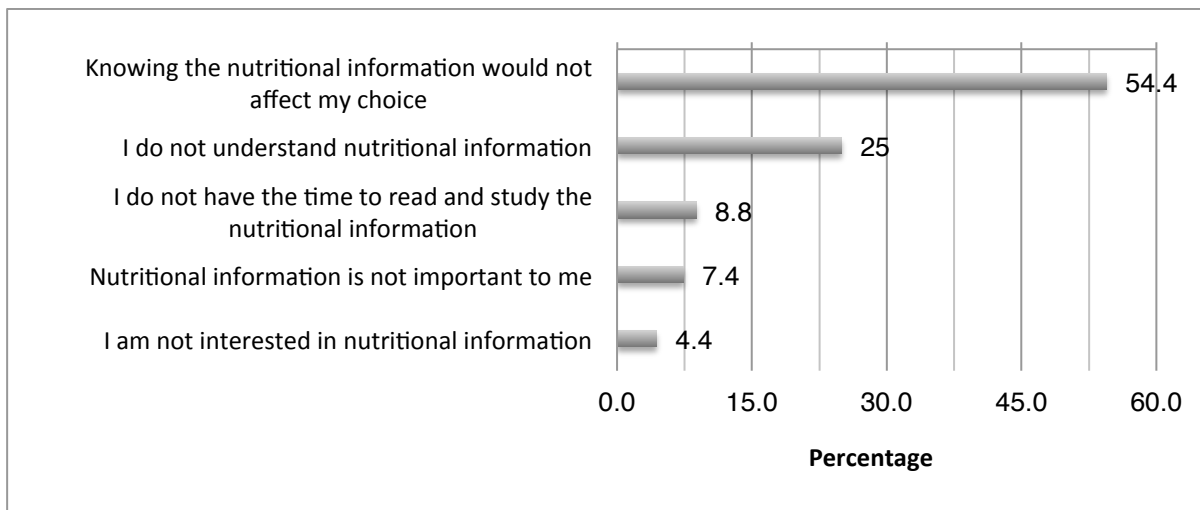


Figure 4.3: Reasons for why the nutritional information provision would not influence the respondent choice of a beef burger (n = 68)

4.5.2 Influence of specific nutritional information provision

The influence of the provision of the energy, total fat, saturated fat and cholesterol content were investigated, as the nutritional information provision on the beef burger choices of the respondents represented by young adults. Table 4.8 represents the choice made by the respondents (n = 82) when they were presented with 16 various beef burger alternatives, in two nutritional information provision formats: firstly, showing only the energy content of each of these beef burger alternatives; and secondly, showing the energy, total fat, saturated fat and cholesterol content of each of these beef burger alternatives. Beef burger choices are presented in Table 4.8 as they were presented within the questionnaire, and are arranged incrementally, in ascending order, according to their nutritional information (i.e. from the least [contributed by a

‘regular beef burger’] to the highest [contributed by a ‘regular beef burger with extra beef patty, cheese, fried egg & bacon’] nutritional contribution). The respondents making these beef burger selections were those who had indicated that they would be influenced by the nutritional information provision when making their beef burger selection. In the first format, when presented with the energy content only, nearly half (45.1%) of the respondents chose a ‘regular beef burger’ where the energy content of this alternative was lowest among the 16 options. Next in line for the most popular choice when presented with the energy content alone, was a ‘regular beef burger with cheese’ (35.5%), further supporting results shown in Table 4.7, where cheese (42.0%) was the most popular choice among the addition/extra item choices. In line with these previous results, a ‘regular beef burger with cheese and bacon’ (5.0%, n = 4), was also the third most popular choice among the respondents, when presented with the energy content alone. Thus, energy content alone (before being shown the content values for total fat, saturated fat and cholesterol), proved to have a strong influence on the respondents choices, as the majority (80.6%) chose the beef burger alternatives with the lowest energy content (i.e. ‘regular beef burger’, and ‘regular beef burger with cheese’) among the beef burger choices.

Table 4.8: Beef burger choice of the respondents when presented with the nutritional information of each beef burger item in two nutritional information provision formats

Respondent beef burger choice when presented with the nutritional information provision of the energy (kJ), total fat (g), saturated fat (g) and cholesterol (mg) content per beef burger (n = 82)		%	n
Item choice when presented with energy content per burger ^a	Regular beef burger	45.1	37
	Regular beef burger with cheese	35.5	29
	Regular beef burger with fried egg	0.0	0
	Regular beef burger with bacon rasher	2.4	2
	Regular beef burger with cheese & fried egg	0.0	0
	Regular beef burger with cheese & bacon	5.0	4
	Regular beef burger with fried egg & bacon	1.2	1
	Regular beef burger with cheese, fried egg & bacon	0.0	0
	Regular beef burger with extra beef patty	0.0	0
	Regular beef burger with extra beef patty & cheese	2.4	2
	Regular beef burger with extra beef patty & fried egg	1.2	1
	Regular beef burger with extra beef patty & bacon	0.0	0
	Regular beef burger with extra beef patty, cheese & fried egg	2.4	2
	Regular beef burger with extra beef patty, cheese & bacon	1.2	1
	Regular beef burger with extra beef patty, fried egg & bacon	1.2	1
	Regular beef burger with extra beef patty, cheese, fried egg & bacon	2.4	2

Respondent beef burger choice when presented with the nutritional information provision of the energy (kJ), total fat (g), saturated fat (g) and cholesterol (mg) content per beef burger (n = 82)		%	n
Item choice when presented with energy, total fat, saturated fat and cholesterol content per burger^b	Regular beef burger	61.0	50
	Regular beef burger with cheese	20.7	17
	Regular beef burger with fried egg	2.4	2
	Regular beef burger with bacon rasher	2.4	2
	Regular beef burger with cheese & fried egg	0.0	0
	Regular beef burger with cheese & bacon	6.2	5
	Regular beef burger with fried egg & bacon	1.2	1
	Regular beef burger with cheese, fried egg & bacon	1.2	1
	Regular beef burger with extra beef patty	0.0	0
	Regular beef burger with extra beef patty & cheese	3.7	3
	Regular beef burger with extra beef patty & fried egg	1.2	1
	Regular beef burger with extra beef patty & bacon	0.0	0
	Regular beef burger with extra beef patty, cheese & fried egg	0.0	0
	Regular beef burger with extra beef patty, cheese & bacon	0.0	0
	Regular beef burger with extra beef patty, fried egg & bacon	0.0	0
Regular beef burger with extra beef patty, cheese, fried egg & bacon	0.0	0	

^a First nutritional information provision format (indicating energy content alone, per beef burger)

^b Second nutritional information provision format (indicating energy, total fat, saturated fat and cholesterol content, per beef burger)

The influence that the nutritional information provision for total fat, saturated fat and cholesterol, in addition to energy, had on the beef burger choices of the respondents is evident in the second part of Table 4.8, in comparison to its first part that presented the item choice when presented only with the energy content per burger option. In the second nutritional information provision format, although a similar majority (81.7%) versus the first format (80.6%) still chose the two beef burger choices with the lowest nutritional contributions (i.e. a ‘regular beef burger’ and ‘regular beef burger with cheese’), the proportion of respondents now selecting a ‘regular beef burger’ which had the lowest nutritional contribution for energy, total fat, saturated fat and cholesterol increased by approximately 16% (from 45.1% to 61.0%). The proportion of the respondents making a ‘regular beef burger with cheese’ as their choice in the second nutritional information provision format (20.7%) decreased from the proportion, making this selection in the first format (35.5%). In addition, the proportion of respondents (7.2%, n = 6) choosing the beef burger options with the highest nutritional contributions (i.e. ‘regular beef burger with extra beef patty, cheese & fried egg’, ‘regular beef burger with extra beef patty, cheese & bacon’, ‘regular beef burger with extra beef patty, fried egg & bacon’, and ‘regular beef burger with extra beef patty, cheese, fried egg & bacon’) in the first nutritional information provision format,

became zero for these beef burger selections in the second nutritional information provision format.

Figure 4.4 represents the reasons provided by the respondents who indicated that they would be influenced by the nutritional information provision for a beef burger (n = 82), for their change in beef burger choice between the two nutritional information provision formats (as presented in Table 4.8); i.e. between being shown the energy content for 16 beef burger choices in the first instance, versus being shown the energy, total fat, saturated fat and cholesterol in the second instance for the same beef burger choices. Where the largest proportion, and two-thirds (69.5%, n = 57) of the respondents indicated ‘no change’, it could be assumed that the majority of these responses were contributed by the respondents choosing a ‘regular beef burger’ (45.1%, n = 37) (see first nutritional information provision format in Table 4.8) and those respondents choosing a ‘regular beef burger with cheese’ (20.7%, n = 17) (see second nutritional information provision format in Table 4.8), as no respondents made a beef burger choice in the second nutritional information provision format having a higher nutritional contribution across the four presented nutritional information content provisions. Of the remaining respondents who did change their choice from the first nutritional information provision format to the second, the largest proportion (11%, n = 9) indicated that a combination of the four nutritional information provision contributions being shown caused them to change their choice, closely followed by the influence of the cholesterol content provision (9.8%, n = 8).

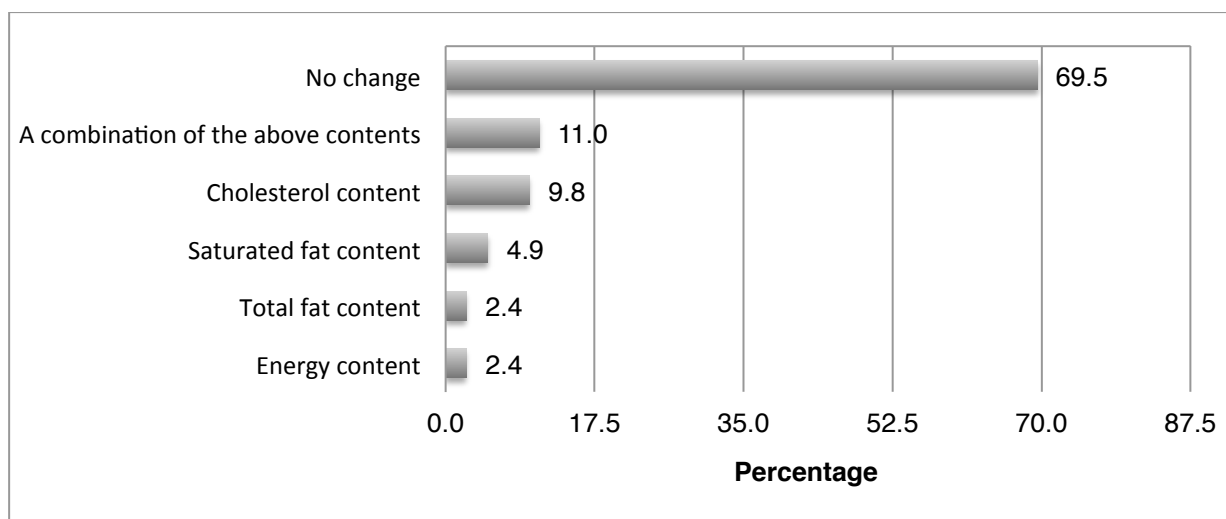
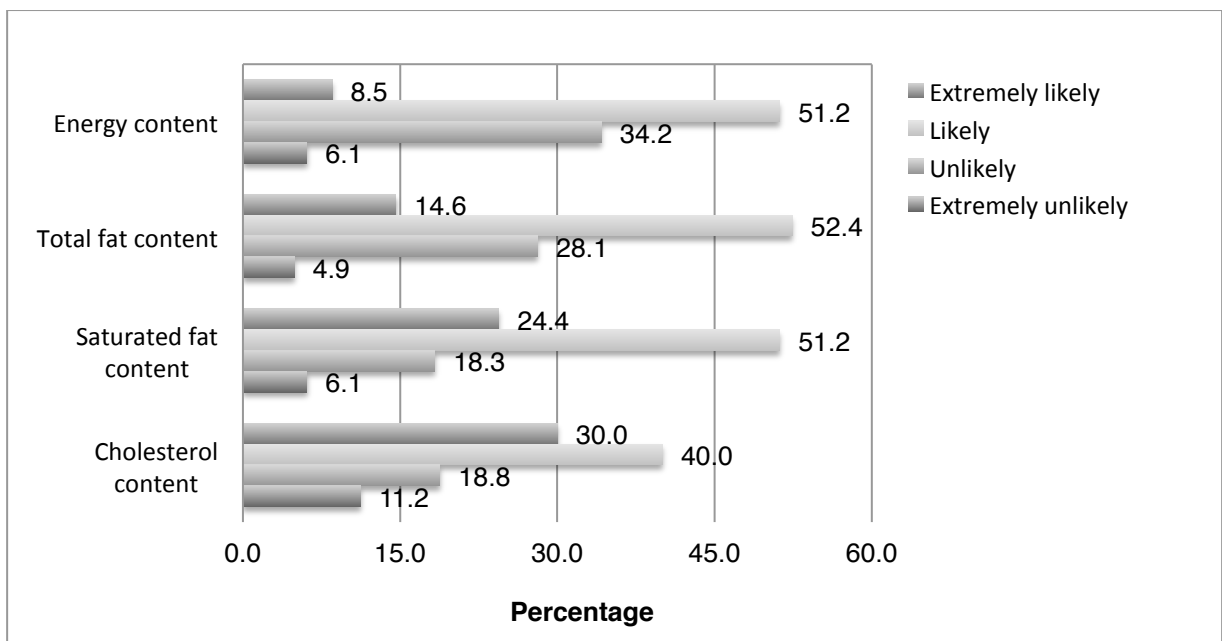


Figure 4.4: Respondent indication for their change of beef burger choice on the nutritional information provision in two different formats (n = 82)

Figure 4.5 represents the likeliness that the respondents would purchase a beef burger with lower levels of each of the four presented nutritional information provisions (i.e. energy, total fat, saturated fat and cholesterol). For each of the nutritional information provisions, each was more

likely (represented by the ‘extremely likely’ and ‘likely’ response options) than not (represented by the ‘unlikely’ and ‘extremely unlikely’ response options) to influence the respondents in their beef burger purchase selection towards lower content options. The influence on the respondent likeliness (considering the responses indicated for ‘extremely likely’ and ‘likely’) ranged from the energy content having a somewhat lower influence (on 59.7%, n = 49 of the respondents) to saturated fat having the higher likely influence (on 75.6%, n = 62 of the respondents) and the cholesterol information provision having a slightly higher respondent influence than the total fat information provision (on 70.0%, n = 56 vs. 67.0%, n = 49 of the respondents). Similarly, energy was also the nutrient most unlikely (considering the responses for ‘extremely unlikely’ and ‘unlikely’) (40.3% of the respondents) to influence the respondents in their beef burger purchase selection towards lower content options. Considering the ‘extremely likely’ response option singly, the influence of the cholesterol information provision on the respondent beef burger purchase likeliness towards a lower content option was foremost (on 30.0%, n = 24 of the respondents), followed by that of the saturated fat information provision (on 24.4%, n = 20 of the respondents) and the influence of these nutritional information provisions being more ‘extremely likely’ on the respondents than that for the total fat and energy information provisions (on 14.6%, n = 12 and 8.5%, n = 7 of the respondents, respectively).



^a n = 80 as respondent sample (two missing respondent answers)

Figure 4.5: Likeliness of the respondents to buy a beef burger with lower levels of the nutrients energy, total fat, saturated fat and cholesterol as the nutritional information provisions (n = 82)

4.6 Factors influencing the respondent beef burger choice on the nutritional information provision

The respondent demographic, biographic and lifestyle characteristics; fast food consumption frequency, occasion characteristics and factors influencing fast food consumption; eating practices; and beef burger consumption; and their associations with the respondent beef burger choice on the nutritional information provision, were assessed through the use of cross-tabs. Both the Pearson’s chi-square and Fisher’s exact test (where cell counts were 2x2) were utilised to determine the significance ($p < 0.05$). In specific cases where cell counts were low for response options, these were combined where they could be considered coherent (represented by superscript symbols in the tables corresponding to footnote indications below the tables representing such data).

4.6.1 Respondent demographic characteristics

The influence of the nutritional information provision on the respondents’ beef burger, choice was not significantly affected by either their gender ($p > 0.05$), or living establishment ($p > 0.05$). The association between the influence of the nutritional information provision on the respondents’ beef burger choice, and their demographic characteristics, as represented by their gender and living establishment, are presented in Table 4.9.

Table 4.9: Association between the influence of the nutritional information provision on the respondents’ beef burger choice and the respondent demographic characteristics

Respondent demographic characteristics (n = 157)		Influence of nutritional information provision on beef burger choice				Significance ($p < 0.05$) ^{a,b}
		Yes		No		
		%	n	%	n	
Gender	Male	39.0	32	49.3	37	0.203 ^a
	Female	61.0	50	50.7	38	
	Total		82	Total	75	
Living circumstance^c	With parents	26.3	21	23.3	17	0.467 ^b
	With roommates	8.8	7	9.6	7	
	With partner	31.2	25	23.3	17	
	With partner and children/ or children/ or family ^d	21.2	17	20.5	15	
	On own	12.5	10	23.3	17	
	Total		80	Total	73	

^a Fisher’s exact test

^b Pearson’s chi-square

^c n = 153 as respondent sample (2 missing respondent answers with ‘yes’, n = 80 and ‘no’, n = 73)

^d Response options combined due to low cell counts

4.6.2 Respondent biographic and lifestyle characteristics

The influence of the nutritional information provision on the respondents' beef burger choice were not significantly affected by their own perceived body weight status ($p > 0.05$), alcohol consumption ($p > 0.05$), level of physical activity ($p > 0.05$) and own perceived knowledge of the topic of 'food, nutrition and health' compared to other young adults ($p > 0.05$) (see Table 4.10). In contrast, the influence of the nutritional information provision on the respondents' beef burger choice was significantly affected by the respondents' smoking status ($p < 0.001$) and their own perceived interest in the topic of 'food, nutrition and health' ($p < 0.05$) (see Table 4.10). Considering the respondents' smoking behaviour, most (69.5%) of the respondents who indicated that the nutritional information provision would influence their beef burger choice were non-smokers, while most (44%) of the respondents who indicated that the nutritional information provision would not influence their beef burger choice were current smokers (see Table 4.10).

Table 4.10: Association between the influence of the nutritional information provision on the respondents' beef burger choice and the respondent biographic and lifestyle characteristics

Respondent biographic and lifestyle characteristics (n = 157)		Influence of nutritional information provision on beef burger choice				Significance ($p < 0.05$) ^{f,g}
		Yes		No		
		%	N	%	n	
Own perceived body weight status ^a	Underweight	6.1	5	2.7	2	0.416 [†]
	Optimal/Normal body weight	58.5	48	54.1	40	
	Slightly overweight/Overweight/Obese ^b	35.4	29	43.2	32	
		Total	82	Total	74	
Alcohol consumption	<i>Consumption within past month</i>					0.267 ^g
	Yes	72.0	59	80.0	60	
	No	28.0	23	20.0	15	
		Total	82	Total	75	
	<i>Number of consumption occasions during past month (n = 119)</i>					0.111 [†]
	1-2	25.4	15	23.3	14	
	3-5	47.4	28	30.0	18	
	6-9	11.9	7	15.0	9	
	>10 ^b	15.3	9	31.7	19	
		Total	59	Total	60	

Respondent biographic and lifestyle characteristics (n = 157)		Influence of nutritional information provision on beef burger choice				Significance (p < 0.05) ^{f,g}	
		Yes		No			
		%	N	%	n		
		Binge drinking^c occurrence (days) during the past month (n = 119)					
		0	54.2	32	33.3	20	0.115 ^f
		1	15.3	9	16.7	10	
		2	8.5	5	11.7	7	
		>3 ^b	22.0	13	38.3	23	
		Total		59	Total	60	
Smoking status^d	Non-smoker	69.5	57	36.0	27	0.000 ^f	
	Current smoker	15.9	13	44.0	33		
	Former smoker	14.6	12	20.0	15		
	Total		82	Total	75		
Level of physical activity	Physically active ^e	69.5	57	58.7	44	0.183 ^g	
	Not physically active	30.5	25	41.3	31		
	Total		82	Total	75		
Own perceived interest in the topic of 'food, nutrition and health'	Very interested (will regularly obtain/read information on the topic)	40.2	33	22.7	17	0.025 ^g	
	Somewhat interested (will occasionally read/obtain information on the topic)/ Not interested (will not obtain/read information on the topic) ^b	59.8	49	77.3	58		
	Total		82	Total	75		
Own perceived knowledge of the topic of 'food, nutrition and health' compared to other young adults^a	Much or somewhat less than most ^b	11.0	9	22.7	17	0.147 ^f	
	About similar to most	40.2	33	37.3	28		
	Somewhat more than most	35.4	29	32.0	24		
	Much more than most	13.4	11	8.0	6		
	Total		82	Total	75		

^a n = 156 as respondent sample (1 missing respondent answer with 'yes', n = 81)

^b Response options combined due to low cell counts

^c Binge drinking was defined as "5 drinks of alcohol in a row, that is, within a couple of hours" (Naimi *et al.*, 2010:201).

^d Current smoker included those who smoked any tobacco in the past 12 months and those who had quit within the past year. Former smoker included those who had quit more than a year ago (Liu *et al.*, 2011:406).

^e Physically active was defined as "regular involvement in moderate exercise (walking, cycling or gardening) or strenuous exercise (jogging, football and vigorous swimming) for four hours or more a week" (Liu *et al.*, 2011:406).

^f Pearson's chi-square

^g Fisher's exact test

A significant difference ($p < 0.05$) was also established between the respondents' interest in the topic of 'food, nutrition and health', and the influence that the nutritional information provision would have on their choice of a beef burger. That is, about three-quarters (77.3%) of the

respondents who indicated that they would not be influenced by the nutritional information provision, were either somewhat (i.e. they would occasionally read, or obtain information on the topic), or not (i.e. would not obtain or read information on the topic) interested in the topic of 'food, nutrition and health'. The remaining quarter (22.7%) who indicated that they would not be influenced, indicated that they were very interested (i.e. would regularly obtain or read information on the topic) in the topic. Among those respondents who indicated that their beef burger choice would be influenced by the nutritional information provision, a higher percentage of the respondents in contrast, and a number double this (40.2% or 33 respondents vs. 22.7% or 17 respondents), indicated that they were very interested in the topic of 'food, nutrition and health' (see Table 4.10).

4.6.3 Respondent fast food consumption

The influence of the nutritional information provision on the respondents' beef burger choice was not significantly influenced by when they usually consumed fast food ($p > 0.05$), or with whom they usually consumed fast food ($p > 0.05$). However, the influence of the nutritional information provision on the respondents' beef burger choice was significantly ($p < 0.05$) influenced by how often they consumed fast food. The respondents reporting a consumption frequency of at least two to three times per month in both groups ('yes' and 'no' on being influenced by the nutritional information provision) were very similar (39.1% and 41.3%, respectively). However, among the groups who indicated that they would be influenced by the nutritional information provision, more respondents consumed fast food less than once a month, and at least once a week, than among those respondents who indicated that they would not be influenced by the nutritional information provision (26.8% vs. 13.3% and 45.2% vs. 54.8%, respectively) (see Table 4.11).

Table 4.11: Association between the influence of the nutritional information provision on the respondents' beef burger choice and the respondent fast food consumption

Respondent fast food consumption (n = 157)		Influence of nutritional information provision on beef burger choice				Significance (p < 0.05) ^c
		Yes		No		
		%	n	%	n	
Consumption frequency	Less than once a month	26.8	22	13.3	10	0.040
	At least 2-3 times per month	39.1	32	41.3	31	
	At least once a week ^d	45.2	28	54.8	34	
		Total	82	Total	75	
When usually consumed^a	Meeting friends/family ^d	8.7	7	17.6	13	0.129
	Special occasions	13.8	11	9.5	7	
	Hungry/mealtime ^d	15.0	12	24.3	18	
	Extra money to spend	12.5	10	5.4	4	
	Lack time to prepare food	50.0	40	43.2	32	
		Total	80	Total	74	
With who usually consumed^b	Friends	33.3	27	42.7	32	0.616
	Family	39.5	32	37.3	28	
	Work colleagues	8.7	7	6.7	5	
	Nobody	18.5	15	13.3	10	
		Total	81	Total	75	

^a n = 154 as respondent sample (3 missing respondent answers with 'yes', n = 80 and 'no', n = 74)

^b n = 156 as respondent sample (1 missing respondent answer with 'yes', n = 81)

^c Pearson's chi-square

^d Response options combined due to low cell counts

The influence of the nutritional information provision on the respondents' beef burger choice was not significantly ($p > 0.05$ in each case) affected by any of the factors investigated to support and/or influence their fast food consumption. That is, time constraints, convenience, taste, price, assumed nutritional content, availability, advertising/media messages, or friends or family (see Table 4.12).

Table 4.12: Association between the influence of the nutritional information provision on the respondents' beef burger choice and the factors influencing the respondent fast food consumption

Factors influencing respondent fast food consumption (n = 157)		Influence of nutritional information provision on beef burger choice				Significance ^a
		Yes		No		
		%	n	%	n	
Time constraints	No	46.3	38	48.0	36	0.874
	Yes	53.7	44	52.0	39	
		Total	82	Total	75	
Convenience	No	29.3	58	61.3	46	0.239
	Yes	70.7	24	38.7	29	
		Total	82	Total	75	
Taste	No	61.0	50	60.0	45	1.000
	Yes	39.0	32	40.0	30	
		Total	82	Total	75	
Price	No	93.9	77	94.7	71	1.000
	Yes	6.1	5	5.3	4	
		Total	82	Total	75	
Assumed nutritional content	No	91.5	75	97.3	73	0.171
	Yes	8.5	7	2.7	2	
		Total	82	Total	75	
Availability	No	57.3	47	48.0	36	0.266
	Yes	42.7	35	52.0	39	
		Total	82	Total	75	
Advertising/media messages	No	98.8	81	100.0	75	1.000
	Yes	1.2	1	0.0	0	
		Total	82	Total	75	
Friends	No	89.0	73	9.3	68	0.796
	Yes	11.0	9	90.7	7	
		Total	82	Total	75	
Family	No	92.7	76	92.0	69	1.000
	Yes	7.3	6	8.0	6	
		Total	82	Total	75	

^a Fisher's exact test

4.6.4 Some respondent eating practices

The influence of the nutritional provision on the respondents' beef burger choice was not significantly ($p > 0.05$) affected by the respondent's usual meal pattern during the weekend. However, the influence of the nutritional information provision on the respondents' beef burger choice were significantly affected by their usual meal pattern during the week ($p < 0.05$), as well as the meals most often skipped during the week ($p < 0.05$) and during the weekend ($p < 0.05$) (see Table 4.13). A significant difference ($p < 0.05$) was found between the daily meal pattern during the week of those respondents who indicated that the nutritional information provision would influence their beef burger choice and those who indicated that it would not. Most, and just over half (51.2%) of the respondents who indicated that the nutritional information provision would influence their beef burger choice indicated that they had a weekly meal pattern of three or more meals per day, plus snacks, or followed a daily snacking pattern, versus only one-third (32%) who reported this meal pattern among the respondents who indicated that they would not be influenced by the nutritional information provision (see Table 4.13).

Table 4.13: Association between the influence of the nutritional information provision on the respondents' beef burger choice and meal pattern as indication of their eating practices

Respondent meal pattern (n = 157)		Influence of nutritional information provision on beef burger choice				Significance ($p < 0.05$) ^a
		Yes		No		
		%	n	%	n	
Daily meal pattern during the week	One meal per day/ one meal plus snacks ^d	4.9	4	13.3	10	0.035
	Two meals per day	6.1	5	14.7	11	
	Two meals per day plus snacks	19.5	16	25.3	19	
	Three meals per day	18.3	15	14.7	11	
	Three or more meals per day plus snacks/ only snacks ^d	51.2	42	32.0	24	
		Total	82	Total	75	
Daily meal pattern during the weekend	One meal per day/ one meal per day plus snacks ^d	11.0	9	12.0	9	0.839
	Two meals per day	13.4	11	18.7	14	
	Two meals per day plus snacks	40.2	33	41.3	31	
	Three meals per day	11.0	9	8.0	6	
	Three meals per day plus snacks/ only snacks ^d	24.4	20	20.0	15	
		Total	82	Total	75	

Respondent meal pattern (n = 157)		Influence of nutritional information provision on beef burger choice				Significance (p < 0.05) ^a
		Yes		No		
		%	n	%	n	
Meal most skipped during the week^b	None/ no meal	48.1	39	22.7	17	0.004
	Breakfast	35.8	29	57.3	43	
	Lunch/ dinner ^d	16.1	13	20.0	15	
		Total	81	Total	75	
Meal most skipped during the weekend^c	None/ no meal	25.9	21	12.2	9	0.043
	Breakfast	32.1	26	52.7	39	
	Lunch	30.9	25	25.7	19	
	Dinner	11.1	9	9.4	7	
		Total	81	Total	74	

^a Pearson's chi-square

^b n = 156 as respondent sample (1 missing respondent answer with 'yes', n = 81)

^c n = 155 as respondent sample (2 missing respondent answers with 'yes', n = 81 and 'no', n = 74)

^d Response options combined due to low cell counts

Among those respondents who indicated that the nutritional information provision would influence their beef burger choice, nearly half (48.1%) indicated not skipping meals during the week, while among those respondents who indicated that the nutritional information provision would not influence their beef burger choice, more than half (57.3%) indicated that they mostly skipped breakfast during the week. Among the respondents who indicated that the nutritional information provision would influence their beef burger choice, a near equal number indicated that they did not skip meals during the weekend (25.9%, n = 21) or skipped breakfast (32.1%, n = 26) or lunch (30.9%, n = 25) during the weekend. However, among those respondents who indicated that the nutritional information provision would not influence their beef burger choice, most indicated that they skipped breakfast (52.7%) followed by lunch (25.7%) during the weekend (see Table 4.13).

The influence of the nutritional information provision on the respondents' beef burger choice were significantly affected by the respondent's own perception of their dietary intake compared to that of other young adults of their own age (p < 0.05), along with their weekly fruit and vegetable intake (p < 0.05), daily fruit serving intake (p < 0.05), and daily wholegrain serving intake (p < 0.05). The influence of the nutritional information provision on the respondents' beef burger choice was not significantly affected by their daily intake servings of vegetables (p > 0.05) (see Table 4.14).

Table 4.14: Association between the influence of the nutritional information provision on the respondents' beef burger choice and the respondent own dietary intake description and intake of some foods as indication of their eating practices

Respondent own dietary intake description and intake of some foods		Influence of nutritional information provision on beef burger choice				Significance (p < 0.05) ^{c,d}
		Yes		No		
		%	n	%	n	
Own dietary intake description^a	Consume types of foods/beverages popular with and consumed by most young adults of own age	40.7	33	63.5	47	0.006 ^d
	Consume types of foods/beverages considered healthier choices than those consumed by most young adults of own age	59.3	48	36.5	27	
		Total	81	Total	74	
Weekly fruit and vegetable consumption	Never/ few days (3 days or less) ^e	28.0	23	52.0	39	0.005 ^c
	Most days (4 days or more)	37.8	31	30.7	23	
	Every day	34.2	28	17.3	13	
		Total	82	Total	75	
Number of daily fruit servings	None to 1	41.5	34	65.3	49	0.004 ^d
	2 or more ^e	58.5	48	34.7	26	
		Total	82	Total	75	
Number of daily vegetable servings	None to 1	32.9	27	38.7	29	0.637 ^c
	2	47.6	39	46.7	35	
	3 or more ^e	19.5	16	14.6	11	
		Total	82	Total	75	
Number of daily wholegrain servings^b	None	17.1	14	33.8	25	0.044 ^c
	1	52.4	43	37.8	28	
	2 or more ^e	30.5	25	28.4	21	
		Total	82	Total	74	

^a n = 155 as respondent sample (2 missing respondent answers with 'yes', n = 81 and 'no', n = 74)

^b n = 156 as respondent sample (1 missing respondent answer with 'no', n = 74)

^c Pearson's chi-square

^d Fisher's exact test

^e Response options combined due to low cell counts

Among the respondents who indicated that the nutritional information provision would influence their beef burger choice, most (59.3%) described their own dietary intake as consuming types of foods and beverages considered healthier choices than those consumed by most young adults of their age. The majority (72%) of this group of respondents also reported that they consumed fruit and vegetables on most days (four days or more) per week (37.8%), daily (34.2%) and most

(58.5%) also consumed two or more daily fruit servings. In addition, the majority (82.9%) consumed one (52.4%) to two or more (30.5%) daily whole grain servings (see Table 4.14).

In contrast, most (63.5%) of those respondents who indicated that the nutritional information provision would not influence their beef burger choice, described their own dietary intake as consuming types of foods and beverages popular with and consumed by most young adults of their age. The majority (82.7%) of this group of respondents also reported that they never consumed fruit and vegetables, or only on a few days per week (three days or less) (52%), followed by most days (four days or more) per week (30.7%) and most (65.3%) consumed either none or only one daily fruit serving. The majority (71.6%) also reported that they consumed none (33.8%) to one (37.8%) daily wholegrain serving (see Table 4.14).

4.6.5 Respondent beef burger consumption

The influence of the nutritional information provision on the respondents' beef burger choice was significantly affected by their beef burger of choice ($p < 0.05$) and the factors influencing their beef burger of choice ($p < 0.05$) (see Table 4.15). Among those respondents who indicated that the nutritional information provision would influence their beef burger choice, a significantly ($p < 0.05$) higher number and double the proportion of respondents (37.8%, $n = 31$) indicated that they consumed regular beef burgers without additions (no extra items), than among those respondents who indicated that the nutritional information provision would not influence their beef burger choice (18.7%, $n = 14$). When further investigating the respondents who were influenced by the nutritional information provision and those who weren't, and their beef burger selection, nearly two-thirds (62.2%) of those respondents who were influenced by the nutritional information provision, chose a regular beef burger with additions, versus slightly more than one-third (37.8%) who chose a beef burger without additions; while of those respondents who were not influenced by the nutritional information provision, more than four times the number (81.3%, $n = 61$) of respondents among them chose a beef burger with additions, than those who chose a beef burger without additions (18.7%, $n = 14$) (see Table 4.15).

Table 4.15: Association between the influence of the nutritional information provision on the respondents' beef burger choice and their beef burger choice and factors influencing the choice

Respondent beef burger choice and the factors influencing the choice (n = 157)		Influence of nutritional information provision on beef burger choice				Significance ^{b,c}
		Yes		No		
		%	n	%	n	
Beef burger choice	Regular beef burger ^a with additions (extra items)	62.2	51	81.3	61	0.009 ^b
	Regular beef burger ^a without additions (no extra items)	37.8	31	18.7	14	
		Total	82	Total	75	
Factors influencing beef burger choice^d	Familiarity	22.2	18	35.6	26	0.006 ^c
	Taste	55.6	45	56.2	41	
	Price	3.7	3	4.1	3	
	Assumed nutritional content	16.0	13	0.0	0	
	Availability	2.5	2	4.1	3	
		Total	81	Total	73	

^a For the purpose of the study a regular beef burger consisted of one white bread roll with one beef patty, sauce of choice, lettuce, tomato (1 slice), fried onions (1 tablespoon) and gherkins (3 slices)

^b Fisher's exact test

^c Pearson's chi-square

^d n = 154 as respondent sample (3 missing respondent answers with 'yes', n = 81 and 'no', n = 73)

In terms of the factors influencing the respondent beef burger choice, a significant ($p < 0.05$) result was found between the nutritional information provision, or not, on the respondents' beef burger choice and the factors influencing their beef burger of choice. The results, however, need to be interpreted with caution due to the presence of low and empty response cell counts for three of the five influencing factors, as these factors could not be combined to form one unified and accurate response, to reduce the low and empty response cell counts (see Table 4.15). Taste was found to be the most important influencing factor, contributing more than half of the respondent choices, followed by familiarity, among the respondents who were influenced by the nutritional information provision (55.6% and 22.2%, respectively) and those who weren't (56.2% and 35.6%, respectively). Very few respondents found price and availability to be factors influencing their beef burger choice; this was the case between both respondents who were affected by the nutritional information provision (3 and 2 respondents, respectively), and those who weren't (3 and 3 respondents, respectively). Among the respondents who were not influenced by the nutritional information provision, the assumed nutritional content was not a chosen factor influencing these individuals' beef burger choice, but was found to be an influencing factor among those respondents who were influenced by the nutritional information

provision on their beef burger choice, although to a far lesser extent (16%) than taste (55.6%) and to an even lesser extent than familiarity (22.2%), as influencing factors (see Table 4.15).

4.6.6 Most probable influencing factors

Since it was believed that some of the factors identified to affect the respondent's beef burger choice on the nutritional information provision might do so more than others, logistic regression was applied to the respondent fast food and beef burger consumption, eating practice, demographic, biographic and lifestyle data found to significantly influence the respondents, via the Pearson's chi-squared and Fisher's exact analyses, to change their beef burger choice on the nutritional information provision. The results indicated that the model overall is statistically significant (chi-square = 48.463, $p = 0.000$) with three of the 12 predictor (explanatory or independent) variables obtained from the respondent fast food and beef burger consumption (as representation of the respondent fast food consumption), eating practice, demographic, biographic and lifestyle data, using the Wald statistic, found significantly ($p < 0.001$) (see Table 4.16) related to the respondent beef burger choice change on the nutritional information provision, namely the respondent smoking status (as representation of a respondent biographic and lifestyle influence), weekly fruit and vegetable consumption (as a respondent eating practice influence) and the factors influencing the respondent beef burger choice (as a respondent fast food consumption influence). Table 4.16 shows the Wald chi-square statistic and significance for each of these predictors and that these predictors would be correct nearly 70% of the time. The degrees of freedom in Table 4.16 is a function of the number of categories in each respondent variable. The other nine predictor variables as own perceived interest in the topic of 'food, nutrition and health' (as a respondent biographic and lifestyle influence) (included in Table 4.10), fast food consumption frequency (included in Table 4.11), beef burger choice (included in Table 4.15) (as respondent's fast food consumption influences), respondent own dietary intake description, number of daily fruit servings, and number of daily wholegrain servings (included in Table 4.14) and respondent daily meal pattern during the week, meal most skipped during the week, and meal most skipped during the weekend (included in Table 4.13) (as respondent's eating practice influences) did not add to the computed logistic regression model.

Table 4.16: Logistic regression of the respondent factors most probable to predict the respondent beef burger choice change on the nutritional information provision

Step	Model			Percentage correct	Respondent variable
	Wald chi-square	Degrees of freedom (df)	Significance		
1	20.656	2	0.000	68.2	Smoking status as biographic and lifestyle influence representation
2	34.689	5	0.000	67.6	Weekly fruit and vegetable consumption as eating practice influence representation
3	48.463	9	0.000	69.6	Factors influencing beef burger choice as fast food consumption influence representation

CHAPTER 5 DISCUSSION

The chapter to follow consists of four sections. The first section (as 5.1) profiles the respondents according to both their fast food (5.1.1) and young adult (5.1.2) consumer attributes. These two attributes were the major respondent characteristics considered as inclusion criteria for the respondent sample. The section to follow (as 5.2) focuses on the fast food consumption of the respondents, assessing their consumption behaviour, consumption frequency and factors affecting their consumption. The second last section (as 5.3) focuses on the crux of the study, considering the major objectives. That is, whether the provision of nutritional information (probability vs. improbability), and which nutritional information provision; would influence the respondent choice of a fast food item, using a beef burger as the exploratory item, and which of the respondent biographic and lifestyle characteristics, and/or their eating and/or fast food consumption practices influence their beef burger choice on the nutritional information provision. This section also addresses the improbability of nutritional information provision to influence the respondent choice of a beef burger. Completing this chapter is a short section deliberating the strengths and limitations of the study (as 5.4).

5.1 Respondent profiling

In the sub-sections to follow, the respondents are profiled according to their fast food consumer attributes (as 5.1.1), reporting their demographic (as gender, SES and living circumstances) and biographic and lifestyle characteristics (as health-related traits), followed by their young adult consumer attributes (as 5.1.2), reporting the respondent biographic and lifestyle characteristics specific to young adults (as meal consumption patterns, healthy food intakes and alcohol consumption).

5.1.1 Fast food consumer attributes

The sample group was pre-screened to be between the ages of 20 and 34 years, representing the young adult demographic - an age group strongly associated with fast food consumption (Bes-Rastrollo et al., 2010:1358; Anderson et al., 2011; Lachat et al., 2012:340; Steyn et al., 2012; Fryar & Ervin, 2013; Smith et al., 2013:2370; Dominguez et al., 2014). Participants were also employed in the City of Cape Town, SA, within the professional and clerk occupational classifications (ILO, 2015), as employment and income - as representation of SES (American Psychological Association (APA), 2017) - is a further attribute found to be associated with fast food consumption (Smith et al., 2009; Steyn et al., 2011).

Further fast food consumer attributes investigated and reported below, aside from their SES, are their gender, family status, and health-related traits (particularly, own perceived body weight status, alcohol consumption, smoking status, level of physical activity, and own perceived interest in and knowledge of the topic of ‘food, nutrition and health’). Neither race nor ethnicity, as consumer demographic attributes, was considered as part of the study as these attributes were found to be inconsistent in their association with fast food consumption throughout the literature reviewed (Larson et al., 2011:1701; Steyn et al., 2011; Dunn et al., 2012:8; Dingman et al., 2014:569).

5.1.1.1 Gender

A near-even split of male versus female respondents participated in the study, with slightly more females than males participating. These results are, in part, supported by multiple studies (Berra et al., 2010:1358; Anderson et al., 2011; Smith et al., 2013:2370) that found men to be higher consumers of fast food in comparison to women, presumably because females have been consistently reported as being more health-conscious than men (Ellison et al., 2013; Stefan, 2013:740; GrubHub, 2014) and therefore an increased use of nutritional information of this gender can also be predicted (Ayranci et al., 2010:772; Ollberding et al., 2010:1234; Dumanovsky et al., 2011; Hess et al., 2011:411; Li et al., 2012:248; Martinez et al., 2012:323; Cheah et al., 2015:2780). In addition, the slightly higher proportion of females who participated in the study may provide some useful insights into the health-consciousness tendency of the study respondent sample.

5.1.1.2 Socioeconomic status

The study was aimed at obtaining data from young adults who would be employed, having a higher education, and earning an income to feasibly purchase these foods, in order to gather a sample group who would represent a proportion of nutritional information users and in respect of fast food. These socioeconomic characteristics, i.e. education (Jacobs et al., 2010:514; Brissette et al., 2012:406; Chen et al., 2012:764; Cha et al., 2014:336; Cheah et al., 2015:2780), employment status (Cheah et al., 2015:2782) and increased income (Ollberding et al., 2010:1234; Chen et al., 2012:764; Cheah et al., 2015:2782), have all been found to predict more frequent use of nutritional labelling, while employment status (Smith et al, 2009) and income levels (Mohr et al., 2007:1460) have shown to predict a more frequent consumption of fast food.

5.1.1.3 Living circumstances

Results from the current study were consistent with related studies that found a higher frequency of fast food consumption among households where children were present (Larson et al., 2011:1707; Dominguez et al., 2014) or among larger households (more than four members) (Smith et al., 2013:2370), versus living by oneself. They were contrasting in comparison to those found by Smith et al. (2013:2375) which indicated individuals living on their own, to be more likely to consume fast food in comparison to individuals living with a partner or spouse. In the current study rather, two-person households were in fact the highest household-type to report fast food consumption.

5.1.1.4 Health-related traits

The health-related traits investigated in the study included body weight status (reported as ‘own perceived’), smoking status, level of physical activity, and own perceived interest and knowledge of the topic of ‘food, nutrition and health’. These factors, with the exception of own perceived interest in the topic of ‘food, nutrition and health’, have been found to be associated with fast food consumption throughout the fast food literature, and as reported below, contributing towards the attributes of fast food consumers. These associated traits have furthermore been found to be associated with health-consciousness, which may again, provide an indication of potentially a higher proportion of health-conscious individuals comprising the respondent sample.

5.1.1.4.1 Body weight status

Most of the respondents reported their own perceived body weight status to be either of optimal or normal body weight. Second to this group of respondents, were those who considered themselves to be overweight (represented as slightly overweight, overweight and obese), representing one-third of the respondent sample. While these results are not fully consistent with literature evidencing that overweight and obese individuals were more likely to frequent fast food consumption versus individuals who were not overweight (Larson et al. 2011:1701; Shah et al., 2014:CC06; Qi et al., 2014). As a possible explanation to these findings, the higher proportion of optimal or normal body weight respondents, may again, be as a result of a potentially a higher proportion of health-conscious individuals comprising the respondent sample. Second to this, it is important to consider that the study findings pertain to ‘perceived’ body weight status by the respondents themselves, and not ‘actual’ calculated BMI values. Studies on body weight interpretation by individuals show a tendency of individuals to underestimate their body weight status, especially among obese individuals (Dorsey et al., 2009:790; Lynch & Kane, 2014:415) and among men (Dorsey et al., 2009:790). In addition, the study sample comprised young adults with

the highest age range at 34 years, an age group where overweight and obesity is not as prevalent as among older, more middle-aged adults (Ogden et al., 2013).

5.1.1.4.2 Smoking status

Just more than half of the respondents in the current study indicated that they were non-smokers. Fast food studies consistently show a positive association between smoking status and fast food consumption (Smith et al., 2009; Bes-Rastrollo et al., 2010:1358; Krishnan et al., 2010:468; Dominguez et al., 2014), and in the study by Krishnan et al. (2010:468), particularly beef burgers. This higher proportion of respondents in the current study indicating to be non-smokers, may be as a result of a higher proportion of the respondent sample being female (Smith et al., 2009) and presumably being more health-conscious (Ambrosini et al., 2009:5; De Magistris et al., 2010:540), as both factors are negatively associated with smoking status.

5.1.1.4.3 Level of physical activity

Similar to non-smoking, an increased level of physical activity has been associated with health-consciousness (Krishnan et al., 2010:468; De Magistris et al., 2010:540; Anderson et al., 2011; Scarborough Research, 2012), and a decreased level, with an increased consumption of fast food (Smith et al., 2009; Krishnan et al., 2010:468; Anderson et al., 2011) and more specifically, beef burger consumption (Krishnan et al. (2010:468). As two-thirds of the respondents reported participating in physical activity, this may further indicate the presence of a large proportion of health-conscious individuals among the sample group.

5.1.1.4.4 Own perceived interest and knowledge of food, nutrition and health

Studies around the interest of young adults in the topic of 'food, nutrition and health' seem to be limited; however, research around the awareness among young adults of the topic may, according to Alkerwi et al. (2015:2834), provide insight into the willingness and intention to stay healthy among individuals. The researchers found an increased nutritional awareness to be an indicator of nutritional knowledge and self-perception of dietary balance. Where self-reporting of the respondents' own interest and knowledge in the topic of 'food, nutrition and health' was considered, the majority of the respondents, in both instances, indicated an own perceived interest in (represented as 'somewhat' and 'very' interested) and knowledge of (represented as 'about similar to', 'somewhat more than' and 'much more than' most other young adults) the topic. This increased interest and knowledge being reported may further provide an indication of a proportion of health-conscious individuals representing the respondent sample in the current study, as according to Ellison et al. (2013), individuals who are highly health-conscious, are likely to own a large amount of health or nutrition awareness and knowledge. An increased knowledge

around the topic of ‘food, nutrition and/or health’ was, in addition, found to be associated with healthier eating habits (Mulvaney-Day, 2012:360; Wie & Giebler, 2012:64, Nani, 2016:66; Yahia et al., 2016).

The increased interest, knowledge and potential awareness of the topic of ‘food, nutrition and health’ among the respondent sample, may also be as a result of a slightly higher proportion of females comprising the respondent sample, and therefore an increased health-consciousness (Ellison et al., 2013; Stefan, 2013:740; GrubHub, 2014) and interest in health (Ellis et al., 2013) among the sample. In addition, women were reported to be more informed than men when it came to healthier eating practices, according to the very early US study by Buttriss (1997:1986S), and also more nutritionally aware (Alkerwi et al., 2015:2824); this characteristic (‘informedness’), found to be associated with an interest in acquiring knowledge on the subject of health by Szoboszlai (2013:46). In this study by Szoboszlai (2013:46), a large proportion of young adults indicated a willingness to want to learn about health issues, similar to the current study where a large proportion of the respondents indicated an interest in the topic of ‘food, nutrition and health’.

5.1.2 Young adult consumer attributes

Young adults accessed in the study were between the age of 20 and 34 years - an age group utilised due to its persistent association with a high fast food consumption (Smith et al., 2009; Bes-Rastrollo et al., 2010:1358; Anderson et al., 2011; Lachat et al., 2012:340; Steyn et al., 2012; Fryar & Ervin, 2013; Dominguez et al., 2014; Smith et al., 2014:2370). The respondent meal consumption patterns, as well as their daily fruit, vegetable and whole grain intakes reported in the sections to follow, reflect the dietary consumption attributes identified with young adults.

5.1.2.1 Meal consumption patterns

Results from the study support meal skipping to be high among young adults, as previously found by Pendergast et al. (2016), and being especially popular among individuals over the age of 20 years (Sebastian et al., 2011), in that during both weekly periods (i.e. during the week and during weekend), more meals were skipped than not. During both weekly periods, breakfast was also the meal most skipped, supporting the established fact that breakfast is often the meal most skipped among young adults (Nani, 2016:19; Pendergast et al., 2016).

The study also established that a meal pattern that included the addition of snacks was the most predominant among these young adult respondents, for both weekly periods. The respondent consumption of snacks as an addition to their meals, was further supported by the fact that for every meal frequency reported (i.e. one, two, or three meals consumed per day), the frequency

“plus snacks” (i.e. one meal plus snacks, two meals plus snacks, or three meals plus snacks consumed per day) was reported by more than double the number of respondents who reported such consumption patterns without snacks. In addition, even when fewer meals were skipped (mainly during the week), the proportion of ‘meals plus snacks’ combination was not lowered. These results were comparative with similar studies (Brindal, 2010:249; Chapelot et al., 2011:161; McCrory & Campbell, 2011:145), which found that individuals did not compensate for increased energy intakes through snacking by reducing energy intakes during later meals and also consistent with literature showing the popularity of snacking as either a dietary addition or in lieu of traditional meals (Brindal, 2010:249; Chapelot et al., 2011:161; Sebastian et al., 2011; Zizza et al., 2012:295; McCrory & Campbell, 2011:145).

The dietary patterns of the young adult respondent sample may, as a result, represent one that is higher in energy, as snacking behaviour has shown to contribute increased energy intakes among individuals (Chapelot et al., 2011:161; Sebastian et al., 2011; McCrory & Campbell, 2011:145; Nicklas et al., 2014; Kant & Graubard, 2015:58). However, the results of this study also indicate that respondents may show a meal pattern of lowered energy intake over the weekends, in comparison to during the week. This is deliberated in light of the fact that the highest meal consumption patterns consumed on the weekends were ‘two meals per day plus snacks’ (versus ‘three meals per day plus snacks’ during the week), and respondents also skipped meals a lot more over the weekends versus during the week, therefore possibly allowing for the addition of snacks over the weekend without upsetting the total energy balance. This deliberation though, depends greatly on the types of foods consumed over the weekend in comparison to the week. These results did not support that of comparative studies (Niemeier et al., 2006:847; Pendergast et al., 2016) between time constraints and an increased frequency of meal skipping, as the week is presumably a period when individuals would experience increased time constraints due to work responsibilities and therefore, in theory, would likely be the reported period for an increased frequency of meal skipping.

5.1.2.2 Healthy food intakes

Research shows that young adults predominantly consume diets that are less healthy (Todd et al., 2010:iii; El Ansari et al., 2012), typically representing the Westernised diet (Ayranci et al., 2010:775; Janse van Rensburg et al., 2011:249); therefore, lowered intakes of healthier foods such as fruit, vegetables and increased intakes of unhealthier foods such as fast food (Ayranci et al., 2010:775; Todd et al., 2010:iii; El Ansari et al., 2012). In the current study, the sample group showed a near-even-split between individuals who considered their dietary intake as ‘healthy’, versus those individuals whose dietary intakes could potentially be viewed as being ‘less healthy’

(through the respondents reporting consumption of food and beverage intakes that were considered more popular among their peers). The findings reported and discussed in the sections to follow (i.e. lowered intakes of fruit and vegetables, and whole grains), however, do not fully support the respondents reporting their diets as being healthy. That is, the daily fruit and vegetable consumption and the daily whole grain consumption findings of the sample group, where less than half of them were found to consume an adequate number of fruit servings per day, and the majority to not consume an adequate vegetable or whole grain serving intake per day, or even consuming fruit and vegetables daily.

The high proportion of respondents reporting an intake of 'healthy' foods, may firstly be as a result of a larger proportion of health-conscious respondents, but secondly, may be as a result of individuals underestimating their level of being informed around healthy eating, as was found in both the UK (Buttriss, 1997:1986S) and in SA (Peltzer, 2004:26). The UK study also found that many consumers did not have knowledge regarding healthy food choices, or were not able to translate healthy messages into their own applied healthy food choices. This lack of knowledge on making healthy food choices may very well be a barrier to healthy eating (Buttriss, 1997:1987S). Hence, this high proportion of respondents reporting a 'healthy' food intake may in fact be an incorrect respondent supposition, as their actual indicated daily fruit and vegetable serving intakes, as well as their whole grain serving intakes, did not meet the consumption guidelines.

5.1.2.2.1 Fruit and vegetable intakes

In the current study, although the respondent weekly consumption of both fruit and vegetables was not totally abysmal (with around one-third each reporting consumption on most days [4 or more] of the week, and daily consumption), the daily serving intakes were not as positive when the consumption of fruit and vegetables was assessed separately. While the vegetable intakes were more positive in achieving the recommended intakes than the fruit intakes, consistent with the consumption findings of Todd et al. (2010:3) and Ungar et al. (2013:201), findings were not consistent with those of Chourdakis et al. (2010:724), which found daily fruit intakes to be slightly more positive than daily vegetable intakes.

Where weekly fruit and vegetable consumption was concerned, intakes among the sample group presented similar results to the study by Chourdakis et al. (2010:724), where more than half of the respondents revealed a weekly fruit and vegetable consumption of at least three times per week. However, where the respondent daily fruit and vegetable consumption was concerned, results showed an intake below the recommended guideline of '5 a day' for fruit and vegetables (Ungar et al., 2013:203; Naude, 2013:S52; WHO; 2014:97), consistent with similar international

(Chourdakis et al., 2010:724; Todd et al., 2010:5; Graham et al., 2013:1366; Pelletier et al., 2014:148; Wolfson & Bleich, 2015:5) and local (Napier & Oldewage-Theron, 2011:8; Naude, 2013:S52; Pengpid & Peltzer, 2013:149; Gresse et al., 2015:156; Steyn et al., 2016) studies, reporting fruit and vegetable consumption inadequacy among young adults.

Although the current study did not assess the 'less than one serving per day' intake level among the sample group (rather the 'none to 1 serving' for both fruit, and vegetable intake separately), results still show a more positive daily fruit and vegetable intake among the sample, in comparison to the local Gresse et al. (2015:156) study. Proportions reported in this lowest delimiter of 'none to one serving', were still higher than proportions reported in the local study for the 'less than one serving per day' delimiter, which may be as a result of a larger proportion of health-conscious respondents present in the current study sample.

5.1.2.2.2 Whole grain intakes

Comparative to international studies (Larson et al., 2010:230; Todd et al., 2010:5; Quick et al., 2013) where whole grain intakes among young adults were found to be lower than the recommendation of three or more daily servings (UDSA, 2010:51), the respondent whole grain intakes in this current study were directly comparative with the USDA/USDHHS (2010:36) findings, with only five percent of the respondents reporting consumption of the daily recommendation. On a local scope, data on young adult whole grain intakes are limited, with the dietary intake studies generally reporting energy, macro- and micro-nutrient intakes and therefore dietary fibre intakes versus intakes of whole grain servings. Thus, the current study could not make comparisons with local studies pertaining to whole grain intakes among young adults, as South Africans' dietary consumption reports currently do not reflect food consumption but, rather, nutrient intakes.

5.1.2.3 Alcohol consumption

The respondent alcohol consumption occasions and binge drinking occurrences over the month prior were investigated, with the majority of the respondent sample indicating consumption of alcohol over the month prior. Not surprising, as young adults are commonly associated with an increased consumption of alcohol, and particularly binge drinking (Naimi et al., 2010:202; Ferriter & Ray, 2011:99; Riddell et al., 2011:728; George et al., 2013:96). Three-quarters of the respondents in the sample group also resided away from home, a lifestyle circumstance frequently associated among young adults and a higher frequency of alcohol consumption (Riddell et al., 2011:728). The large proportion of respondents indicating consumption of alcohol within the month prior, together with a large proportion of consumption occasions over the month prior ('6-9 occasions and more', but not binge drinking), and highest among the '3-5 occasions'

delimiter, may indicate a large proportion of the sample representing ‘social’ drinkers (Morawska & Oei, 2005:206), or ‘regular’ drinkers (Read et al., 2008:227).

Although non-binge drinking occurrences were reported by nearly half of the respondents, the largest proportion of respondents reporting binge drinking occurrences were ‘frequent’ binge drinkers (a binge drinking frequency of > 3 times/month) (Courtney & Polich, 2009:147), followed by ‘low-frequency’ binge drinkers (a binge drinking frequency of 1-2 times/month) (Morawska & Oei, 2005:206), and ‘infrequent’ binge drinkers (a binge drinking frequency of < 3 times/month) (Courtney & Polich, 2009:147). Binge drinking occurrences have been reported as higher among males (Naimi et al., 2010:202; Gresse et al., 2015:157), and individuals not college educated (Naimi et al., 2010:202).

5.2 Respondent fast food consumption

The respondent fast food consumption is discussed in the sections to follow through addressing the consumption behaviour (as 5.2.1), by assessing the frequency of fast food consumption among the respondents, and with who and when these foods are mostly consumed, as factors influencing the consumption frequency; the preferences and popular choices, especially in terms of beef burgers (as 5.2.2); and the factors influencing the consumption of these foods (as 5.2.3).

5.2.1 Consumption behaviour

Consumption behaviour encompasses both the consumption frequency in terms of how often young adults visit fast food outlets, and the factors associated with this consumption frequency in terms of when or with whom these foods are usually consumed. The findings of this current study, showed a high proportion of monthly and weekly consumption of fast food, prompted mainly by time constraints, with the majority of the respondents reporting consumption with friends and family.

5.2.1.1 Consumption frequency

By employing the definitions for fast food consumption frequency delineated by Steyn et al. (2011) as ‘high’ (two or more times/week), ‘moderate’ (once/week or 2-3 times/month) or ‘low’ (seldom or never) frequencies, the majority of the respondents in the current study according to this classification, were ‘moderate’ consumers of fast food, followed by ‘low’, then ‘high’ frequency consumers; comparative with results on both a local (Van Zyl et al., 2010:126; Steyn et al., 2011) and international (Brindal, 2010:92; Larson et al., 2011:1700; Dingman et al., 2014:567; Statista, 2017) scope. This ‘moderate’ frequency proportion found is consistent with the South African publication by Van Zyl et al. (2010:126), where most of the individuals who reported fast food consumption were also among this ‘moderate’ delineation. In this latter study however, the

moderate frequency consumer proportion was closely followed by a 'high' frequency pattern with a 'low' frequency pattern forming the lowest proportion in the study. The proportion of respondents reporting a 'high' frequency (represented in combination by the '2-3 times/week', '>3 times/week, but not daily, and daily) of fast food consumption in the current study, was comparative to the results reported by Steyn et al. (2011) around the 'high' consumption frequencies reported in Johannesburg, however, much lower (more than half) than the results for this consumption frequency reported by Van Zyl et al. (2010:124).

5.2.1.2 Factors influencing the consumption frequency

Time constraints have recurrently been cited throughout fast food studies as a motivator of convenience, driving fast food consumption (Brindal, 2010:234; Todd et al., 2010:5; Van Zyl et al., 2010:127; Bezerra et al., 2012:77; Cohen & Bhatia, 2012:622; Freeland-Graves & Nitzke, 2013:311; Deliens et al., 2014), and a major barrier to adopting healthier food behaviours (Mulvaney-Day, 2012:359; Pelletier & Laska, 2012:483). In the current study, most of the respondents indicated their main reason for consuming fast food, was when they lacked the time to prepare food or meals; a respondent proportion (47%) nearly identical to the proportions (46%) of young adults in both the studies by Larson et al. (2006:2004) and Pelletier and Laska (2012:483), reporting time constraints specifically affecting diet-related behaviours. These results were greatly lower than that of the earlier Driskell et al. (2006:525) study, where a large proportion (71%) of young adults identified limited available time as a primary motivator for fast food consumption.

Increased fast food consumption has frequently been associated with social occasions (Brindal, 2010:104; Seo et al., 2011:171; Cohen & Bhatia, 2012:622; Pelletier et al., 2014:148). The results of the current study are consistent with related studies finding the consumption of fast food to be mostly influenced by the presence of friends (Brindal, 2010:107; Seo et al., 2011:171; Pelletier et al., 2014:148) and family (Brindal, 2010:107; Pelletier et al., 2014:148). Brindal (2010:208) in fact, found fast food consumption to be significantly influenced by the presence of others; with friends and family being the most influential, comparative to the current study. In addition, the current study found that the highest proportion (84%) of young adults in combination reported consumption of fast food with somebody else (vs. eating on their own), similar to the results of Brindal (2010:107) where the highest proportion (78%) of their respondents also reported consumption of fast food with at least one other person.

5.2.2 Preferences and popular choices

Pizza and beef burgers were found to be the top two preferred respondent fast food choices among young adults (Van Zyl et al., 2010:126; Chen et al., 2015:549). Smith et al. (2013:2371) found bread-based foods to be the highest reported FAFH, which included sandwiches, burgers or hotdogs, pizzas and potatoes (including French fries). Where the current study found pizzas to be the primary preference, on a local level, Van Zyl et al. (2010:126) found burgers to be the primary preference, followed by pizzas. On an international level, burgers were also found to be the primary preference (Larson et al., 2011:1700 Seo et al., 2011:176; Kirkpatrick et al., 2014:927), and dominating the fast food industry in 2015 (Euromonitor International, 2015:7; Mazzone & Associates, 2015), followed by French fries and pizzas. French fries ('chips') were also found to be the fourth most popular fast food choice among the respondents in the current study, comparative to the fast food choices obtained by Van Zyl et al. (2010:127).

Larson et al. (2011:1700) found sandwich/sub outlets to be the most commonly frequented fast food outlets among young adult students in the US, followed by burger-and-fries outlets. Although the current study did not find the same selection for the primary preference, it did find burgers to be the second most preferred fast food choice. In addition, the current study seems to be unique in that it showcases the most preferred type of beef burger among young adults, i.e. with additions (chosen by two-thirds of the respondents), and most preferred additions being predominantly cheese, followed by bacon (in combination, representing two-thirds of the respondent selections). Given that burger-and-fries outlets have been reported as the second most frequented fast food outlet among young adults (Larson et al., 2011:1700), it comes as no surprise that both burgers and French fries are among the top five most preferred fast foods in the current study sample. Hamburgers and French fries have continuously been identified throughout fast food literature, as leaders in terms of fast food popularity (Brindal, 2010:41; Krishnan et al., 2010:467; Larson et al., 2011:1700; Kirkpatrick et al., 2014:927; Euromonitor International, 2015:7). These fast food-types are generally sold together as a 'meal deal', or 'traditional meal', with the addition of a drink (Brindal, 2010:30), and are therefore termed 'traditional' fast food items (Driskell et al., 2006:525; Dunn et al., 2008:332; Brindal, 2010:10). The current study supported these findings, as both burgers and French fries individually, ranked among the top five most preferred fast food choices. Although French fries ranked lower than burgers, this may be as a result of French fries commonly being ordered as a side dish (Dunford et al., 2010:485).

5.2.3 Factors influencing the consumption

The top four factors indicated by the respondent sample of young adults in this current study as having the highest influence on their consumption of fast food were time constraints, availability, taste and convenience; factors consistent with international studies. Although separately represented in the current study, the fast food literature represents both time constraints (Brindal, 2010:234; Todd et al., 2010:5; Van Zyl et al., 2010:127; Bezerra et al., 2012:77; Cohen & Bhatia, 2012:622; Freeland-Graves & Nitzke, 2013:311; Deliens et al., 2014) and availability (Lucan et al., 2010:633) to be associated strongly with convenience. In isolation, these two factors rated higher than convenience as a factor on its own. For this reason, these three factors are categorised and discussed under convenience in the sections to follow.

Where 'assumed nutritional content' was not rated as an important factor influencing fast food consumption, consistent with other fast food studies (Harnack et al., 2008; Oni & Matiza, 2014:806), neither 'price' (Seo et al., 2011:169; Mulvaney-Day, 2012:359; Oni & Matiza, 2014:808), nor 'availability' (Lucan et al., 2010:633; Boone-Heinonen et al., 2011:1165; Burgoine et al., 2014; Oni & Matiza, 2014:805) were rated as important factors affecting the choice of a beef burger by the respondents; although the literature shows these factors to be very strong as influencing factors affecting fast food consumption. In the Oni and Matiza (2014:805) study, availability (represented as 'conveniently located') was rated second to convenience as an influencing factor. Both Brindal (2010:19) and Cotti and Tuft (2013:142) however, did report that price was not significant as a predictor; with the latter researchers finding that fluctuations in food pricing did not change self-reported consumption patterns of hamburgers, fried chicken, fruit and vegetables, and overall grams of fat. This may further support the notion that the choice of fast food is more commonly driven by a factor such as preference (reported as taste and familiarity) versus price as a factor. Similarly, in the current decade, Dunn et al. (2012:6) found that consumers did not factor in the cost of travel when choosing to purchase a fast food. Brindal (2010:18) further hypothesised that certain groups of individuals are more susceptible to fast food consumption drivers than others.

5.2.3.1 Convenience

Consistent with the previous section on factors influencing consumption frequency of fast food among young adults, time constraints, therefore driving an increased need for convenience, was identified as a primary reason for the consumption of fast food by the majority of the young adults in this current study; consistent with fast food literature (Brindal, 2010:234; Todd et al., 2010:5; Van Zyl et al., 2010:127; Bezerra et al., 2012:77; Cohen & Bhatia, 2012:622; Freeland-Graves & Nitzke, 2013:311; Deliens et al., 2014). Similarly, availability (Lucan et al., 2010:633;

Boone-Heinonen et al., 2011:1165; Burgoine et al., 2014; Oni & Matiza, 2014:805) was also cited in the literature as a major factor prompting an increased consumption of fast food. Considering the factors ‘time constraints’ and ‘availability’ under the overall category of ‘convenience’, convenience thus, may be the primary motivator of young adults in the current study consuming fast food; comparative to other fast food studies (Brindal, 2010:96; Lucan et al., 2010:633; Anderson et al., 2011; Bezerra et al., 2012:77).

5.2.3.2 Taste

Taste, was also a strong influencing factor for the consumption of fast food in this current study, third after time constraints and availability. Several studies (Lucan et al., 2010:633; Van Zyl et al., 2010:127; Seo et al., 2011:169; Temple & Steyn, 2011:505; Mulvaney-Day et al., 2012:360) have found the taste and preference for the taste of a specific fast food to be a motivator of fast food consumption, with it being the main influencer in the South African study by Van Zyl et al. (2010:127). In the current study, it was rated as second in importance after convenience (including both time constraints and availability). Anderson et al. (2011) also found convenience to be the highest-rated factor influencing fast food consumption, but found taste, to not be as crucial, which was not evident in the current study. Taste was rated as one of the top four factors influencing fast food consumption and, in comparison to convenience as a factor on its own (without the respondent addition of time constraints and availability), it was rated as slightly higher.

When it came to a specific choice of fast food however, taste seemed to be a lot more influential in this current study. This was evident in the fact that taste was the major reason for most and greater than half of the respondents in the current study for choosing a beef burger. Taste has been cited in many studies as a reason for the preference of a specific fast food (Todd et al., 2010:5; Van Zyl et al., 2010:127; Seo et al., 2011:169; Temple & Steyn, 2011:505; Mulvaney-Day et al., 2012:359). This was very clear in the study by Mulvaney-Day (2012:360), where young adults indicated being driven by foods that satisfied them both in terms of taste and satiety, indicating that burgers just made them “feel fulfilled”, “like they had just eaten ‘something good’ that they liked, unlike an apple which left them feeling unfulfilled”. Thus, results in the current study support the results in SA (Van Zyl et al., 2010:127; Temple & Steyn, 2011:505), and in the US (Todd et al., 2010:5; Seo et al., 2011:169; Mulvaney-Day et al., 2012:359) around taste as a major driver for the choice of a specific fast food. The South African study by Van Zyl et al. (2010:127) revealed that individuals chose to eat at fast food establishments by reason of wanting to eat a specific meal.

5.2.3.3 Familiarity

The second major reason identified among the respondents in the current study in their choosing of a beef burger, was familiarity. This can be related to habit, as Temple and Steyn (2011:505) found that “humans are creatures of habit and are often reluctant to change longstanding food preferences, even when the habitual diet poses a risk of chronic diseases of lifestyle”. Although this factor was not identified in much of the fast food literature researched for the purpose of this study, it may feature as a new determining factor as to consumers’ choice of a fast food, and specifically a beef burger. Considering the student responses in the study of Mulvaney-Day et al. (2012:359) where they indicated that they were just “used to” eating fast food, provides additional support for the influence of habit as a determining factor in the consumption of fast food.

5.3 Influence of nutritional information provision on the respondent beef burger choice

To determine whether the beef burger choice of the young adults in the study would be influenced when nutritional information was provided for the fast food item, the section to follow discusses the following: the probability of the respondents to be influenced by the provision of nutritional information (as 5.3.1) which considers the nutritional information provision likely to influence their choice of a beef burger (as 5.3.1.1) and, for the largest part, the factors found to determine the influence of nutritional information provision on the respondent beef burger choice (as 5.3.1.2) and for the dissimilar proportion of respondents, the improbability of the nutritional information provision to influence the choice of a beef burger (as 5.3.2).

5.3.1 Probability of nutritional information provision to influence the choice of a beef burger

The respondents showed an almost even split between either being affected by the provision of nutritional information of a beef burger, or not, and their choice of a beef burger, which may possibly support the presence of health-conscious and non-health-conscious respondent participation in the study, as health-conscious individuals reportedly, have a higher propensity to spend time reading nutritional labels (Jacobs et al., 2010:515; Hess et al., 2011:411; Graham & Laska, 2012:418; Ellison et al., 2013; Dingman et al., 2014:569).

5.3.1.1 Nutritional information provision likely to influence the choice of a beef burger

To establish the nutritional information likely to influence the choice of a beef burger by the young adult respondent group in the study, this section discusses the effect that the specific nutrient provisions (i.e. energy, total fat, saturated fat and cholesterol) had on the choice by the respondents after presented with the two nutritional information formats (energy vs. energy, total fat, saturated fat and cholesterol). The respondents’ change in beef burger choice from the first

nutritional information provision format to the second (where a change was present) and the reason for their change in beef burger choice is assessed, as well as their indicated likeliness to choose a beef burger containing lower levels of each of the nutrients.

5.3.1.1.1 Energy content

Several studies, although limited, have attempted to assess the influence of nutritional content labelling on the selection of fast food choices by individuals (Larson et al. 2011:1703; Cohen & Bhatia, 2012:622; Martinez et al., 2012:321). The provision of energy information on the influence of fast food meal purchasing before and after presentation of this information, has largely been the area of research (Elbel et al., 2009:w1117; Roberto et al., 2010:314; Dumanovsky et al., 2011; Dowray et al., 2013:177; Ellison et al., 2013; Morley et al., 2013:8). The largest proportion of respondents, and two-thirds of the respondents, in the current study indicated 'no change' from their initial beef burger choice (presenting only the energy provision), to their second choice (presenting the total nutrient content of each burger choice as energy, total fat, saturated fat and cholesterol), which may indicate that the respondents were greatly influenced by the energy content alone of each beef burger choice. It is assumed, that if the respondents were susceptible to being influenced by the energy provision alone, then they would have already been influenced at the stage of being presented with the first menu format, with no change in the beef burger choice from the first nutritional information provision format to the second. This was encountered in the current study.

The above findings support previous research (Roberto et al., 2010:316; Martinez et al., 2012:321; Dowray et al., 2013:177; Morley et al., 2013:14), in that energy content may be the most influential nutritional information in influencing consumers' choice of a fast food. In addition, it may substantiate the theory by both Cohen and Bhatia (2012:622) and Martinez et al. (2012:321) that if consumers were made aware of the energy content of foods offered at fast food establishments, they might be able to make healthier food choices. This 'no change' in beef burger choice may also further indicate the strength of familiarity/habit as an influencing factor on the choice of a fast food among young adults, as was showcased in the previous section. In addition, of the respondents who did indicate a change in beef burger choice from the first nutritional information provision format to the second (contributing a lower nutritional contribution than the first choice), the largest proportion indicated that their change in choice was due to the energy information being displayed, thereby substantiating the important effect of the energy content in influencing a lowered energy-dense choice among consumers. These latter results support the fast food literature that consumers, who reported making use of energy information, reported a fast food choice that was lower in energy-density (Roberto et al.,

2010:316, Dumanovsky et al., 2011; Brissette et al., 2013:406; Dowray et al., 2013:177) and also purchased no accompanying beverages (Dumanovsky et al., 2011; Brissette et al., 2013:406).

When the respondents were asked to indicate the likeliness that they would buy a beef burger with lower levels of each of the nutrients (i.e. energy, total fat, saturated fat and cholesterol content), the results were contrasting considering the seemingly high influence of the energy provision on the respondents' choice of a beef burger portrayed above. In this second scenario, energy now was rated as the least likely (when considering both the 'extremely likely' and 'likely' responses in combination, and the 'extremely unlikely' and 'unlikely' responses in combination) nutrient to influence these respondents in purchasing a beef burger when the nutritional information was provided. These results may support the findings by Elbel et al. (2009:w1117), who established energy information to have little influence on health-conscious consumers in their choice of a fast food, as these consumers, in theory, would already be aware of the energy content; and thus the influence of the provision would be lower in comparison.

5.3.1.1.2 Combination of energy, total fat, saturated fat and cholesterol content

Although the influence that the provision of the energy information alone has on the choice of a beef burger by these young adults seems clear from the previous section, of the remaining one-third of the respondents who did change their choice from the first nutritional information provision format to the second, the largest proportion of these latter respondents indicated that a combination of the four nutrient contributions (i.e. energy, total fat, saturated fat and cholesterol content) being shown, caused them to change their choice. The fact that across all the nutrients singly, the likeliness (represented as 'likely' and 'extremely likely') of the respondents to change their choice of a beef burger when provided the nutritional information, was higher than the unlikeliness (represented as 'unlikely' and 'extremely unlikely') for each of the nutrients, may be a further indication of the strength of the provision of the nutritional information of a combination of nutrients (i.e. extended nutritional information). This is evident in this finding that one-third of the respondents were influenced by the extended nutritional information provision, which caused them to change their choice of a beef burger from the first nutritional information provision format to the second.

The fact that cholesterol and saturated fat were considered as the nutrients most likely to influence the respondents in purchasing a beef burger with lower levels of the nutrients individually is in line with the results where the respondents were asked to indicate the reason for their change in beef burger choice. Here, after accounting for a combination of the ingredients (which represented the largest respondent indication for the change in beef burger choice), the

cholesterol provision, followed by the saturated fat provision, influenced the change in beef burger choice the most, in comparison to the energy and total fat provisions.

5.3.1.2 Factors determining the influence of nutritional information provision on the choice of a beef burger

The section to follow, discusses the 12 factors found to be significant (where $p < 0.05$) in influencing the respondent choice of a beef burger on the nutritional information provision. The significant factors included smoking status and own perceived interest in the topic of 'food, nutrition and health' (as respondent biographic and lifestyle characteristic influences); daily meal pattern during the week, meals most skipped during the week and the weekend, own dietary intake description, number of daily fruit servings and whole grain servings consumed, and weekly fruit and vegetable consumption as the number of days per week consumed (as respondent eating practice influences); and fast food consumption frequency, beef burger choice and the factors influencing the beef burger choice (as a respondent fast food consumption influence). Of these factors, the respondent smoking status, weekly fruit and vegetable consumption, and the factors influencing the respondent beef burger choice were found to be the most significantly ($p < 0.001$) related, after applying a logistic regression to these factors found to be significant in influencing the respondent choice of a beef burger on the nutritional information provision.

5.3.1.2.1 Respondent biographic and lifestyle characteristics

The influence of the nutritional information provision on the respondents' beef burger choice was significantly affected by the respondents' smoking status and their own perceived interest in the topic of 'food, nutrition and health', with smoking status found to be a strong predictor in influencing the respondent beef burger choice on the nutritional information provision. Smoking status was found to have been associated with health-consciousness, with the health-conscious individuals being non-smokers (Ambrosini et al., 2009:1811; De Magistris et al., 2010:540; Yen & Tan, 2012:949). Currently, there is very little literature around the interest in either of the topics of 'food, nutrition and/or health' and an increased use of nutritional information provision. However, considering a possible association between a positive attitude towards nutritional labelling and an interest in the topic of 'food, nutrition and health', the latter may be associated with health-consciousness, as Sun et al. (2015:3029) found consumers' attitude towards nutritional labelling to be influenced by health-consciousness and nutritional self-efficacy.

i. Smoking status

Smoking status was found to be a strong predictor in influencing the respondents' beef burger choice on the nutritional information provision. That is, most of the respondents in the sample who indicated that they would be influenced by the provision of nutrition information in the making of their beef burger choice were non-smokers; and *visa versa*. This finding is consistent with that of the studies by Cheah and Naidu (2012:1127) and Cheah et al. (2015:2782), which found that the likelihood of nutritional label use was higher among non-smokers.

ii. Own perceived interest in food, nutrition and health

There seems to be a shortage of available literature pertaining to the interest in the topic of 'food, nutrition and health' among individuals, including young adults, and its relation to nutritional information use. A study by Grunert et al. (2010:177), though, through researching consumers' nutritional knowledge, and their use and understanding of nutrition information among consumers in the UK, analysed consumers 'interest in healthy eating', and whether this influenced their use of nutritional labels and the purchasing of foods. The results revealed that an interest in healthy eating brought about a higher level of understanding of nutritional labels. Research supports an association between the understanding of nutritional information and an increased use of nutritional information (Jacobs et al., 2010:516; Chen et al., 2012:764). Research also supports an association between nutritional knowledge and an increased use of nutritional information labels (Jacobs et al., 2010:516). Nutritional knowledge on its own, though, was found to be not enough to predict healthier eating behaviours (e.g. the use of nutritional labels), unless mediated by attitude (Cooke & Papadaki, 2014:300) with a positive attitude towards food and nutrition then a further factor found to be associated with an increased use of nutritional labels (Sun et al., 2015:3029). These associations, however, should be interpreted with caution. Todd et al. (2010:10) suggested that nutritional information provision on fast food, together with education strategies, would not contribute an appreciable solution for eating healthier, unless consumers were motivated to utilise the information. Taking this into consideration, the current study provides new and additional findings in this area of food and nutrition research as the respondents' interest in the topic of 'food, nutrition and health', was found to be a significant predictor in influencing their beef burger choice on the nutritional information provision. That is, the proportion of the respondents who indicated that they were very interested in the topic of 'food nutrition and health' and among those who indicated that they would be influenced by the presence of nutritional information in making their beef burger selection, was around double that of such respondents within the group who indicated that they would not be influenced.

5.3.1.2.2 Respondent meal patterns, reported dietary intake description and intake of some foods as indication of eating practices

The respondents, in their choice of a beef burger on the nutritional information provision, were significantly influenced by their meal patterns (represented as regular meals during the week and meal skipping during the week and weekend, particularly breakfast skipping), own perceived dietary intakes (represented as either consuming types of foods or beverages popular with, or healthier in comparison to most young adults of their age), and healthy food intakes; i.e. fruit and vegetable intakes (specifically weekly consumption of both, and daily consumption of fruit individually), and daily whole grain intakes.

In SA, dietary intake data of young adults is scarce, so much so, that Van Heerden et al. (2011:24) published an article on “the lack of food intake data and the consequences thereof”. The researchers reported that since the publication of the FBDGs in 2001, very little data has been published on the food intakes of adult South Africans in the decade that followed; an important gap in research as the consumption of certain foods in SA may have increased due to the urbanisation and Westernisation of large population sectors, according to the researchers. As a result, there is a paucity of research published between the period of 2000 and 2010 on the nutrient and food intake of South Africans. The current study may therefore present some novel findings in this regard and, due to the scarcity of data on a local level; results are compared in the main, against international dietary intake data among young adults.

i. Meal patterns

To date, no studies have been published around the meal skipping patterns of young adults and the associations with the use of nutritional information. Kim et al. (2012:331) in this regard, conducted a related study, albeit, among children. The researchers recommended that a better understanding around nutritional labelling could potentially assist in helping individuals who skipped meals, to prevent weight gain and the development of obesity through campaigning of a wider selection of healthier food intakes. Breakfast skipping has also been shown to be associated with poorer dietary quality (Odegaard et al. 2013:3102; Leech et al., 2015:17; Pendergast et al., 2016), particularly increased energy intakes (Larson et al., 2009:1869; Pendergast et al., 2016). The latter, presumably exacerbated by the association between an increase in breakfast skipping and an increased consumption of fast food found among studies (Brindal, 2010:102; Odegaard et al., 2013:3102). Thus, throughout the literature, an increased frequency in breakfast skipping has been linked to health-related risks (Odegaard et al., 2015:3102), such as an increase in body weight gain (Larson et al., 2009:1869; Pendergast et al., 2016).

For both groups of respondents (i.e. those who were influenced by the nutritional information provision, and those who weren't), more meals were skipped during the weekend than during the week. Of the meals skipped, breakfast was the meal most skipped within both groups during both the week and on the weekends, with very little difference in breakfast skipping noted between each weekly occasion (i.e. week vs. weekend). These results are consistent with previous literature indicating breakfast skipping to be prevalent among young adults (Nani, 2016:19; Pendergast et al., 2016) and the meal most frequently skipped by young adults in comparison to either lunch or dinner (Pendergast et al., 2016). Breakfast skipping among the respondents who reported not being influenced by the nutritional information provision however, was still significantly higher than for the respondents who reported being influenced.

McCrorry and Campbell (2011:146) recommended a meal pattern of between three and six meals (i.e. main or smaller-sized meals) per day. When comparing the two respondent groups and their daily meal patterns during the week specifically, a significant difference was found between the two groups where more than half of the respondents in the group not being influenced by the nutritional information provision consumed less than the recommended lower limit of three meals per day; the same group of respondents also reporting a significantly higher skipping of meals (especially breakfast). In addition, these respondents reported higher snacking patterns and more irregular eating patterns, which may indicate unhealthier eating habits (De Magistris et al., 2010:54) among this group of individuals not being influenced by the nutritional information provision. In support of these latter findings, the higher unhealthy macronutrient contributions commonly associated with snacking (Sebastian et al., 2011; Chapelot et al., 2011:161; McCrorry & Campbell, 2011:145; Nicklas et al., 2014; Kant & Graubard, 2015:58) and the associations found between snacking and overeating (McCrorry & Campbell, 2011:145), as well as the significantly lowered intakes of fruit, vegetable and whole grain intakes among this group of respondents, may highlight this group of respondents not being influenced by the nutritional information provision as less health-conscious.

In contrast then, among the respondents who indicated that the nutritional information provision would influence their beef burger choice, most and two-thirds indicated that they had a weekly meal pattern of at least three meals per day or more, plus snacks, or followed a daily snacking pattern. Snacking patterns reported among this latter group of respondents was also significantly lower in comparison to the group not being influenced by nutritional information provision. This result was directly comparative to the study by De Magistris et al. (2010:54), which found that individuals, who were more inclined to make use of nutritional information, were less inclined to adopt unhealthy eating habits such as snacking in between meals.

ii. Own perceived dietary intake

Studies show health-consciousness and the use of nutritional labels to be interrelated (Jacobs et al., 2010:515; Hess et al., 2011:411; Graham & Laska, 2012:418; Ellison et al., 2013). That is, health-consciousness, represented by way of making healthier dietary choices (Graham & Laska, 2012:418), which in itself encompasses health concerns (Jacobs et al., 2010:515; Hess et al., 2011:411; Graham & Laska, 2012:418; Ellison et al., 2013; Dingman et al., 2014:569), and a more positive attitude towards healthier eating (Cooke & Papadaki, 2014:300) among individuals, was found to predict more frequent nutritional label use. Individuals making use of nutritional information were also found to be practicing healthier eating behaviours (Campos et al., 2011:1502; Hess et al., 2011:411; Graham & Laska, 2012:418), characterised by more frequent consumption of fruit and vegetables, less consumption of FAFH, and specifically lowered consumption of fast food in this regard (Dickson-Spillman & Siegrist, 2011:58; Monsivais et al., 2014:799). Graham and Laska (2012:418) found an increased usage of nutritional labels between both individuals who had healthy eating attitudes and those who did not, to be associated with healthier eating behaviours.

The current study supports the above findings, as respondents who perceived themselves to be making healthier food and beverage choices than most young adults of their age, were significantly more likely to be influenced by the nutritional information provision on the choice of a beef burger, in comparison to the respondents who perceived themselves as consuming types of foods or beverages popular among most young adults of their age. Among the respondents who were reportedly not influenced by the provision of nutrition information on the choice of a beef burger however, the proportion of respondents perceiving themselves as consuming types of food or beverages considered popular among young adults of their age was significantly higher (an amount almost double) than the respondents considering themselves to be making healthier choices. The current study results therefore support the findings of Campos et al. (2011:1502) and Graham and Laska (2012:418), which found individuals who have a higher affinity for consuming a healthier diet, to be more inclined to consult nutritional information and the association between health-consciousness and increased use of nutritional information (Jacobs et al., 2010:515; Hess et al., 2011:411; Graham & Laska, 2012:418; Ellison et al., 2013).

iii. Fruit and vegetable intake

Limited research is available on the association between adequate fruit and vegetable intakes and the utilisation of nutritional information. De Magistris et al. (2010:54) reported a scarcity in studies that focused on the effect of nutritional information use in promoting healthier eating habits. Nutritional information provision has proven to contribute towards an improved quality

of the diet through adopting healthier eating habits in both the studies of De Magistris et al. (2010:54) and Staser et al. (2011). Staser et al. (2011) specifically, found that the use of nutritional labels all or most of the time when making purchasing decisions at the supermarket, was strongly associated with adequate intakes of both fruit and vegetables.

The current study showed support for the above associations in part, whereby the influence of the nutritional information provision on the respondents' beef burger choice was significantly affected by the respondents' weekly fruit and vegetable intake; that is, the majority of the respondents who indicated that the nutritional information provision would influence their beef burger choice, reported that they consumed fruit and vegetables on most days (four days or more) per week or daily, versus the majority of the respondents who indicated that the nutritional information provision would not influence their beef burger choice, reporting that they consumed fruit and vegetables never, or on a few days (three days or less) or most days (four days or more) per week. In addition, most of the respondents who indicated that the nutritional information provision would influence their beef burger choice indicated that they consumed two or more daily fruit servings, while most of the respondents who indicated that the nutritional information provision would not influence their beef burger choice indicated that they consumed none to one daily fruit serving; below the recommended intake of two servings per day (Ungar et al., 2013:201).

iv. Whole grain intakes

A scarcity of studies was found pertaining directly to whole grain intakes and the use of nutritional information. However, as healthy eating patterns emphasise the intake of whole grains (USDA/USDHHS, 2010:ix), the literature supportive of individuals who have a higher affinity for consuming a healthier diet, to be more inclined to consult nutritional information (Campos et al., 2011:1502; Graham & Laska 2012:418), and the association between health-consciousness and increased use of nutritional information (Hess et al., 2011:411; Graham & Laska, 2012:418; Jacobs et al., 2010:515; Ellison et al., 2013) may incidentally provide support for the association found between whole grain intakes and the influence of nutritional information on a fast food choice in this current study. That is, in the current study, daily whole grain intakes were significantly associated with the nutritional information provision on the choice of a beef burger, where a large proportion of respondents not being influenced by the nutritional information provision, reported no daily servings of whole grains; an amount near double the proportion of respondents being influenced by the nutritional information provision on the choice of a beef burger and reporting no daily whole grain intakes. Similarly, a much larger proportion of respondents in the group of respondents who reported being influenced by the nutritional

information provision, also reported one daily whole grain serving in comparison to the group of respondents who indicated that they wouldn't be influenced by the nutritional information provision on the choice of a beef burger. It may be assumed then, that the current study presents novel findings as to the outcome of whole grain intake in this regard.

5.3.1.2.3 Respondent fast food consumption

The influence of the nutritional information provision on the respondents' beef burger choice was significantly affected by the frequency at which they consumed fast food, their beef burger of choice (i.e. with or without additions) and the factors influencing their beef burger of choice (i.e. familiarity, taste, price, assumed nutritional content and availability). For the latter, while the factors influencing the choice of a beef burger were found to be significant holistically, the results need to be interpreted with caution.

i. Fast food consumption frequency

The current study found the frequency of fast food consumption to be significantly associated with the influence of nutritional information provision on the choice of a beef burger. Although these findings are novel in their regard, health-consciousness and the utilisation of nutritional labels were found to be positively associated with one another throughout multiple studies (Jacobs et al., 2010:515; Hess et al., 2011:411; Graham & Laska, 2012:418; Ellison et al., 2013; Dingman et al., 2014:570), with health-consciousness associated with a lowered consumption of fast food (Krishnan et al., 2010:468; De Magistris et al., 2010:540; Anderson et al., 2011; Scarborough Research, 2012; Dingman et al., 2014:569). These findings may further support the earlier theory of a high proportion of health-conscious consumers being present in the current study, and for this proportion of health-conscious respondents to be associated with the group of respondents reporting an influence of nutritional information provision on their beef burger choice.

Sarmugam and Worseley (2015:8043) found that health-consciousness was directly related to the frequency of fast food consumption with health-conscious and non-health-conscious individuals reporting not much difference in the consumption frequency of between one and three times per month. Health-conscious individuals however, were found to frequent fast food consumption significantly less for the frequency of 'at least once per week', and a lot more for the 'never' frequency. In the current study, while a similar proportion of individuals for both groups reported consumption of fast food 'at least 2-3 times per month', respondents who indicated being influenced by the nutritional information provision, were significantly less likely to report fast food consumption 'less than once a month', and 'at least once a week' in comparison to individuals who were not influenced by the nutritional information provision. While these results

don't directly relate to the findings by Sarmugam and Worseley (2015:803), if it is postulated that the respondents in the current study being influenced by the nutritional information provision are the more health-conscious proportion, the findings may provide some support to the current study findings for the significant association found between the utilisation of nutritional information provision, and a lowered fast food consumption frequency.

i. Beef burger choice

The influence of the nutritional information provision on the respondents' beef burger choice was significantly affected by the respondents' beef burger of choice. That is, among the respondents who indicated that the nutritional information provision would influence their beef burger choice, double the proportion of the respondents indicated that they consumed regular beef burgers without additions (no extra items) than among the respondents who indicated that the nutritional information provision would not influence their beef burger choice. Here, in comparison, a larger proportion of this group of respondents chose a regular beef burger with additions. Todd et al. (2010:10) reported that individuals, who consider their dietary intake, might make the same fast food choices as those individuals who don't, and also do not compensate for these less healthy dietary choices by eating healthier at home. The current study results, however, indicate that these findings may not be entirely accurate, as the respondents who considered their dietary intake, and therefore may possibly be considered as more health-conscious individuals, made healthier dietary choices in their fast food selection, as indicated above and outlined below.

The respondents who indicated that the nutritional information provision would influence their beef burger choice, evidently made healthier dietary choices in the current study (i.e. in this study, represented as the beef burger that had no additions, and therefore a lower energy and macronutrient contribution), and *vice versa*. These findings may support the literature that individuals may make use of nutritional information as an indication of the nutrient content, specifically the macronutrients (Misra, 2007:2132; Rasberry et al., 2007:79; Chen et al., 2012:764), to avoid certain nutrients, and to identify differences in the fat, energy and sugar content of the foods being purchased (Cowburn & Stockley, 2004:24), to therefore aid them in making healthier dietary choices (Rasberry et al., 2007:79).

The current study attests that even among the respondents who would be influenced by the nutritional information provision on the choice of a beef burger, that the majority already chose a beef burger with minimum additions. Their beef burger choices therefore already contributed a lower nutrient content (as energy and macronutrients) on the nutritional information provision, even from the onset when only being showed the energy content of the beef burgers in the first menu format. Second to the above, for every respondent indicating that they would be influenced

by the nutritional information provision, and therefore provided with the two menu formats, the second menu format choice was in every case, an alternative that had less additions and therefore lower in its nutrient provision than the first. The second choice was never the same burger choice, or a beef burger choice with a higher nutrient contribution. This showed that the respondents, who indicated that they would be influenced by the nutritional information provision, were indeed influenced. These findings coincide with the findings from the study by Roberto et al. (2010:312), where consumers who reported using the energy information in their fast food purchase, purchased on average, a lower number of food items. These findings are also consistent with studies showing a positive influence of the nutritional information provision on fast food, and especially energy content, to influence consumers in purchasing less energy-dense fast food items (Roberto et al., 2010:316; Dumanovsky et al., 2011; Brissette et al., 2013:406; Dowray et al., 2013:177; Morley et al., 2013:14) with Dumanovsky (2011) reporting the most prominent difference in energy-lowering to be among the hamburger chains. However, it is important to note that these studies focused on actual purchasing of the fast foods before and after being shown the energy-labelling provisions.

ii. Factors influencing the choice of a beef burger

The factors influencing the respondent beef burger choice were found to be particularly significant in influencing the respondent beef burger choice on the nutritional information provision. Though this finding should be considered with caution, the factors presenting the difference on the face of it are: the assumed nutritional content above the beef burger taste, its familiarity, price and availability.

As can be expected, among the respondents who were not influenced by the nutritional information provision, the assumed nutritional content was not a chosen factor influencing these individuals' beef burger choice. Although it was a factor among those respondents who were influenced by the nutritional information provision on their beef burger choice, it was only ranked as third after taste and familiarity. This finding is similar to that of the Harnack et al. (2008) study, which found nutrition as a factor to not be important. Similarly, Jacobs et al. (2010:510) and Oni and Matiza (2014:806) in their South African studies found that nutrition was not a significant factor in influencing the choice of a fast food. Jacobs et al. (2010:518) found that both taste and price as factors were more important than the nutritional content of the food, and therefore hindered the reading of nutritional labels, with individuals reporting that they "know what the product contains" and "pick what I want" as reasons for not making use of the nutritional information. What is consistent throughout the literature, though, is that nutrition - as a factor - predominantly follows after taste as a major influencing factor (Harnack et al., 2008;

Jacobs et al., 2010:518). In this current study, the 'no' response reported for this factor among the respondents not being influenced by the nutritional information provision, together with the low response reported for the respondents who were influenced, may support the findings of Anderson et al. (2011), which reported the perceived healthfulness of fast food to be non-related to fast food consumption.

Between both the respondent groups, taste was found to be the most important factor in both influencing and not influencing the beef burger choice on the nutritional information provision, contributing slightly more than half of the respondent indications in both groups. This finding is consistent with the existing literature supporting taste as a strong influencing factor for the purchase of foods, and specifically, fast food (Jacobs et al., 2010:518; Lucan et al., 2010:633; Van Zyl et al., 2010:127; Seo et al., 2011:169; Temple & Steyn, 2011:505; Mulvaney-Day et al., 2012:360), and as mentioned in the previous section, was one of the major reasons for hindering the utilisation of nutritional labels (Jacobs et al., 2010:516).

Second to taste as an influencing factor was familiarity; similar to the finding in the Jacobs et al. (2010:516) study, which established that familiarity (represented by the response "purchase food out of habit") was reflected as a strong influencing factor in the choice of fast food among their respondents. Similarly, Hess et al. (2011:411) found individuals who made routine purchases, to be less likely to make use of nutritional information in their purchase. In the current study however, neither group of respondents considered price as an important influencing factor. Although price has consistently been cited as an influencing factor on fast food choice (Jacobs et al., 2010:518; Seo et al., 2011:169; Mulvaney-Day, 2012:359; Oni & Matiza, 2014:808), it was not found to be significant in the current study among either the respondents who were and weren't influenced by the nutritional information provision on the choice of a beef burger; consistent with the study of Brindal et al. (2010:19) finding price to be inconsistent as a predictor of fast food choice. Price has been found to greatly influence the utilisation of nutritional labels (Jacobs et al., 2010:516; Hess et al., 2011:411) and, in addition to taste, was considered to be more important than the nutritional content of food, thereby deterring individuals taking the time to make use of nutritional information. The current study, however, did not support these findings.

Very few respondents furthermore, found availability to be a factor influencing their beef burger choice between both the respondents who were affected by the nutritional information provision and those who weren't. Similar to price as an influencing factor, availability was also inconsistent throughout fast food studies as a predictor of fast food choice, with some finding a positive association (Paquet et al., 2010:773; Bonne-Heinonen et al., 2011:1165; Dingman et al., 2014:569), and others finding no association (Burgoine et al., 2014; Oni & Matiza, 2014:805). The

results of these fast food studies however were susceptible to many demographic and geographic variables.

5.3.2 Improbability of nutritional information provision to influence the choice of a beef burger

Considering the literature, the predictors of infrequent nutritional information usage seems to be associated with a lack of knowledge and understanding (Jacobs et al., 2010:516; Chen et al., 2012:764), time constraints (Campos et al., 2011:1502), taste (Jacobs et al., 2010:516; Mulvaney-Day et al., 2012:359), lack of interest (Bosman et al., 2012:39), habit and price (Jacobs et al., 2010:516; Hess et al., 2011:411).

The current study supports the above results in part, although by and large, the number one factor predicting an infrequent utilisation of nutritional information provision among the respondents was that knowing the nutritional information would not affect their choice (i.e. “I am aware/have an idea of the nutritional content of beef burgers, but will still buy my original choice even if nutritional information was available”), followed by a lack of understanding, and a much lower reported factor as a lack of time. Although lack of time was found to be a strong influencing factor among the literature (Jacobs et al., 2010:516; Campos et al., 2011:1502), it was found to be weak as an influencer in the utilisation of nutritional information provision in the current study. The same was true for a lack of interest in the current study, where the lowest proportion of respondents reported this as their reason for not being influenced by the nutritional information provision. The few respondents indicating no interest in the topic of food, nutrition and health, and finding the nutritional information to be important when asked *“why the provision of nutritional information on beef burgers would not influence your choice of beef burger?”* further supports the inference of a high presence of health-conscious individuals in the study.

5.3.2.1 Knowing the nutritional information would not influence the choice

The number one factor in the current study for more than half of the respondents reporting not being influenced by the nutritional information provision on the choice of a beef burger was that knowing the nutritional information would not affect their choice of a beef burger. The proportion of respondents indicating this was near identical to the proportion of individuals in the study by Van der Merwe et al. (2012:405) who indicated that even though they made use of nutritional labels, that they still ate what they wanted, regardless of what was good for them. The current study results may also support the results by GrubHub (2014) evidencing that regardless of healthier fast food options and nutritional information being provided, ultimately, consumers will still purchase according to what they crave.

The fact that the respondents indicated that even after knowing the nutritional information of beef burgers, that this information would not influence them to change their original choice, may indicate that taste or habit was more important to the respondents than nutrition. Taste was found to be a strong factor inhibiting the use of nutritional information among respondents in multiple studies (Jacobs et al., 2010:516; Mulvaney-Day et al., 2012:359). Burton et al. (2009:264) found that nutritional information provision had little influence on consumers' choice of a fast food, and that taste may be more important. Similarly, Mulvaney-Day et al. (2012:359) found that young adults enjoyed the taste of fast food, and that even where nutritional information was provided for fast food options, that nutritional information provision was ignored. These findings are supported by earlier findings in this chapter that taste as a factor, is the most important factor influencing respondents in the choice of a beef burger (Jacobs et al., 2010:518; Lucan et al., 2010:633; Van Zyl et al., 2010:127; Seo et al., 2011:169; Temple & Steyn, 2011:505), and one of the major reasons for deterring the utilisation of nutritional labels (Jacobs et al., 2010:516).

5.3.2.2 Lack of understanding

The second highest rated respondent reason for not being influenced by the nutritional information provision on the choice of a beef burger was that respondents did not understand the nutritional information provided. The understanding, or lack thereof around nutrition information is a popular topic in the literature (Jacobs et al., 2010:56; Chen et al., 2012:764; Martinez et al., 2012:321). In the Jacobs et al. (2010:56) study, half of the respondents who indicated that they did not read nutritional labels, gave their reason as finding the terms utilised in the ingredient listing as confusing. Another major reason in this specific study was also that individuals felt as though they had insufficient knowledge or reading skills to understand the nutritional information provided.

5.4 Study strengths and limitations

Though the current study had limitations, mainly in terms of the sampling methods employed, it also lent itself to many strengths, that is, supporting and expanding existing literature but, more importantly, contributing a large amount of novel information to the field of food and nutrition allied with fast food consumption and nutritional information. The study provided much strength in the case of extended nutritional information provision on the choice of a fast food item, and particularly, the factors to result in the nutritional information provision influencing the fast food consumer choice of specifically a beef burger.

5.4.1 Strengths

The current study was, to the knowledge of the researcher, the first study undertaken in SA to assess the influence of nutritional information provision on the choice of a fast food, and more specifically, on the choice of a beef burger. The current study was, to the knowledge of the researcher, furthermore the first study to assess the influence of extended nutritional information provision (i.e. energy, total fat, saturated fat and cholesterol in combination) on the choice of a fast food and, more specifically, on the choice of a beef burger, in comparison to previous studies which have only assessed the influence of energy provision (Elbel et al., 2009:w1117; Roberto et al., 2010:314; Dumanovsky et al., 2011; Dowray et al., 2013:177; Ellison et al., 2013; Morley et al., 2013:8) on the choice of restaurant or fast food choices. The study supported previous findings, in that the provision of energy information influenced consumers' choice of a less energy-dense fast food meal (Roberto et al., 2010:316; Dowray et al., 2013:177; Morley et al., 2013:14), and adds to the literature published by Dumanovsky et al. (2011) around the positive influence of energy information in influencing consumers to make a fast food choice of lower energy-density, specifically at hamburger chains. However, the strength of the study overall, resides on the fact that a combination of extended nutritional information provision had a greater likelihood of influencing the fast food choice among fast food consumers and users of nutritional information, than energy provision alone. As there is still limited literature available on the influence of extended nutritional information provision on the choice of a fast food, the current study therefore presents novel information in this regard. The study also found a number of factors to significantly support nutritional information provision in influencing the choice of a beef burger that greatly expanded the existing knowledge in this respect. Although the associations were not all comparable to existing literature, thereby limiting the comparison of the results in the discussion and not providing consistency, these findings are new in this field of research and may be considered an addition of information to a field of food and nutrition where limited information exists.

Due to assumed health-conscious respondents contributing toward the respondent sample, the study also provided support to existing literature, in that even health-conscious consumers are consumers of fast food, albeit in lower frequencies. The study moreover, added data to the limited available information on the fast consumption of South Africans. To the knowledge of the researcher, currently only two studies (Van Zyl et al., 2010:126; Steyn et al., 2011) provided comprehensive information on the matter of fast food consumption in SA. In addition to the current study adding to the fast food consumption data in SA, it also seems to be unique in that it showcases the most preferred type of beef burger among young adults (vs. showing only 'burgers' as a popular fast food item among individuals). Furthermore, limited or no data is

available pertaining to the dietary intakes of South Africans and for the most part that related to their food intakes (Van Heerden, 2011:24), as well as whole grain intakes, which this study provided - at least for a sample of young employed South African adult consumers of beef burgers and residing in the City of Cape Town.

The questionnaire was extensive in its format and data collection, allowing for data collection on participant fast food consumption, fast food consumption on the nutritional information provision, as well as demographic, biographic and lifestyle information. Therefore, it did not only permit the collection of data pertinent to the study, but also allowed for a number of possible associations to be undertaken after the data collection stage that greatly expanded the existing knowledge regarding the factors to significantly influence the nutritional information provision in effecting the choice of a beef burger as exemplification of a fast food. The questionnaire was pilot-tested on the target population, as advised by Rattray and Jones (2007:237), and evaluated by several experts in the food and nutrition field for content and face validity, as recommended by Bannigan and Watson (2009:3240). The result was that, through this process, the questionnaire was designed so that it included thoroughly reviewed and compiled multiple-choice questions, allowing for more data to be collected in a shorter amount of time spent by the respondents to complete the questionnaire, and that all the received responses were consistent, making for an easier data-capturing process and the accuracy thereof.

5.4.2 Limitations

Because the sample selection was not random, it therefore adopted a non-probability approach (i.e. 'snowball sampling'). Although this does not mean that the sample is not representative of the population under study, it does mean that the sample may or may not represent the population adequately. In addition, non-probability sampling may also lead to sample bias. With a purposive approach, although it is likely that the researcher will obtain the required opinions of the targeted population, chances are higher that certain subgroups within the selected population sample will be larger and better represented due to the sample subgroup being more readily accessible (Trochim, 2006). That is, the study sampled young adult individuals who were consumers of fast food, and specifically of a beef burger employed in the City of Cape Town within the professional and clerk occupational classifications (ILO, 2015), as consumer group. Hence it did not allow for individuals who did not consume fast food to partake in the study and contribute towards representative data. Further to this, the aforementioned groups were chosen to fulfill the young adult sample, as higher education (Ollberding et al., 2010:1234; Brissette et al., 2012:406; Chen et al., 2012:764; Cheah et al., 2015:2780; Jacobs et al., 2010:514), employment status (Cheah et al., 2015:2782) and income status (Ollberding et al., 2010:1234; Chen et al.,

2012:764; Cheah et al., 2015:2782) have all been associated with an increased use of nutritional labels throughout the literature, therefore a higher proportion of both nutritional information label users may be present, which may not be truly indicative of the target population.

In addition, the questionnaire obtained information on occupation, and not level of education, therefore it was assumed, according to the occupation-type, that respondents would be higher educated. In saying this, however, there are circumstances in which non-probability sampling is inevitable and may be exactly what is required (Bernard, 2000:175), as well as the most appropriate method available (Trochim, 2006), and is also an effective way to build an exhaustive frame, provided that the sampling bias is documented (Bernard, 2000:179). The non-probability approach further allowed for access to young adult individuals in the study, who may not have been accessible to the researcher had it not been for the contact and snowball-sampling method adopted through the researchers' contacts and subsequent recruiters.

The sampling method can also be considered as convenient, in that the researcher sampled via means of requesting volunteers to partake in the study (Trochim, 2006). Further to this, it was convenient in nature as the sample group was derived through the simple availability of candidates to the researcher through accessibility, and therefore had characteristics of specific relevance to the researcher (Bryman, 2012:201). The researcher also relied on the informants to screen their respondent circles for age and fast food consumption inclusion, which may not have been wholly accurate. However, in the latter case, if respondents were not consumers of fast food, this was evident later in the questionnaire and, as a result, these questionnaires were discarded by the researcher. This does also mean that, together with being purposive, and the fact that the sampled individuals had specific characteristics of interest, the sampling method might have inferred bias in that there was no evidence to show that the sample was representative of the generalised population that the researcher was concerned with (Neuman, 2006:222; Trochim, 2006; Bryman, 2012:203). However, this approach has been cited as being useful for exploratory research (Bernard, 2000:175), which this research represents in the South African context.

Some further limitations to the study may be that, as the respondent sample was not making actual purchases of a fast food, that their fast food choice, might only have reflected a hypothetical choice. This may also imply that the influence of 'price' as a factor, might not have been as valid in this study and as a result, might have had less impact on the study findings (as was established) compared to if actual price considerations had accompanied the provided beef burger choices. However taking the literature support into consideration, the latter is thought to not have influenced the study findings.

CHAPTER 6 CONCLUSIONS

The chapter to follow commences with an overall research supposition (as 6.1), linking the research question “*Would the provision of nutritional information influence the choice of a popular fast food item by young adults employed in the City of Cape Town within the professional and clerk occupational classifications as consumer group, using a beef burger as the fast food exploratory item?*” to the main and subsidiary objectives of the study, and provides additional associated outcomes of the study. As the subsidiary objectives were not as pertinent as the major objectives in the current study, the overall research supposition highlights the major subsidiary objective findings. The remainder of the chapter highlights the salient outcomes of the main objectives of the study, through its’ sections to follow as: the prospect of nutritional information provision in influencing the choice of a popular fast food item by young adults (as 6.2), among respondents who were influenced by the nutritional information provision on the choice of a beef burger, and therefore presumably among the health-conscious proportion of the respondent sample; and in contrast, why the nutritional information provision would not influence the choice of a popular fast food item by young adults (as 6.3), among the respondents who would not be influenced by the nutritional information provision on the choice of a beef burger, and therefore presumably among the less health-conscious proportion of the respondent sample.

6.1 Overall research supposition

The current study supports global findings around the popularity of fast food among young adults (Seo et al., 2011:169; Lachat et al., 2012:340; Steyn et al., 2012; Fryar & Ervin, 2013; Smith et al., 2013:2370), and adds to the body of knowledge already published in SA (Van Zyl et al., 2010:126; Steyn et al., 2011), albeit limited, around the consumption of these foods. Consumption frequencies revealed an overall moderate fast food consumption frequency by this employed young adult sample in the City of Cape Town, slightly lower in comparison to the Johannesburg region as reported by Van Zyl et al. (2010:124). The major fast food consumption items are still mainly pizzas and burgers (Van Zyl et al., 2010:126; Larson et al., 2011:1700; Seo et al., 2011:176; Smith et al., 2013:2371; Chen et al., 2015:549). Furthermore, convenience (driven in the main by time constraints and availability) and taste, are the two main promoters of fast food consumption among these employed young adult fast food consumers; with preference (represented by taste and familiarity/habit) as seemingly the most crucial factor influencing the choice of a specific fast food. Thus, the actual allure of the convenience of fast food seemingly attracts consumers to the fast food establishment, yet once at the actual establishment, preference for a specific fast food becomes the most influential factor driving a specific fast food choice.

'Taste', by and large therefore, remains the most important influencing factor of a specific fast food choice, with it being the primary inhibitor of nutritional label use (Jacobs et al., 2010:516; Mulvaney-Day et al., 2012:359), particularly among less health-conscious consumers.

In contrast, the current study showed that in the presence of nutritional information provision, that nutritional content seemingly overrides the taste of the fast food choice among health-conscious consumers to make a healthier fast food choice. This was evident in the finding that while 'assumed nutritional content (*being a 'healthier choice'*)' featured very low as an influencing factor on the respondent choice of the beef burger, when asked '*If nutritional information was provided for beef burgers, would this influence your choice of beef burger?*' just over half of the respondents in fact were influenced to make a healthier beef burger choice in the presence of the nutritional information provision. Thus, the results may indicate that young adults might not be aware of the influence that the nutritional information provision has on them, until presented with such information.

6.2 Prospect of the provision of nutritional information influencing a healthier choice of a popular fast food item by young adults

The sub-sections to follow conclude the nutritional information provision that was found to be most likely to influence a healthier (represented as being lower in the energy, or macronutrient, content) fast food choice among the respondents, as well as the biographic and lifestyle characteristics, eating practice and fast food consumption factors that influenced the choice. These latter factors found to be associated, are predominantly associated with being more health-conscious. Thus, the current study identifies health-conscious consumer attributes as the determinants associated with influencing the choice of a beef burger on the nutritional information provision, and identifies these health-conscious consumers as those consumers who may be influenced in their beef burger choice, and possibly even other fast food choices, to make a healthier selection on the nutritional information provision.

6.2.1 The nutritional information provision likely to influence the choice

On the face of it, the respondents were mostly influenced by the energy provision in their choice of a healthier fast food choice. On a deeper investigation however, energy provision was not the only, nor the most influential nutritional information provision in aiding these consumers to make a healthier fast food selection. Rather, a combination of the extended nutritional information provision showed a positive influence on the choice of a healthier fast food choice, similar to the findings of Cheah et al. (2015:2782), showing students to make use of nutritional information beyond only the energy content. These results may substantiate that of Elbel et al. (2009:w1117) who found energy provision to have little influence on the choice of a fast food

among health-conscious individuals. These results are also seemingly unique in their regard, as no studies, to the researchers' knowledge, have examined the influence of a more comprehensive nutritional information provision on the choice of a fast food.

6.2.2 The biographic and lifestyle characteristics, eating practice and fast food consumption factors that influenced the choice

While no demographic factors were found to significantly influence the respondent choice of a beef burger on the nutritional information provision, the study found 12 factors significantly influencing the respondent choice of a beef burger on the nutritional information provision. These factors comprised a combination of the respondent biographic and lifestyle influences (i.e. smoking status and perceived interest in the topic of 'food, nutrition and health'), their eating practice influences (i.e. daily meal pattern during the week, meal most skipped during the week and meal most skipped over the weekend, own dietary intake description, weekly fruit and vegetable consumption, number of daily fruit servings, and number of daily wholegrain servings) and fast food consumption influences (i.e. fast food consumption frequency, beef burger choice, and the factors influencing the beef burger choice). The respondent smoking status (as a biographic and lifestyle influence), weekly fruit and vegetable consumption (as eating practice influence) and the factors influencing the respondent beef burger choice (as a fast food consumption influence), resulted as the three factors to have the most significance.

These factors showed that the likeliness of the respondents to be influenced by the nutritional information provision on fast food was significantly influenced by them being non-smokers, having a perceived interest in the topic of 'food, nutrition and health', them perceiving their dietary intakes as healthier in comparison to other young adults of their age, as well as them having actual healthier dietary intakes (represented as a lowered fast food consumption frequency, healthier fast food choices [represented as a beef burger being lower in total energy and macronutrient content due to fewer burger ingredient additions], and an increased intake of fruit, vegetables and whole grain intakes). In combination, these factors collectively represent the characteristics of health-consciousness, which in itself, is a strong predictor of increased utilisation of nutritional information (Hess et al., 2011:411; Bosman et al., 2012:39; Graham & Laska, 2012:418; Jacobs et al., 2010:515; Ellison et al., 2013). Thus, the current study results show a strong influence of increased health-consciousness on the influence of nutritional information provision on the choice of a popular fast food item. They also support previous literature (Scarborough, 2012; Sarmugam & Worsley, 2015:8043; Gresse et al., 2015:154) showing health-conscious individuals to still frequent fast food consumption, albeit their fast food selections differ to those who are less health-conscious (Todd et al., 2010:10). Rather, their selections are healthier in the presence of nutritional information provision. Health-consciousness alone

therefore, may not predict healthier fast food choices necessarily, unless such consumers are provided with the nutritional information.

In addition to the above, the study also revealed that the likeliness of respondents to be influenced by nutritional information provision on fast food is significantly influenced by them following a more regular weekly meal pattern of at least three meals per day, a lowered snacking pattern, and the regular consumption of breakfast during the week and on the weekends. This irregular meal pattern, represented as the frequent skipping of meals (Brindal, 2010:109) and snacking (Ovaskainen et al., 2006:494), had previously and significantly been associated with a reduced respondent likeliness to be influenced by nutritional information provision on fast food (Ovaskainen et al., 2006:494; Brindal, 2010:109). These results are novel in their regard, proving support for a positive inference between the influence of nutritional information provision on the choice of a fast food, and more regular eating patterns.

6.3 Why the nutritional information provision would not influence the choice of a popular fast food item by young adults

Similar to the previous section, the sub-sections to follow conclude the factors as to why the nutritional information provision would not influence the choice of a fast food item by young adults and were acquired from the respondents who indicated that they would not be influenced by the nutritional information provision on their choice of a beef burger. As the current study results show a strong influence of increased health-consciousness on the influence of nutritional information provision on the choice of a popular fast food item, this remaining proportion of the respondent sample may therefore presumably be considered as less health-conscious.

6.3.1 The preference for a specific fast food

The study showed that the primary motivator for young adults not being influenced by the nutritional information provision was not due to an ignorance around the nutritional content of fast food, but rather, that young adults are aware of, or have an idea of the nutritional content of beef burgers, but that its' nutritional content provision would not influence their choice. As taste was found to be the number one influencing factor on the choice of a beef burger in the current study among both groups of respondents (those influenced vs. those not influenced), followed by familiarity, the results suggest that the preference for a specific fast food, driven by taste primarily, or habit, is the major motivator for young adults not being influenced by the nutritional information provision, and still continuing to purchase their original choice. Research has confirmed the taste of food to be a major inhibitor of nutritional label use (Jacobs et al., 2010:516; Mulvaney-Day et al., 2012:359) and that even when provided with the nutritional

information, that the information is ignored when taste is a key food choice determinant (Mulvaney-Day et al., 2012:359; Van der Merwe et al., 2012:405).

The current study therefore supports the inference of preference/taste of a popular fast food item over the nutritional value among young adults who are presumably less health-conscious, and therefore not influenced by the nutritional information provision, while the opposite seems to be true for more health-conscious young adults. That is, among less health-conscious young adults, and therefore not nutritional label users, the nutritional content of fast food items are not enough to influence young adults in their choice of a beef burger and ultimately, consumers will still purchase what they desire (GrubHub, 2014; Van der Merwe et al., 2012:405), regardless of the potential health detriments (Van der Merwe et al., 2012:405).

6.3.2 Lack of understanding of the nutritional information

In contrast to young adults in the study either being aware of the nutritional information, or having no desire to obtain the nutritional information, a high proportion also indicated that a lack of understanding around the nutritional information which inhibits the use of nutritional label provision, as established in similar studies (Jacobs et al., 2010:56; Chen et al., 2012:764; Martinez et al., 2012:321). These findings support those of Christoph et al. (2016:2145), which found regular label users to be associated with an increased level of nutritional label understanding.

CHAPTER 7 RECOMMENDATIONS

Investigation into the research question, “*Would the provision of nutritional information influence the choice of a popular fast food item by young adults employed in the City of Cape Town within the professional and clerk occupational classifications as consumer group, using a beef burger as the fast food exploratory item?*” and its related main and subsidiary research objectives, through a review of the literature and resultant research findings and conclusions, recommendations are provided for further academic research (as 7.1), for policy-makers (as 7.2), and for the fast food industry (as 7.3), in SA in this regard.

7.1 Recommendations for further academic research in the domain of young adult fast food consumption in South Africa

Recommendations for further academic research that ensues from the current study are targeted at young adults in SA, and their fast food consumption habits, to be able to potentially obtain local comparisons, allowing expansion and strength added to the findings of the current study. Further recommendations for academic research are aimed at the influence of nutritional information provision on the choice of a fast food, using a different fast food as subject, respondent sample and sampling method.

7.1.1 Local fast food consumption and specific to young adults

The popularity of fast food consumption in SA is increasing (Maumbe, 2012). According to Maumbe (2012), “SA has one of the fastest growing fast food industries in the world”, attributed mainly to an increase in household income. Literature published thus far around the fast food consumption patterns in SA however, is limited (Feeley et al., 2009:118; Van Zyl et al., 2010:124; Feeley et al., 2011:199; Steyn et al., 2011; Steyn & Labadarios, 2011:462), with only a few of the studies (Steyn et al., 2011; Steyn & Labadarios, 2011:462) including the Western Cape as part of the study sample, and only one study by Van Zyl et al. (2010:124) focusing specifically on the young adult demographic and in the Johannesburg region. According to Steyn et al. (2011), “very little is known about fast food consumption in SA despite it being a large sector of the SA economy”. Few studies have been conducted since this statement in SA, with the majority of the local literature (Feeley et al., 2009:118; Feeley et al., 2011:199; Steyn et al., 2011; Steyn & Labadarios, 2011:462) also fundamentally focusing on street food consumption. No fast food studies have been published in the City of Cape Town, or the Western Cape Province region, specifically pertaining to young adults. Literature regarding fast food consumption and its trends in SA is therefore still scarce. Research should hence be conducted to broaden the scope of information.

7.1.2 Influence of nutritional information provision on the choice of a fast food item among young adults in South Africa, employing a different fast food subject, sample and sampling method

A beef burger was chosen as the fast food exploratory item in the current study, as Dumanovsky et al. (2011) found the influence of energy provision in influencing a healthier fast food choice (lower in energy content) among individuals to be highest among hamburger chains. Dunford et al. (2010:486) found burgers (219 g portion size on average) to be the largest contributor of energy (2 185 kJ), and therefore burgers provided an opportunity for ingredient and nutritional labelling content manipulation. At the time of initiation of the current study, burgers were also identified as being the most popular fast food choice on a local (Van Zyl et al., 2010:126) and international (Krishnan et al., 2010:467; Larson et al., 2011:1700. Seo et al., 2011:176; Kirkpatrick et al., 2014:927) level; if not a primary choice, then one of the leading fast food choices, together with pizzas, among fast food consumers (Brindal, 2010:41; Krishnan et al., 2010:467; Larson et al., 2011:1700; Dingman et al., 2014:567; Kirkpatrick et al., 2014:927; Chen et al., 2015:547; Euromonitor International, 2015:7). Burgers were also reported to dominate the U.S. fast food industry in 2015 (Euromonitor International, 2015:7; Mazzone & Associates Incorporated, 2015). After conducting the study however, the results evidenced pizzas to be the most popular fast food choice among the young adult demographic study sample. Although some studies (Dunn et al., 2012:3; Dingman et al., 2014:567) referred to pizza establishments as being separate from fast food establishments, the majority of the studies included pizzas as a fast food choice. Further research could therefore be conducted to ascertain the influence of extended nutritional information provision on the choice of a fast food, potentially using a pizza as the exploratory item, as this fast food item was found to be the largest fast food contributor of food energy per portion size (63 kcal/265 kJ) (Drewnowski & Rehm, 2013).

As the sample selection was not random, but rather purposive - therefore used a non-probability approach in the selection of potential respondents - the sample may or may not be a true representation of the fast food consumer population. The chances are therefore higher that certain subgroups within the selected population sample are larger and better represented due to the sample subgroup being more readily accessible. For one, this meant that the sampling method employed in the current study did not allow for individuals who did not consume fast food to take part in the study and to contribute towards representative data of fast food consumption. Considering the research question though, the criteria for respondent participation in the current study had to be related to being a fast food consumer (and that of beef burgers specifically). In addition to the criteria for respondent participation in the current study being a fast food consumer, respondent consideration also included having a relatively higher SES. The latter

criterion was utilised, as the use of nutritional information is typically associated with individuals who are employed (Larson et al., 2011:1701; Steyn et al., 2011) and earning reasonable disposable incomes (Ellison et al., 2013). This higher SES also allowed for potential respondents who would be more likely to utilise nutritional labels (Jacobs et al., 2010:515; Campos et al., 2011:1502; Hess et al., 2011:411; Graham & Laska, 2012:418; Ellison et al., 2013; Dingman et al., 2014:569). As a result, this may predict a higher presence of users of nutritional labels and also recognised as outwardly more health-conscious consumers in the current study; thus, potentially not truly indicative of the fast food consumer population, potentially inferring bias.

By using a more randomised approach for the sampling method, a future study in this regard could allow for the inclusion of respondents who are not fast food consumers, as well as a more true representation of health-conscious and non-health-conscious consumers among the fast food consumption population, allowing for potential comparisons. In addition, conducting a similar study on a lower SES demographic, or to not limit SES, could provide a more accurate representation of fast food consumption and health-consciousness among a larger population. As the study was also hypothetical regarding a healthier fast food choice among the young adult fast food consumers, it may also be of great benefit to employ a similar study using actual fast food purchases to establish the intentions among young adults to be influenced by nutritional information provision. This could further gauge the importance of price as an influencing factor on the choice of a fast food on a local level (found not to be of significance in the current study), and in circumstances where disposable income was potentially lower.

7.2 Recommendations for policy-makers

Although a lowered frequency of fast food consumption is predominantly associated with health-consciousness (Krishnan et al., 2010:468; De Magistris et al., 2010:540; Scarborough Research, 2012; Anderson et al., 2011; Dingman et al., 2014:569; Sarmugam & Worsley, 2015:8043), the current study confirmed that individuals having health-conscious traits still frequent fast food consumption (Scarborough, 2012; Sarmugam & Worsley, 2015:8043; Gresse et al., 2015:154), albeit the fast food consumption frequency is reportedly lower (Sarmugam & Worsley, 2015:8043), and selections are not the same as those who are less health-conscious, as predicted by Todd et al. (2010:10) but rather, selections are healthier in the presence of nutritional information provision; more specifically, in the presence of the provision of energy, saturated fat and cholesterol content, and a combination of the provision of energy and total macronutrient content. Thus, the current study showed that nutritional information provision on fast food could greatly assist these fast food consumers who are predominantly more health-conscious, and particularly those who frequent burger establishments, in making healthier fast food choices. Fast

food consumers, in particular, have been found to be quite poor at estimating actual levels of fat, sodium and energy of fast food outlet offerings (Burton et al., 2009:270). Thus, nutritional information provision on fast food offerings may provide consumers with valuable insights that they may or may not be aware of, and further, may or may not be seeking.

7.2.1 Mandatory legislation consideration of energy provision at fast food establishments in South Africa

Based on the current study results, and the international findings of the influence of energy provision in influencing a healthier fast food choice (Roberto et al., 2010:316, Dumanovsky et al., 2011, Cohen & Bhatia, 2012:622; Martinez et al., 2012:321; Brissette et al., 2013:406; Dowry et al., 2013:177; Morley et al., 2013:14), as a first step, the SA DOH could consider legislating the mandatory labelling of energy provision on fast food in SA. The respondents in the current study were highly influenced by the provision of energy content alone in influencing them to select a healthier fast food choice, although upon a deeper investigation and after being provided with extended nutritional information provision, energy provision was reported as being least likely to influence respondents in selecting a healthier fast food choice. A recommendation in this regard therefore, may be to conduct a similar research exercise in SA, but investigating true fast food purchases, as was done on an international scope (Roberto et al., 2010:316, Dumanovsky et al., 2011, Brissette et al., 2013:406; Dowry et al., 2013:177), as the current study was only based on nutritional information provision displayed as menu offerings, and no purchasing was involved.

7.2.2 Consideration of legislation of extended nutritional information (as energy, total fat, saturated fat and cholesterol) provision at fast food establishments in South Africa

In comparison to the influence of energy provision, a combination of the energy and macronutrient provision was found to be most likely to influence a healthier fast food choice among the respondents. As a further step to the provision of energy information for fast food choices, the SA DOH should consider the display of a more extensive nutritional information provision, at least to include saturated fat and cholesterol content. These macronutrients in isolation, were more likely to influence a healthier fast food choice in comparison to energy provision alone, and in combination with energy and total fat provision, had the highest likeliness of influencing a healthier fast food choice among the young adult respondents in the current study. In support of this recommendation for a more extensive nutritional information provision, if, as the current study shows, potentially more health-conscious consumers are likely to be nutritional label users, and therefore are at higher odds of being influenced by the nutritional information provision, then this group of consumers is unlikely to be influenced by the provision of energy alone as, in theory, these health-conscious consumers would already be aware of the

information (Elbel et al., 2009:w1117; Dumanovsky et al., 2011). This was supported by the fact that in the current study, respondents who were likely to be influenced by the nutritional information provision indicated the provision of energy to be least likely to influence a healthier fast food choice.

7.3 Recommendations for the South African fast food industry

At present, in SA, the fast food industry has no obligation to provide nutritional information to consumers. However, should this law be considered and/or mandated in SA based on the previous section recommendations, this change has the potential to impact fast food consumption sales should consumers become more aware of the unhealthy detriments of fast food consumption and seek healthier food alternatives. As the current study results support health-conscious consumers still frequenting fast food consumption as found by Gresse et al. (2015:154), policy-makers should therefore be targeting their approach regarding the use of nutritional information toward more health-conscious consumers.

7.3.1 Display format of nutritional information by fast food establishments

As time constraints are still a major motivator of convenience, therefore driving fast food consumption (Brindal, 2010:234; Todd et al., 2010:5; Van Zyl et al., 2010:127; Bezerra et al., 2012:77; Cohen & Bhatia, 2012:622; Freeland-Graves & Nitzke, 2013:311; Deliens et al., 2014) and a major barrier to adopting healthier food behaviours (Mulvaney-Day, 2012:359; Pelletier & Laska, 2012:483), it is equally important that the nutritional information provision be displayed in a way that is quick and effective for consumers to utilise. Research by Campos et al. (2011:1502) highlighted the need for label simplicity by consumers, by balancing the complexity of nutritional information provision with consumers' ability to be able to process the information in a quick and meaningful manner. If not, an increased time taken by consumers to make use of nutritional information may hinder the use of the labels, as it may be seen as a potential hindrance to convenience. Furthermore, Jacobs et al. (2010:517) recommended presenting food labelling information in a way that assists those consumers with inadequate reading abilities to be able to gain an understanding of all details required around the labelled products. This therefore highlights the need from consumers for nutritional information provision that is not too time-consuming to construe. A lack of time has frequently been cited as a predictor for infrequent label use, with students identifying nutritional labelling information consideration as time-consuming (Jacobs et al., 2010:516; Campos et al., 2011:1502).

The current study results, however, proved time constraints to be weak as an influencer in the utilisation of nutritional information provision. Time constraints may therefore not be as high a limiting factor in the utilisation of nutritional information in SA as was found previously. An

additional strategy to limit the influence of time-constraints in promoting nutritional label use therefore may be to mandate nutritional information provision on the packaging of the fast food item. This may allow for consumers to potentially consult nutritional information at a later stage, thus not hindering the sought-after convenience at the time of the fast food purchase. This strategy may have the potential to create awareness around the dietary contributions of fast food choices, and in return, may further influence a healthier purchase of the consumers' subsequent fast food purchase.

7.3.2 Provision of more tailored fast food meal deals

The current study also provided evidence of increased fast food consumption in SA to be associated with two-person households, and particularly, associated with social occasions (Brindal, 2010:104; Seo et al., 2011:171; Cohen & Bhatia, 2012:622; Pelletier et al., 2014:148). Brindal (2010:18) further reported that food choices are formed within the condition of specific environments, time constraints and social variables, in addition to individual preferences. Fast food industries may therefore see benefit in offering bundle-deals as two-person offerings, as currently initiated through offerings of buying a fast food item and receiving the same option free, as two for the price of one, on certain days of the week, and certain times of the day. Such tailored fast food meal deals may, in particular be considered for the available 'healthier' fast food menu offerings.

REFERENCES

- Al-Ghamdi, A.S. 2002. Using logistic regression to estimate the influence of accident factors on accident severity. *Accident analysis and Prevention*, 34:729-741.
- Alkerwi, A., Sauvageot, N., Malan, L., Shivappa, N. & Hébert, J.R. 2015. Association between nutritional awareness and diet quality: evidence from the observation cardiovascular risk factors in Luxembourg (ORISCAV-LUX) study. *Nutrients*, 7:2823-2838.
- Allman-Farinelli, M.A. 2015. Nutrition promotion to prevent obesity in young adults. *Healthcare*, 3:809-821.
- Ambrosini, G.L., Oddy, W.H., Robinson, M., O'Sullivan, T.A. & Hands, B.P. 2009. Adolescent dietary patterns are associated with lifestyle family psycho-social factors. *Public Health Nutrition*, 12(10):1807-1815.
- American Heart Association. n.d. *How much sodium should I eat per day?*
https://sodiumbreakup.heart.org/how_much_sodium_should_i_eat [29th July 2017].
- The American Heritage Dictionary of the English Language. 5th ed. 2017. Boston: Houghton Mifflin Harcourt Publishing Company. <https://ahdictionary.com> [22nd March 2016].
- American Psychological Association (APA). 2017. *Education and socioeconomic status*.
<http://www.apa.org/pi/ses/resources/publications/education.aspx> [9th August 2017].
- Anderson, B., Rafferty, A.P., Lyon-Callo, S., Fussman, C. & Imes, G. 2011. Fast-food consumption and obesity among Michigan adults. *Preventing Chronic Disease*, 8(4):A71.
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3136980/> [12th June 2017].
- Ayranci, U., Erenoglu, N. & Son, O. 2010. Eating habits, lifestyle factors, and body weight status among Turkish private educational institutional students. *Nutrition*, 26:772-778.
- Babbie, E.R. 1975. *The practice of social research*. Belmont, Calif. Wadsworth Publishing Company.
- Babbie, E.R. 2007. *The practise of social research* (11th ed.). USA: Thomson Wadsworth.
- Babbie, E.R. 2013. *The basics of social research*. (6th ed.). USA: Wadsworth.
- Bannigan, K. & Watson, R. 2009. Reliability and validity in a nutshell. *Journal of Clinical Nursing*, 18(23):3237-3243.
- Bauer, K.W., Hearst, M.O., Earnest, A.A., French, S.A., Oakes, M. & Harnack, L.J. 2012. Energy content of U.S. fast-food restaurant offerings: 14 year trends. *American Journal of Preventative Medicine*, 43(5):490-497.
- Bava, C.M., Jaeger, S.R. & Park, J. 2008. Constraints upon food provisioning practises in 'busy' women's lives: trade-offs which demand convenience. *Appetite*, 50:486-498.
- Benton, D. 2015. Portion size: what we know and what we need to know. *Critical Reviews in Food Science and Nutrition*, 55:988-1004.
- Bernard, H.R. 2000. *Social Research Methods: Qualitative and Quantitative approaches*. Thousand Oaks. Sage Publications, Inc.
- Bes-Rastrollo, M., Basterra-Gortari, F.J., Sanchez-Villegas, A., Marti, A., Martinez, J.A. & Martinez-Gonzalez, M.A. 2010. A prospective study of eating away-from-home meals and weight gain in a Mediterranean population: the SUN (Seguimiento Universidad de Navarra) cohort. *Public Health Nutrition*, 13(9):1356-1363.
- Bezerra, I.N., Curioni, C. & Sichieri, R. 2012. Association between eating out of home and body weight. *Nutrition Reviews*, 70(2):65-79.
- Bickman, L. & Rog, D.J. 1998. *The SAGE Handbook of Applied Social Research Methods* (2nd ed.). United States of America: SAGE.
- Bocknek, G. 1986. *The young adult: Development after adolescence*. New York: Gardner Press.

- Boone-Heinonen, J., Gordon-Larsen, P., Kiefe, C.I., Shikany, J.M., Lewis, C.E. & Popkin, B.M. 2011. Fast food restaurants and food stores: longitudinal associations with diet in young to middle-aged adults: The CARDIA Study. *Archives of Internal Medicine*, 171(13):1162-1170.
- Bosman, M.J.C., Van der Merwe, D., Ellis, S.M., Jerling, J.C. & Badham, J. 2014. South African adult metropolitan consumers' opinions and use of health information on food labels. *British Food Journal*, 116(1):30-43.
- Bowman, S.A. & Vinyard, B.T. 2004. Fast food consumption of U.S. adults: impact on energy and nutrient intakes and overweight status. *Journal of the American College of Nutrition*, 23(2):163-168.
- Brindal, E. 2010. Exploring fast food consumption behaviours and social influence. Unpublished PhD Dissertation, University of Adelaide, South Australia.
- Brindal, E., Mohr, P., Wilson, C. & Wittert, G. 2008. Obesity and the effects of choice at a fast food restaurant. *Obesity Research & Clinical Practise*, 2:111-117.
- Brissette, I., Lowenfels, A., Noble, C. & Spicer, D. 2013. Predictors of total calories purchased at fast-food restaurants: restaurant characteristics, calorie awareness, and use of calorie information. *Journal of Nutrition Education and Behavior*, 45(5):404-411.
- Bryant, R. & Dundes, L. 2008. Fast food perceptions: a pilot study of college students in Spain and the United States. *Appetite*, 51:327-330.
- Bryman, A. 2012. *Social research methods*. 4th ed. New York: Oxford University Press.
- Burgoine, T., Forouhi, N.G., Griffin, S.J., Wareham, N.J. & Monsivais, P. 2014. Associations between exposure to takeaway food outlets, takeaway food consumption, and body weight in Cambridgeshire, UK: population based, cross sectional study. *British Medical Journal*, 348:g1464. <http://www.bmj.com/content/bmj/348/bmj.g1464.full.pdf> [3rd March 2016].
- Burton, S., Howlett, E. & Tangari, A.H. 2009. Food for thought: how will the nutrition labelling of quick service restaurant menu items influence consumers' product evaluations, purchase intentions, and choices? *Journal of Retailing*, 85(3):258-273.
- Bushak, L. 2014. *Healthy living: binge-drinking linked to overeating; drinkers consume an extra 6,300 calories after a night out*. <http://www.medicaldaily.com/binge-drinking-linked-overeating-drinkers-consume-extra-6300-calories-after-night-out-279094> [26th April 2015].
- Butriss, J.L. 1997. Food and nutrition: attitudes, beliefs, and knowledge in the United Kingdom. *American Journal of Clinical Nutrition*, 65:1985S-1995S.
- Cameron-Smith, D., Bilsborough, S.A. & Crowe, T.C. 2002. Upsizing Australia's waistline: the dangers of "meal deals". *Medical Journal of Australia*, 177(11-12):686-686.
- Campos, S., Doxey, J. & Hammond, D. 2011. Nutrition labels on pre-packaged foods: a systematic review. *Public Health Nutrition*, 14(8):1496-1506.
- Centre for Science in the Public Research. 2013. *Anyone's guess: the need for nutrition labeling at fast-food and other chain restaurants*. 1-34. https://cspinet.org/sites/default/files/attachment/anyone_s_guess_final_web.pdf [29th July 2012].
- Cha, E., Kim, K.H., Lerner, H.M., Dawkins, C.R., Bello, M.K., Umpierrez, G. & Dunbar, S.B. 2014. Health literacy, self-efficacy, food label use, and diet in young adults. *American Journal of Health Behavior*, 38(3):331-339.
- Chandon, P. & Wansink, 2011. *Is food marketing making us fat? A multi-disciplinary review: Foundation and Trends in Marketing*. Delft: Now Publishers.
- Chapelot, D. 2011. The role of snacking in energy balance: a biobehavioral approach. *Journal of Nutrition*, 141:158-162.
- Cheah, Y.K. & Naidu, B.M. 2012. Exploring factors influencing smoking behaviour in Malaysia. *Asian Pacific Journal of Cancer Prevention*, 13:1125-1130.

- Cheah, Y.K., Moy, F.M. & Loh, D.A. 2015. Socio-demographic and lifestyle factors associated with nutrition label use among Malaysian adults. *British Food Journal*, 117(11):2777-2787.
- Chen, R., Smyser, M., Chan, N., Ta, M., Saelens, B.E. & Krieger, J. 2015. Changes in awareness and use of calorie information after mandatory menu labeling in restaurants in King County, Washington. *American Journal of Public Health*, 105(3):546-553.
- Chen, X., Jahns, L., Gittelsohn, J. & Wang, Y. 2012. Who is missing the message? Targeting strategies to increase food label use among US adults. *Public Health Nutrition*, 15(5):760-772.
- Chopra, M., Galbraith, S. & Darnton-Hill, I. 2002. A global response to a global problem: the epidemic of overnutrition. *Bulletin of the World Health Organization*, 80(12):952-958.
- Chourdakis, M., Tzellos, T., Papazisis, G., Toulis, K. & Kouvelas, D. 2010. Eating habits, healthy attitudes and obesity indices among medical students in Northern Greece. *Appetite*, 55:722-725.
- Christoph, M.J., Ruopeng, A.N. & Ellison, B. 2015. Correlates of nutrition label use among college students and young adults: a review. *Public Health Nutrition*, 19(12):2135-2148.
- City of Cape Town. 2013. *Statistics South Africa*. http://www.statssa.gov.za/?page_id=1021&id=city-of-cape-town-municipality [11th March 2013].
- Cohen, D.A. & Bhatia, R. 2012. Nutrition standards for away-from-home-foods in the United States. *Obesity Reviews*, 13(7):618-629.
- Collins English Dictionary. 2017. Glasgow: Harper Collins Publishers. <https://www.collinsdictionary.com> [17th November 2017].
- Cooke, R. & Papadaki, A. 2014. Nutrition label use mediates the positive relationship between nutrition knowledge and attitudes towards healthy eating with dietary quality among university students in the UK. *Appetite*, 83:297-303.
- Coons, S.J., Gwaltney, C.J., Hays, R.D., Lundy, J.J., Sloan, J.A., Revicki, D.A., Lenderking, W.R., Cella, D. & Basch, E. 2009. Recommendations on evidence needed to support measurement equivalence between electronic and paper-based patient-reported outcome (PRO) measures: ISPOR ePRO good research practises task force report. *International Society for Pharmacoeconomics and Outcomes Research*, 12(4):419-429.
- Cotti, C. & Tefft, N. 2013. Fast food prices, obesity, and the minimum wage. *Economics and Human Biology*, 11:134-147.
- Courtney, K.E. & Polich, J. 2009. Binge drinking in young adults: data, definitions and determinants. *Psychological Bulletin*, 135(1):142-156.
- Cowburn, G. & Stockley, L. 2004. Consumer understanding and use of nutritional labelling: a systematic review. *Public Health Nutrition*, 8(1):21-28.
- Creswell, J.W. 2003. *Research design: qualitative, quantitative, and mixed methods approaches*. 2nd ed. Thousand Oaks. SAGE Publications.
- Currie, J., Vigna, S.D., Moretti, E. & Panthania, V. 2010. The effect of fast food restaurants on obesity and weight gain. *American Economic Journal*. 2(3):32-63.
- De Magistris, T., Gracia, A. & Barreiro-Hurlé, J. 2010. Effects of the nutritional labels use on healthy eating habits in Spain. *Agricultural Economics*, 56(11):540-551.
- De Vogli, R., Kouvonen, A. & Gimeno, D. 2014. The influence of market deregulation on fast food consumption and body mass index: a cross-national time series analysis. *Bulletin of the World Health Organization*, 92:99-107A.
- Deliens, T., Clarys, P., Bourdeaudhuij, I.D. & Deforche, B. 2014. Determinants of eating behaviour in university students: a qualitative study using focus group discussions. *BioMed Central Public Health*, 14:53. <http://www.biomedcentral.com/1471-2458/14/53> [14th March 2017].

- Department of Health. South African Demographic and Health Survey (SADHS); 2007. <http://www.doh.gov.za/docs/misc/sadhs-f.html> [19th January 2016].
- Dickson-Spillman, M. & Siegrist, M. 2011. Consumers' knowledge of healthy diets and its correlation with dietary behaviour. *Journal of Human Nutrition and Dietetics*, 24(1):54-60.
- Dingman, D.A., Schulz, M.R., Wyrick, D.L., Bibeau, D.L. & Gupta, S.N. 2014. Factors related to the number of fast food meals obtained by college meal plan students. *Journal of the American College of Health*, 62(8), 562-569.
- Dominguez, L.J., Martínez-González, M.A., Basterra-Gortari, F.J., Gea, A., Barbagallo, M. & Bes-Rastrollo, M. 2014. Fast food consumption and gestational diabetes incidence in the SUN project. *PLoS One*, 9(9): e106627. <https://doi.org/10.1371/journal.pone.0106627> [23rd April 2017].
- Dorsey, R.R., Eberhardt, M.S. & Ogden, C.L. 2009. Racial/ethnic differences in weight perception. *Obesity*, 17(4):790-795.
- Dowray, S., Swartz, J.J., Braxton, D. & Viera, A.J. 2013. Potential effect of physical activity based menu labels on the calorie content of selected fast food meals. *Appetite*, 62:173-181.
- Drewnowski, A. & Rehm, C.D. 2013. Energy intakes of US children and adults by food purchase location and by specific source. *Nutrition Journal*, 12:59. <http://www.nutritionj.com/content/12/1/59> [25th May 2017].
- Driskell, J.A., Meckna, B.R., & Scales, N.E. 2006. Differences exist in the eating habits of university men and women at fast-food restaurants. *Nutrition Research*, 26(10):524-530.
- Dubois, D., Rucker, D.D. & Galinsky, A.D. 2012. Super size me: product size as a signal of status. *Journal of Consumer Research*, 38(6): 1047-1062.
- Duffey, K.J. & Popkin, B.M. 2011. Energy density, portion size, and eating occasions: contributions to increased energy intake in the United States, 1977-2006. *PLoS Medicine*, 8(6): e1001050: <http://journals.plos.org/plosmedicine/article/authors?id=10.1371/journal.pmed.1001050> [5th Just 2017].
- Duffey, K.J., Gordon-Larson, P., Jacobs Jr, D.R., Williams, O.D. & Popkin, B.M. 2007. Differential associations of fast food and restaurant food consumption with 3-y change in body mass index: the coronary artery risk development in young adults study. *American Journal of Clinical Nutrition*, 85(1):201-208.
- Dumanovsky, T., Huang, C.Y., Nonas, C., Matte, T.D., Bassett, M.T. & Silver, L.D. 2011. Changes in energy content of lunchtime purchases from fast food restaurants after introduction of calorie labelling: cross sectional customer surveys. *British Medical Journal*, 343:d4464. July 26. <https://doi.org/10.1136/bmj.d4464> [5th April 2014].
- Dunford, E., Webster, J., Barzi, F. & Neal, B. 2010. Nutrient content of products served by leading Australian fast food chains. *Appetite*, 55:484-489.
- Dunn, R.A., Sharkey, J.R. & Horel, S. 2012. The effect of fast-food availability on fast-food consumption and obesity among rural residents: an analysis by race/ethnicity. *Economics and Human Biology*, 10(1):1-13.
- Edelman, C.L. & Mandle, C. (eds) 2005. *Health promotion throughout the lifespan*. 6th ed. St. Louis, MO: Elsevier.
- Edlin, G. & Golanty, E., 2012. *Health and wellness*. 11th ed. Burlington: Jones & Bartlett.
- El Ansari, W.E., Stock, C. & Mikolajczyk, R.T. 2012. Relationships between food consumption and living arrangements among university students in four European countries - a cross-sectional study. *Nutritional Journal*, 11:28. <http://www.nutritionj.com/content/11/1/28> [7th March 2017].
- Elbel, B., Kersh, R., Brescoll, V.L. & Dixon, L.B. 2009. Calorie labeling and food choices: a first look at the effects on low-income people in New York city. *Obesity, Food Choices*, w1110-w1121.
- Ellison, B., Lusk, J.L. & Davis, D. 2013. Looking at the label and beyond: the effects of calorie labels, health consciousness, and demographics on caloric intake in restaurants. *International Journal of Behavioral Nutrition and Physical Activity*, 10:21. <http://www.ijbnpa.org/content/10/1/21> [30th March 2017].
- Erikson, E. 1968. *Identity youth and crisis*. New York: Norton.

- Euromonitor International. 2015. *Fast food in the US*. <http://www.euromonitor.com/fast-food-in-the-us/report> [11th April 2016].
- Feeley, A., Pettifor, J.M. & Norris, S.A. 2009. Fast-food consumption among 17-year-olds in the birth to twenty cohort. *South African Journal of Clinical Nutrition*, 22(3):118-123.
- Feeley, A.B.B., Kahn, K., Twine, R. & Norris, S.A. 2011. Exploratory survey of informal vendor-sold fast food in rural South Africa. *South African Journal of Clinical Nutrition*, 24(4):199-201.
- Ferriter, C. & Ray, L.A. 2011. Binge eating and binge drinking: an integrative review. *Eating Behaviours*, 12:99-107.
- Fields, S. 2004. Spheres of influence: the fat of the land. *Environmental Health Perspectives*, 112(14):A820-A823.
- Fleischhacker, S.E., Evenson, K.R., Rodriguez, D.A. & Ammerman, A.S. 2011. A systematic review of fast food access studies. *Obesity Reviews*, 12:e460-e471.
- FoodFinder3 Dietary Analysis Software and Programme, 2002. South African Medical Research Council, Nutritional Intervention Research Unit, Parow Valley, Cape Town, South Africa.
- Food and Drug Association (FDA), HHS. 2012. Food and Drug Administration, Department of Health and Human Services. In *Code of Federal Regulations*. <https://www.gpo.gov/fdsys/pkg/CFR-2012-title21-vol2/pdf/CFR-2012-title21-vol2-sec101-9.pdf> [12th September 2017].
- Franchise Association of South Africa. n.d. *Franchises in S.A.* <http://fasa.co.za/showfranchises.php>. [22nd April 2012].
- Freeland-Graves, J.H. & Nitzke, S. 2013. Position of the academy of nutrition and dietetics: total diet approach to healthy eating. *Journal of the Academy of Nutrition and Dietetics*, 113(2):307-317, February.
- Fryar, C.D. & Ervin, R.B. 2013. *Caloric intake from fast food among adults: United States, 2007–2010*. NCHS data brief, no 114. United States Department of Health and Human Services, Hyattsville, MD: National Center for Health Statistics. <https://www.cdc.gov/nchs/data/databriefs/db114.pdf> [3rd March 2017].
- Ganasegeran, K., Al-Dubai, S.A.R., Qureshi, A.M., Al-Abed, A.A.A., AM, R. & Aljunid, S.M. 2012. Social and psychological factors affecting eating habits among university students in a Malaysian medical school: a cross-sectional study. *Nutritional Journal*, 11(48). <http://www.nutritionj.com/content/11/1/48> [7th March 2017].
- George, G.E., Mugai, W.J., Mugai, N.W., Mugai, W.F. & Nyakwara, S. 2013. Socio- economic factors on alcohol abuse among the youth in Kikuyu district, Kenya. *Research on Humanities and Social Sciences*, 3(7): 96–109.
- Geiger, A.M. & Castellino, S.M. 2011. Delineating the age ranges used to define adolescents and young adults. *Journal of Clinical Oncology*, 29(16):e492-e493.
- Goga, S. 2010. Rhodes students love to get drunk: race, ritual and the legitimization of the authentic Rhodes student. *South African Review of Sociology*, 41(2):41–50.
- Graham, D.J. & Laska, M.N. 2012. Nutritional label use partially mediates the relationship between attitude toward healthy eating and overall dietary quality among college students. *Journal of the Academy of Nutrition and Dietetics*, 112(3):414-418.
- Graham, D.J., Pelletier, J.E., Neumark-Sztainer, D. & Lust, K. 2013. Perceived social-ecological factors associated with fruit and vegetable purchasing, preparation, and consumption among young adults. *Journal of the Academy of Nutrition and Dietetics*, 113(10):1366-1374.
- Gresse, A., Steenkamp, L. & Pietersen, J. 2015. Eating, drinking and physical activity in Faculty of Health Science students compared to other students at a South African University. *South African Journal of Clinical Nutrition*, 28(4):154-159.
- Gronlund, N.E. 1993. *How to make achievement tests and assessments?* (5th ed.). Needham Heights, MA. Allyn and Bacon.

- Grubhub Inc. 2014. *Men vs. women eating preferences: online ordering data reveals gender differences in takeout dining*. http://media.grubhub.com/files/doc_downloads/GrubHub-Inc-Men-vs-Women-Eating-Preferences-White-Paper_v001_b3cw14.pdf [24th September 2015].
- Grunert, K.G., Wills, J.M. & Fernandez-Celemin, L. 2010. Nutrition knowledge, and use and understanding of nutrition information on food labels among consumers in the UK. *Appetite*, 55:177–189.
- Guthrie, J.F., Lin, B.H., & Frazao, E. 2002. Role of food prepared away from home in the American diet, 1977-78 versus 1994-96: change and consequences. *Journal of Nutrition Education and Behaviour*, 34(3):140-150.
- Gwaltney, C.J., Shields, A.L. & Shiffman, S. 2008. Equivalence of electronic and paper-and-pencil administration of patient-reported outcome measures: a meta-analytic review. *International Society for Pharmacoeconomics and Outcomes Research*, 11(2):322-333.
- Harnack, L.J., French, S.A., Oakes, J.M., Story, M.T., Jeffery, R.W. & Rydell, S.A. 2008. Effects of calorie labelling and value size pricing on fast food meal choices: results from an experimental trial. *International Journal of Behavioural Nutrition and Physical Activity*, 5:63. <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2621234/> [7th March 2015].
- Hearst, M.O., Harnack, L.J., Bauer, K.W., Earnest, A.A., French, S.A. & Oakes, M. 2013. Nutritional quality at eight U.S. fast-food chains: 14 year trends. *American Journal of Preventative Medicine*, 44(6):589-594.
- Henney, J.E., Taylor, C.L. & Boon, C.S. (eds). 2010. *Strategies to reduce sodium intake in the United States*. Washington, DC: The National Academies Press.
- Hess, R., Visschers, V.H.M. & Siegrist, M. 2011. The role of health-related, motivational and sociodemographic aspects in predicting food label use: a comprehensive study. *Public Health Nutrition*, 15(3):407-414.
- Hutton, H.E., McCaul, M.E., Santora, P.B. & Erbelding, E.J. 2008. The relationship between recent alcohol use and sexual behaviors: gender differences among sexually transmitted disease clinic patients. *Alcoholism: Clinical and Experimental Research*, 32(11):2008-2015.
- Huysamen, G.K. 1986. *Sielkundige meting – n' inleiding*. Pretoria. Academia.
- Hyman, S. 1972. *Youth in politics*. New York: Basic Books.
- IBM Corporation and others(s). 2012. *SPSS© Statistics (Version 21)* [computer program].
- IBM Corporation and others(s). 2013. *SPSS© Statistics (Version 22)* [computer program].
- Inagami, S., Cohen, D.A., Brown, A.F. & Asch, S.M. 2009. Body mass index, neighbourhood fast food restaurant concentration, and car ownership. *Journal of the Bulletin of Health*, 86(5):683-695.
- International Labour Organization (ILO), 1996-2013. *International Standard Classification of Occupations (ISCO)*. <http://www.ilo.org/public/english/bureau/stat/isco/isco68/major.htm> [26 November 2013].
- Jacobs, S.A., de Beer, H. & Larney, M. 2010. Adult consumers' understanding and use of information on food labels: study among consumers living in Potchefstroom and Klerksdorp regions, South Africa. *Public Health Nutrition*, 14(3):510-522.
- Janse van Rensburg, C., Surujlal, J. & Dhurup, M., 2011. Exploring wellness practices and barriers: a qualitative study of university student-athletes. *African Journal for Physical, Health Education, Recreation and Dance*, 17(2), 248–265.
- Jaworowska, A., Blackham, T., Davies, I.G. & Stevenson, L. 2013. Nutritional challenges and health implications of takeaway and fast food. *Nutrition Reviews*, 71(5):310-318.
- Jeffery, R.W., Baxter, J., McGuire, M. & Linde, J. 2006. Are fast food restaurants an environmental risk factor for obesity? *International Journal of Behavioral Nutrition and Physical Activity*, 3:2. <http://ijbnpa.biomedcentral.com/articles/10.1186/1479-5868-3-2> [2nd July 2012].
- Jennings, K.M. & Richard, G.N. 1981. *Generations and politics: A panel study of young adults and their parents*. New Jersey: Princeton University Press.

- Kant, A.K. & Graubard, B.I. 2015. 40-year trends in meal and snack eating behaviours of American adults. *Journal of the Academy of Nutrition and Dietetics*, 115(1):50-63.
- Kim, H.Y., Lee, N.R., Lee, J.S., Choi, Y.S., Kwak, T.K., Chung, H.R., Kwon, S., Choi, Y.J., Lee, S.K. & Kang, M.H. 2012. Meal skipping relates to food choice, understanding of nutritional labeling, and prevalence of obesity in Korean fifth grade children. *Nutrition Research and Practice*. 6(4):328-333.
- Kirkpatrick, S.I., Reedy, J., Kahle, L.L., Harris, J.L., Ohri-Vachaspati, P. & Krebs-Smith, S.M. 2014. Fast-food menu offerings vary in dietary quality, but are consistently poor. *Public Health Nutrition*, 17(4):924-931.
- Kolahdooz, F., Spearing, K. & Sharma, S. 2013. Dietary adequacies among South African adults in rural Kwazulu-Natal. PLoS ONE 8(6): e67184. <http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0067184> [31st March 2017].
- Krishnan, S., Coogan, P.F., Boggs, D.A., Rosenberg, L. & Palmer, J.R. 2010. Consumption of restaurant foods and incidence of type 2 diabetes in African American women. *American Journal of Clinical Nutrition*, 91:165-471.
- Labadarios, D., Swart, R., Maunder E.M.W., Kruger, H.S., Gericke, G.J., Kuzwayo, P.M.N., Ntsie, P.R., Steyn, N.P., Schloss, I., Dhansay, M.A., Jooste, P.L., Dannhauser, A., Nel, J.H., Molefe, D. & Kotze, T.J.v.W. 2008. The National Food Consumption Survey-Fortification Baseline (NFCS-FB-I): South Africa, 2005. Directorate: Nutrition, Department of Health. Pretoria. 2007. *South African Journal of Clinical Nutrition*, 21(3)(suppl 2):245-300.
- Lachat, C., Nago, E., Verstraeten, R., Roberfroid, D., Van Camp, J. & Kolsteren, P. 2012. Eating out of home and its association with dietary intake. A systematic review of the evidence. *Obesity Reviews*, 13(4):329-346.
- Larson, N.I, Neumark-Sztainer, D., Laska, M.N. & Story, M. 2011. Young adults and eating away from home: associations with dietary intake patterns and weight status differ by choice of restaurant. *Journal of American Dietetic Association*, 111(11):1696-1703.
- Lawrence, F. 2011. *Alarm as corporate giants target developing countries*. The Guardian. <https://www.theguardian.com/global-development/2011/nov/23/corporate-giants-target-developing-countries> [6th June 2017].
- Leech, R.M., Worsley, A., Timperio, A. & McNaughton, S.A. 2015. Understanding meal patterns: definitions, methodology and impact on nutrient intake and diet quality. *Nutrition Research Reviews*, 28:1-21. <https://www.ncbi.nlm.nih.gov/pubmed/25790334> [3rd March 2017].
- Li, K.K., Concepcion, R.Y., Lee, H., Cardinal, B.J., Ebbeck, V., Woekel, E. & Readdy, T. 2012. An examination of sex differences in relation to the eating habits and nutrient intakes of university students. *Journal of Nutrition Education and Behaviour*, 44(3):246-250.
- Lin, B.H. & Frazao, E. 1999. Nutrient contribution of food away from home. In Frazao, E. (ed). *America's eating habits: changes and consequences*. Washington D.C.: USDA. Economic Research Service, Food and Rural Economics Division. Agriculture Information Bulletin No. 750.
- Lin, B.H. & Guthrie, J. 2012. *Nutritional quality of food prepared at home and away from home, 1977-2008*. EIB-105. United States Department of Agriculture. Economic Research Service. <http://ageconsearch.umn.edu/bitstream/142361/2/EIB-105.pdf> [23rd March 2017].
- Liu, Q., Wang, M., Guo, J., Li, J., Li, C. & Qian, M. 2011. Effect of socioeconomic status on secondary prevention of stroke. *International Journal for Quality in Health Care*, 23(4):405-412.
- Lucan, S.C., Barg, F.K. & Long, J.A. 2010. Promoters and barriers to fruit, vegetable, and fast-food consumption among urban, low income African Americans - a qualitative approach. *American Journal of Public Health*, 100(4):631-635.
- Lynch, E.B. & Kane, J. 2014. Body size perception among African American women. *Journal of Nutrition Education and Behavior*, 46(5):412-417.
- Mancino, L., Todd, J. & Lin, B.H. 2009. Separating what we eat from where: measuring the effect of food away from home on diet quality. *Food Policy*, 34(6):557-562.

- Marsh, J.D., Bryant, D.M., MacDonald, S.J. & Naudie, D.D.R. 2014. Patients respond similarly to paper and electronic versions of the WOMAC and SF-12 following total joint arthroplasty. *Journal of Arthroplasty*, 29:670-673.
- Martinez, O.D., Roberto, C.A., Kim, J.H., Schwartz, M.B. & Brownell, K.D. 2012. A Survey of undergraduate student perceptions and use of nutrition information labels in a university dining hall. *Health Education Journal*, 73(3):319-325.
- Maumbe, B. 2012. The rise of South Africa's quick service restaurant industry. *Journal of Agribusiness in Developing and Emerging Economies*, 2(2):147-166.
- Mazzone & Associates Inc. 2015. *2014 Restaurant Industry Report*. <http://www.globalmna.com/assets/2014restaurantindustryreport.pdf> [24th March 2017].
- McCrorry, M.A. & Campbell, W.W. 2011. Effects of eating frequency, snacking, and breakfast skipping on energy regulation: symposium overview. *The Journal of Nutrition*, 141(1):144-147.
- Microsoft Corporation. 2010. *Excel® for Mac 2011*. (Version 14.4.8). [computer program].
- Misra, R. 2007. Knowledge, attitudes, and label use among college students. *Journal of the American Dietetic Association*, 107(12):2130-2134.
- Mohr, P.B., Wilson, C.J., Dunn, K.I., Brindal, E.A. & Wittert, G.A. 2007. Personal and lifestyle characteristics predictive of the consumption of fast foods in Australia. *Public Health Nutrition*, 10(12):1456-1463.
- Monsivais, P., Aggarwal, A. & Drewnowski, A. 2014. Time spent on home food preparation and indicators of healthy eating. *American Journal of Preventative Medicine*, 47(6):796-802.
- Moorad, Z. 2014. *The fast-food sector: it's your choice*. <https://www.businesslive.co.za/people/> [15th March, 2017].
- Moore, L.V., Diez Roux, A.V., Nettleton, J.A., Jacobs, D.R. & Franco, M. 2009. Fast-food consumption, diet quality, and neighborhood exposure to fast food. The multi-ethnic study of atherosclerosis. *American Journal of Epidemiology*, 170(1):29-36.
- Morawska, A. & Oei, T.P. 2005. Binge drinking in university students: a test of the cognitive model. *Addictive Behaviors*, 30(2):203-218.
- Morley, B., Scully, M., Martin, J., Niven, P., Dixon, H. & Wakefield, M. 2013. What types of nutrition menu labelling lead consumers to select less energy-dense fast food? An experimental study. *Appetite*, 67:8-15.
- Mulvaney-Day, N.E., Womack, C.A. & Oddo, V.M. 2012. Eating on the run: a qualitative study of health agency and eating behaviours among fast food employees. *Appetite*, 59:357-363.
- Myles, I.A. 2014. Fast food fever: reviewing the impacts of the western diet on immunity. *Nutrition Journal*, 13:61. <http://www.nutritionj.com/content/13/1/61> [15th June 2017].
- Naimi, T.S., Nelson, D.E. & Brewer, R.D. 2010. The intensity of binge alcohol consumption among U.S. Adults. *American Journal of Preventative Medicine*, 38(2):201-207.
- Nani, M.O. 2016. Relationship between nutrition knowledge and food intake of college students. Masters Degree Thesis, Kent State University College, United States.
- Napier, C. & Oldewagen-Theron, W. 2015. Dietary intake and nutritional status of adolescent girls and young women in Durban, South Africa. *Journal of Family Ecology and Consumer Sciences*, 43:1-15.
- National Alliance for Nutrition and Activity (NANA). 2002. *From wallet to waistline – the hidden costs of supersizing*. Washington, DC. Center for Science in the Public Interest. <https://cspinet.org/sites/default/files/attachment/w2w.pdf> [29th July 2017].
- National Restaurant Association. 2017. *Restaurant Industry Outlook*. http://www.restaurant.org/Downloads/PDFs/News-Research/2017_Restaurant_outlook_summary-FINAL.pdf [24th March 2017].

- Naude, C.E. 2013. "Eat plenty of vegetables and fruit every day": A food-based dietary guideline for South Africa. *South African Journal of Clinical Nutrition* 26(3):S46-S56.
- Neuman, W.L. 2006. *Social research methods: qualitative and quantitative approaches*. (6th ed.). Boston: Pearson Education, Inc.
- Nicklas, T.A., O'Neil, C.E. & Fulgoni, V.L. 2014. Snacking patterns, diet quality, and cardiovascular risk factors in adults. *Public Health*, 14:388. <http://www.biomedcentral.com/1471-2458/14/388> [12th June 2017].
- Nicholson, D.R. 1997. "Advertising and Generation X: Problematics and Potentials." Paper presented to Visual Communication Interest Group, Montreal.
- Nielsen, S.J. & Popkin, B.M. 2003. Patterns and trends in food portion sizes. *Journal of the American Medical Association*, 1977-1998. 289(4):450-453.
- Niemeier, H.M., Raynor, H.A., Lloyd-Richardson, E.E., Rogers, M.L. & Wing, R.R. 2006. Fast food consumption and breakfast skipping: predictors of weight gain from adolescence to adulthood in a nationally representative sample. *Journal of Adolescent Health*, 39(6):842-849.
- Nunnally, J.C. 1972. *Educational measurement and evaluation*. 2nd ed. New York: McGraw-Hill.
- Oddy, W.H., Herbison, C.E., Jacoby, P., Ambrosini, G.L., O'Sullivan, T.A., Ayonrinde, O.T., Olynyk, J.K., Black, L.J., Beilin, L.J., Mori, T.A., Hands, B.P. & Adams, L.A. 2013. The Western dietary pattern is prospectively associated with nonalcoholic fatty liver disease in adolescence. *American Journal of Gastroenterology*, 108:778-785.
- Odegaard, A.O., Jacobs Jr, D.R., Steffen, L.M., Van Horn, L., Ludwig, D.S. & Pereira, M.A. 2013. Breakfast frequency and development of metabolic risk. *Diabetes Care*, 36:3100-3106.
- Ogden, C.L., Carroll, M.D., Curtin, L.R., McDowell, M.A., Tabak, C.J. & Flegal, K.M. 2006. Prevalence of overweight and obesity in the United States. *Journal of American Medical Association*, 295(13): 1549-1555.
- Ollberding, N.J., Wolf, R.I. & Contento, I. 2010. Food label use and its relation to dietary intake among US adults. *Journal of American Dietetic Association*, 110:1233-1237.
- Oni, O.A. & Matiza, T. 2014. Factors influencing consumer choice of fast food outlet: the case of an American fast food brand operating in a predominantly rural community. *Mediterranean Journal of Social Sciences*, 5(20):802-808.
- Ovaskainen, M-L., Reinivuo, H., Tapanainen, H., Hannila, M-L., Korhonen, T. & Pakkala, H. 2006. Snacks as an element of energy intake and food consumption. *European Journal of Clinical Nutrition*, 60:494-501.
- Paquet, C., Daniel, M., Knäuper, B., Gauvin, L., Kestens, Y. & Dubé, L. 2010. Interactive effects of reward sensitivity and residential fast food restaurant exposure on fast food consumption. *American Journal of Clinical Nutrition*, 91:771-776.
- Peat, J., Mellis, C., Williams, K. & Xuan W. 2002. *Health science research: A handbook of quantitative methods*. London: SAGE Publications.
- Pelletier, J.E. & Laska, M.N. 2012. Balancing healthy meals and busy lives: associations between work, school, and family responsibilities and perceived time constraints among young adults. *Journal of Nutrition Education and Behaviour*, 44(6):481-489.
- Pelletier, J.E., Graham, D.J. & Laska, M.N. 2014. Social norms and dietary behaviors among young adults. *American Journal of Health Behavior*. 38(1):144-152.
- Peltzer, K. 2004. Nutrition knowledge among a sample of urban black and white South Africans. *South African Journal of Clinical Nutrition*, 17(1):24-31.
- Pendergast, F.J., Livingstone, K.M., Worsley, A. & McNaughton, S. 2016. Correlates of meal skipping in young adults: a systematic review. *International Journal of Behavioral Nutrition*, 13(125). <https://ijbnpa.biomedcentral.com/articles/10.1186/s12966-016-0451-1> [26th February 2017].

- Pengpid, S. & Peltzer, K. 2013. Physical inactivity and associated factors among university students in South Africa. *African Journal for Physical Health Education, Recreation and Dance*, 19(1):143-153.
- Pereira, M.A., Erickson, E., McKee, P., Schrankler, K., Raatz, S.K., Lytle L.A., Pellegrini A.D. 2011. Breakfast frequency and quality may affect glycemia and appetite in adults and children. *Journal of Nutrition*, 141:163-168.
- Pereira, M.A., Kartashov, A.I., Ebbeling, C.B., Van Horn, L., Slattery, M., Jacobs, D.R. & Ludwig, D.S. 2005. Fast-food habits, weight gain, and insulin resistance (the CARDIA study): 15-year prospective analysis. *Lancet*, 365(9453):36-42.
- Pollard, C.M., Miller, M.R., Daly, A.M., Crouchley, K.E., O'Donoghue, K.J., Lang, A.J. & Binns, C.W. 2008. Increasing fruit and vegetable consumption: success of the Western Australian Go for 2&5 campaign. *Public Health Nutrition*, 11(3)314-320.
- Popkin, B.M. 2011. Does global obesity represent a global public health challenge? *American Journal of Clinical Nutrition*, 93:232-233.
- Popkin, B.M., Adair, L.S. & Ng, S.W. 2012. Global nutrition transition and the pandemic of obesity in developing countries. *Nutrition Reviews*, 70(1):3-21.
- Poti, J.M., Duffey, K.J. & Popkin, B.M. 2014. The association of fast food consumption with poor dietary outcomes and obesity among children: is it the fast food or the remainder of the diet? *American Journal of Clinical Nutrition*, 99:162-171.
- Powell, L.M., Nguyen, B.T. & Han, E. 2012. Energy intake from restaurants: demographics and socioeconomics, 2003-2008. *American Journal of Preventative Medicine*, 43(5):498-504.
- Preedy, V.R. & Watson, R.R (eds). 2010. *Handbook of disease burdens and quality of life measures*. New York: Springer.
- Pritchard, S., Cuvelier, G., Harlos, M. & Barr, R. 2011. Palliative care in adolescents and young adults with cancer. *Cancer*, 117(10):2323-2328.
- Qi, Q., Chu, A.Y., Kang, J.H., Huang, J., Rose, L.M., Jensen, M.K., Liang, L., Curhan, G.C., Pasquale, L.R., Wiggs, J.L., De Vivo, I., Chan, A.T., Choi, H.K., Tamimi, R.M., Ridker, P.M., Hunter, D.J., Willett, W.C., Rimm, E.B., Chasman, D.I., Hu, F.B. & Qi, L. 2014. Fried food consumption, genetic risk, and body mass index: gene-diet interaction analysis in three US cohort studies. *British Medical Journal*, 348:g1610. <http://www.bmj.com/content/bmj/348/bmj.g1610.full.pdf> [3rd March 2017].
- Raspberry, C.N., Chaney, B.H., Housman, J.M., Misra, R. & Miller, P.J. 2007. Determinants of nutritional label use among college students. *American Journal of Health Education*, 38(2):76-82.
- Rattray, J. & Jones, M.C. 2007. Essential elements of questionnaire design and development. *Journal of Clinical Nutrition*, 16(2):234-243.
- Read, J.P., Beattie, M., Chamberlain, R. & Merrill, J.E. 2008. Beyond the “binge” threshold: heavy drinking patterns and their association with alcohol improvement indices in college students. *Addictive Patterns*, 33(2):225-234.
- Reitzel, L.R., Regan, S.D., Nguyen, N., Cromley, E.K., Strong, L.L., Wetter, D.W. & McNeill, L.H. 2014. Density and proximity of fast food restaurants and body mass index among African Americans. *American Journal of Public Health*, 104(1):110-116.
- Richardson, A.S., Boone-Heinonen, J., Popkin, B.M. & Gordon-Larsen, P. 2011. Neighborhood fast food restaurants and fast food consumption: A national study. *Public Health*, 11:543. <http://www.biomedcentral.com/1471-2458/11/543> [7th March 2017].
- Riddell, I.L.J., Ang, B., Keast, R.S.J. & Hunter, W. 2011. Impact of living arrangements and nationality on food habits and nutrient intakes of young adults. *Appetite*, 56:726-731.
- Roberto, C.A., Larsen, P.D., Agnew, H., Baik, J. & Brownell, K.D. 2010. Evaluating the impact of menu labelling on food choices and intake. *American Journal of Public Health*, 100(2):312-318.

- Rolls, B.J., Morris, E.L. & Roe, L.S. 2002. Portion size of food affects energy intake in normal weight and overweight men and women. *American Journal of Clinical Nutrition*, 76:1207-1213.
- Rolls, B.J., Roe, L.S., Meengs, J.S. & Wall, D.E. 2004. Increasing the portion size of a sandwich increases energy intake. *Journal of the American Dietetic Association*, 104(3):367-372.
- Rosenheck, R. 2008. Fast food consumption and increased caloric intake: a systematic review of a trajectory towards weight gain and obesity risk. *Obesity Reviews*, 9(6):535-547.
- Sarmugam, R. & Worsley, A. 2015. Dietary behaviours, impulsivity and food Involvement: identification of three consumer segments. *Nutrients*, 7:8036-8057.
- Scarborough. 2012. *Gym-goers and organic shoppers give in to fast food temptations*. <https://www.scarborough.com/press-room/news/gym-goers-and-organic-shoppers-give-fast-food-temptations> [29th July 2016].
- Scheibehenne, B., Miesler, L. & Todd, P. M. 2007. Fast and frugal food choices: uncovering individual decision heuristics. *Appetite*, 49(3):578-589.
- Schindler, N. 1997. Guardians of disorder: rituals of youthful culture at the dawn of the modern age. In *A history of young people in the west. Volume one: Ancient and medieval rites of passage*. Cambridge: Harvard University Press.
- Sebastian, R.S, Wilkinson, E.C, Goldman, J.D. 2011. *Snacking patterns of U.S. adults: What we eat in America, NHANES 2007-2008*. Food Surveys Research Group Dietary Data Brief No. 4. <http://ars.usda.gov/Services/docs.htm?docid=19476> [23rd August 2015].
- Seo, H.S., Lee, S.K. & Nam, S. 2011. Factors influencing fast food consumption behaviors of middle-school students in Seoul: an application of theory of planned behaviors. *Nutrition Research and Practice*, 5(2):169-178, April.
- Shah, T., Purohit, G., Nair, S.P., Patel, B., Rawal, Y. & Shah, R.M. 2014. Assessment of obesity, overweight and its association with the fast food consumption in medical students, *Journal of Clinical and Diagnostic Research*, 8(5):CC05-CC07.
- Shields, L. & Twycross, A. 2003. The difference between quantitative and qualitative research. *Paediatric Nursing*, 15(9):24.
- Shroder, H., Fito, M. & Covas, M.I. 2007. Association of fast food consumption with energy intake, diet quality, body mass index and the risk of obesity in a representative Mediterranean population. *British Journal of Nutrition*. 98:1274-1280.
- Sizer, F.S. & Whitney, L.N. 2003. *Nutrition: concepts & controversies*. 9th ed. Belmont: Wadsworth/Thompson Learning.
- Smith, C., Gray, A.R., Fleming, E.A. & Parnell, W.R. 2013. Characteristics of fast-food/takeaway-food and restaurant/c  fe-food consumers among New Zealand adults. *Public Health Nutrition*, 17(10):2368-2377.
- Smith, K.J., McNaughton, S.A., Gall, S.L., Blizzard, L., Dwyer, T. & Venn, A.J. 2009. Takeaway food consumption and its association with diet quality and abdominal obesity: a cross-sectional study of young adults. *International Journal of Behavioral Nutrition and Physical Activity*, 6:29. <http://ijbnpa.biomedcentral.com/articles/10.1186/1479-5868-6-29> [6th August 2015].
- South Africa. 2010. Department of Health, Foodstuffs, Cosmetics and Disinfectants Act, 1972 (Act 54 of 1972): Regulations relating to the labelling and advertising of foodstuffs. *Government Gazette*, 146(32965):3-51. March 1.
- Spanos, C. & Hankey, C.R. 2010. The habitual meal and snacking patterns of university students in two countries and their use of vending machines. *Journal of Human Nutrition and Dietetics*, 23(1):102-107.
- Staser, K.W., Zollinger, T.W., Saywell Jr, R.M., Kunapareddy, S., Gibson, P.J. & Caine, V.A. 2011. Dietary behaviours associated with fruit and vegetable consumption, Marion County, Indiana, 2005. *Preventing Chronic Disease*, 8(3). www.cdc.gov/pccd/issues/2011/may/10_0091.htm [1st Marchn 2017].
- Statista. 2017. *Revenue of the quick service restaurant (QSR) industry in the United States from 2002 to 2020 (in billion U.S. dollars)*. <https://www.statista.com/statistics/196614/revenue-of-the-us-fast-food-restaurant-industry-since-2002/> [24th March 2016].

- Stefan, E.K. 2013. Gender differences in health information behaviour: a Finnish population-based survey. *Health Promotion International*, 30(3):736-745.
- Stender, S., Dyerberg, J. & Astrup, A. 2007. Fast food: unfriendly and unhealthy. *International Journal of Obesity*, 31(6):887-890
- Stewart, H., Blisard, N. & Jolliffe D. 2006. *Let's eat out. Americans weigh taste, convenience, and nutrition*. EIB-19. United States Department of Agriculture. Economic Research Service.
<http://ageconsearch.tind.io/bitstream/59411/2/eib19.pdf> [24th April 2017].
- Steyn, N.P. & Labadarios, D. 2011. Street foods and fast foods: how much do South Africans of different ethnic groups consume? *Ethnicity & Disease*, 21:462-466.
- Steyn, N.P., Jaffer, N., Nel, J., Levitt, N., Steyn, K., Lombard, C. & Peer, N. 2016. Dietary intake of the urban black population of Cape Town: the cardiovascular risk in black South Africans (CRIBSA) study. *Nutrients*, 8(5):285.
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4882698/> [4th May 2015].
- Steyn, N.P., Labadarios, D. & Nel, J.H. 2011. Factors which influence the consumption of street foods and fast foods in South Africa - a national survey. *Nutrition Journal*, 10:104. <https://doi.org/10.1186/1475-2891-10-104> [4th May 2015].
- Steyn, N.P., Labadarios, D. & Nel, J.H. 2012. *Factors which influence the consumption of street foods and fast foods in South Africa*. Human Sciences Research Council. Pretoria. South Africa.
http://www.fao.org/fileadmin/templates/nutrition_assessment/Invited_speakers/B5_Steyn.pdf [4th May 2015].
- Steyn, N.P., Senekal, M., Brits, S. & Nel, J. 2000. Urban and rural differences in dietary intake, weight status and nutrition knowledge of black female students. *Asia Pacific Journal of Clinical Nutrition*, 9(1):53-59.
- Sun, P.C., Huang, H.L. & Chu, F.Y. 2015. Factors instead of demographic characteristics related to nutritional label use. *British Food Journal*, 117(2):3024-3038.
- Surujlal, J., Nolan, V.T. & Ubane, T. 2012. Drinking patterns and related consequences among university student-athletes. *African Journal for Physical, Health Education, Recreation and Dance*, 18(2):281-292.
- Szoboszalai, A. 2012. Investigation for young adults interest in health. *Journal of Education Culture and Society*, 2:46-56.
- Takomana, G. & Kalimbara, A.A. 2012. Weight gain, physical activity and dietary changes during the seven months of first-year university life in Malawi. *South African Journal of Clinical Nutrition*, 25(3):132-139.
- Temple, N.J. & Steyn, N.P. 2011. The cost of a healthy diet: A South African perspective. *Nutrition*, 27:505-508.
- Thabane, L., Ma, J., Chu, R., Cheng, J., Ismaila, A., Rios, L.P., Robson, R., Thabane, M., Giangregorio, L. & Goldsmith, C.H. 2010. A tutorial on pilot studies: the what, why and how. *BioMed Central Medical Research Methodology*, 10:1-10.
- Thomas, D.M., Albritton, K.H. & Ferrari, A. 2010. Adolescent and young adult oncology: an emerging field. *Journal of Clinical Oncology*, 28(30):5128-5129.
- Thorndike, R.M., Cunningham, G.K., Thorndike, R.L. & Hagen, E.P. 1991. *Measurement and evaluation in psychology and education*. (5th ed.). New York. MacMillan.
- Thorpe, M.G., Kestin, M., Riddell, L.J., Keast, R.S.J. & McNaughton, S.A. 2013. Diet quality in young adults and its association with food-related behaviours. *Public Health Nutrition*, 17(8):1767-1775.
- Todd, J.E., Mancino, L. & Lin, B.H. 2010. *The impact of food away from home on adult diet quality*. EIB-90. United States Department of Agriculture. Economic Research Service.
https://www.ers.usda.gov/webdocs/publications/err90/8170_err90_1_.pdf?v=41056 [23rd March 2017].
- Trochim, W.M.K. 2006. *Non-probability sampling*. Research Methods Knowledge Base.
<http://www.socialresearchmethods.net/kb/sampnon.php>. [22 April 2015].

- U.S. Department of Agriculture and U.S. Department of Health and Human Services (USDA/USDHHS). 2010. *Dietary Guidelines for Americans, 2010*. 7th Edition, Washington, DC: U.S. Government Printing Office. <http://www.health.gov/dietaryguidelines/dga2010/dietaryguidelines2010.pdf> [29th July 2015].
- U.S. Department of Agriculture (USDA). 2015. *USDA Food Composition Databases*. <https://ndb.nal.usda.gov/ndb/> [25th April 2017].
- Ungar, N., Sieverding, M. & Stadnitski, T. 2013. Increasing fruit and vegetable intake. “Five a day” versus “just one more”. *Appetite*, 65:200-204.
- Urban, L.E., Roberts, S.B., Fierstein, J.L., Gary, C.E. & Lichtenstein, A.H. 2014. Temporal trends in fast food restaurant energy, sodium, saturated fat, and trans fat content, United States, 1996–2013. *Preventing Chronic Disease*, 11(E229):140202. <http://dx.doi.org/10.5888/pcd11.140202> [30th July 2017].
- Van der Merwe, D., Bosman, M., Ellis, S., de Beer, H. & Mielmann, A. 2012. Consumers’ knowledge of food label information: an exploratory investigation in Potchefstroom, South Africa. *Public Health Nutrition*, 16(3):403-408.
- Van Teijlingen, E., Rennie, A.M., Hundley, V. & Graham, W. 2001. The importance of conducting and reporting pilot studies: the example of the Scottish Births Survey. *Journal of Advanced Nursing*, 34:289-295.
- Van Zyl, M.K., Steyn, N.P. & Marais, M.L. 2010. Characteristics and factors influencing fast food intake of young adult consumers in Johannesburg, South Africa. *South African Journal of Clinical Nutrition*, 23(3):124-130.
- Vermeer, W. M., Steenhuis, I. H. M. & Seidell, J. C. 2009. From the point-of-purchase perspective: a qualitative study of the feasibility of interventions aimed at portion-size. *Health Policy*, 90(1):73-80.
- Vorster, H.H., Kruger, A. & Margetts, B.M. 2011. The nutrition transition in Africa: an it be steered into a more positive direction? *Nutrients*, 3:429-441.
- Wardle, J., Parmenter, K. & Waller, J. 2000. Nutrition knowledge and food intake. *Appetite*, 34:269-275.
- Webster, J.L., Dunford, E.K. & Neal, B.C. 2010. A systematic survey of the sodium contents of processed foods. *American Journal of Clinical Nutrition*, 9(2):413-420.
- Wie, S. & Giebler, K. 2014. College students’ perceptions and behaviors toward calorie counts on menu. *Journal of Foodservice Business Research*, 17:56-65.
- Wolfson, J.A. & Bleich, S.N. 2015. Fruit and vegetable consumption and food values: National patterns in the United States by supplemental nutrition assistance program eligibility and cooking frequency. *Preventative Medicine*, 76:1-7.
- World Health Organization. 2016. *Overweight and obesity*. <http://www.who.int/mediacentre/factsheets/fs311/en/> [20th April 2017].
- Wuensch, K.L. 2014. Binary Logistic Regression with SPSS. <http://core.ecu.edu/psyc/wuenschk/MV/MultReg/Logistic-SPSS.pdf> [15th March 2017].
- Yahia, N., Brown, C.A., Rapley, M. & Chung, M. 2016. Level of nutrition knowledge and its association with fat consumption among college students. *Public Health*, 16:1047. <https://bmcpublihealth.biomedcentral.com/articles/10.1186/s12889-016-3728-z> [12th June 2017].
- Yen, S.T. & Tan, A.K.G. 2012. Who are eating and not eating fruits and vegetables in Malaysia? *International Journal of Public Health*, 57:945-951.
- Yeomans, M.R. 2010. Alcohol, appetite and energy balance: is alcohol intake a risk factor for obesity? *Physiology and Behaviour*, 100:82-89.
- Young, L.R. & Nestle, M. 1995. Portion sizes in dietary assessment: issues and policy implications. *Nutrition Reviews*, 53(6):149-158.
- Young, L.R. & Nestle, M. 2002. The contribution of expanding portion sizes to the US obesity epidemic. *Research and Practise*, 92(2):246-249.

Zebrack, B., Mathews-Bradshaw, B. & Siegel, S. 2010. Quality cancer care for adolescents and young adults: A position statement. *Journal of Clinical Oncology*, 28(32):4862-4867.

Zizza, C.A. & Xu, B. 2012. Snacking is associated with overall diet quality among adults. *Journal of the Academy of Nutrition and Dietetics*, 112(2):291-296.

Zlatevska, N., Dubelaar, C. & Holden, S.S. 2014. Sizing up the effect of portion size on consumption: a meta-analytic review. *Journal of Marketing*, 78:140-154.

ADDENDUM A

Ethical approval

30 January 2013

Ms Kaylee Ann Stowe
Consumer Science: Food and Nutrition
Cape Peninsula University of Technology

Dear Ms Stowe

Influence of nutritional labelling on the choice of a fast food by young adults from the professional and clerk occupational groups in the City of Cape Town, South Africa – Ref 10/2012

The Ethics Committee has considered your application for Ethics approval for the above project and would like to advise that approval for the project is hereby granted.

We wish you every success with your research.

Kind regards



Dr Maretha Opperman (RD (SA))

ADDENDUM B

Participant information and consent form

PARTICIPANT INFORMATION AND CONSENT FORM

TITLE OF THE RESEARCH PROJECT:

*Influence of nutritional labelling on the choice of a fast food
by young adults from the professional and clerk occupational groups
in the City of Cape Town, South Africa*

Principal Investigator:

Kaylee Ann Stowe
MTech Consumer Science: Food and Nutrition
Department: Agricultural and Food Sciences, Faculty of Applied Sciences,
Cape Peninsula University of Technology (CPUT): Cape Town campus
Email: [REDACTED]

Research study supervisor:

Dr I Venter
Cape Peninsula University of Technology (CPUT): Cape Town campus
Email: [REDACTED]

You are invited to take part in a research study. Please read through the information presented below which explains the study and details as to what the study entails. Your participation is voluntary and you are free to decline to take part at any time. This study has been approved by the Faculty of Applied Sciences Research Ethics Committee, CPUT.

Introduction and purpose of the study

South Africa is experiencing an increase in the amount of money being spent on fast foods, and therefore a large growth in fast food consumption. Nutritional labelling on food products can be used to promote healthy eating. Research shows a connection between the use of nutrition labels when making food choices and healthier food choices among individuals. Because mandatory nutritional labelling is not required on foods intended for immediate consumption, fast foods do not carry any nutritional information on their food labels. Research is thus needed to establish whether the provision of nutritional information about fast foods would influence the choice of a fast food, with a beef burger utilised as the fast food item in this study. The survey will entail the completion of a questionnaire relating to fast food consumption, the factors affecting consumption, and beef burger choices on the provision of nutritional information.

Why have you been chosen to participate?

One of the age groups appearing to have undergone the most dramatic change in their eating habits over recent decades are young adults. For this reason and to obtain the information needed, 150 to 260 young adults aged 25 to 34 years in the City of Cape Town, will be asked to participate in the survey.

What you will be required to do

Should you choose to participate in this study, you will be asked to voluntarily and anonymously complete a questionnaire. The questions will be a set of fixed responses provided (multiple choice) relating to beef burgers where you will be required to indicate your beef burger of choice, to then indicate why you have made this choice and if you would change your choice if nutritional information on its nutrient content is provided. You will also be required to answer some questions about your eating habits and lifestyle.

Benefits of taking part in this research

There is no direct personal benefit from taking part in this study. However, it may broaden your awareness and provide information to the food industry for the possible provision of nutritional information on fast foods, especially for beef burgers.

Risks of taking part in this research

There are no known risks to your participation in this study.

Confidentiality of information gathered from this research

All information collected during the study will be kept confidential, used for research purposes only, and if published in a scientific journal, the identity of the participants' will remain confidential. The researcher alone will be involved in capturing of the data.

Permission to withdraw

Taking part in this study is voluntary. You may choose not to take part in this study, or if you decide to take part, you may change your mind and withdraw from the study.

Will there be any form of remuneration and are there any costs involved?

You will not be paid to take part in this research study nor are there any costs involved if you participate.

For queries and additional information:

Should you have any further queries or require any additional information regarding this research study, you may contact the researcher on [redacted] or Dr Irma Venter on [redacted]

Consent to participate in this research

Your signature below indicates that you have read this consent form, including the details of the study and have had all your questions answered.

Declaration:

By signing below, I agree to take part in a research study entitled *Influence of nutritional labelling on the choice of a fast food by young adults from the professional and clerk occupational groups in the City of Cape Town, South Africa.*

Signed at (place).....on (date).....2013.

.....

Signature of participant

.....

Signature of Investigator

ADDENDUM C

Final respondent questionnaire

FACULTY OF APPLIED SCIENCES
DEPARTMENT OF AGRICULTURAL AND FOOD SCIENCES
PROGRAMME: CONSUMER SCIENCE: FOOD AND NUTRITION

QUESTIONNAIRE: FAST FOOD AND BEEF BURGER CONSUMPTION

Research shows that fast foods are commonly consumed in South Africa. No nutritional information is currently provided on fast foods as the food labelling regulations do not require it. The provision of nutritional information about food products contributes to promoting healthy eating among consumers. The major objective of this study is to determine whether the provision of nutritional information about fast foods will influence the fast food choice/purchase of consumers by using a beef burger as the fast food item. In addition to the above, information in the questionnaire is also asked about the participant's general fast food use, and their demographic and lifestyle characteristics.

This questionnaire is part of an MTech. Consumer Science: Food and Nutrition study. Your participation in this study is highly appreciated, as this will aid further research in this field. The questionnaire consists of multiple-choice questions grouped into 3 sections, and should take no longer than 15 minutes of your time to complete. The information supplied will be anonymous and the information you supply in this questionnaire will be treated as confidential.

Please do not write your name on the questionnaire.

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November 2013

INSTRUCTIONS FOR COMPLETION

Please answer **ALL** the questions. Only choose **ONE** of the answer choices provided by making a cross (**X**) in the block next to your answer (*respondent choice*), **except when otherwise stated**.

SECTION A: PARTICIPANT FAST FOOD CONSUMPTION

Fast foods: Cooked or ready-prepared foods that are available within a short time after ordering them, or are bought from outlets such as takeaway restaurants. Fast foods include among others, burgers, French fries (hot chips), pizza, sandwiches and salads.

A1 On average, how **often** do you eat fast foods?

		<i>Respondent choice</i>	<i>office use</i>
a.	Less than once a month		1
b.	At least 2 - 3 times per month		2
c.	At least once a week		3
d.	2 - 3 times a week		4
e.	More than 3 times per week, but not daily		5
f.	Daily		6

A2 **When** do you **usually** eat fast foods?

		<i>Respondent choice</i>	<i>office use</i>
a.	When meeting friends		1
b.	When meeting family		2
c.	When it is special occasions		3
d.	When I am hungry (<i>not a mealtime</i>)		4
e.	When it is mealtime (<i>eaten as a meal</i>)		5
f.	When I have extra money to spend		6
g.	When I lack the time to prepare food/meals		7
h.	Other (please indicate):		8

A3 With **who** do you **mostly** eat fast foods?

		Respondent choice	office use
a.	With friends		1
b.	With family		2
c.	With work colleagues		3
d.	With nobody (<i>alone</i>)		4
e.	Other (please indicate):		5

A4 Of the fast food choices below, which is your **ONE favourite/most preferred?**

		Respondent choice	office use
a.	Beef burgers		1
b.	Other burgers (chicken/fish)		2
c.	Deep-fried dough's or pastries (vetkoek/doughnuts/spring rolls/samosas)		3
d.	French fries/Hot chips		4
e.	Pizza		5
f.	Pasta		6
g.	Grilled fish/chicken		7
h.	Fried fish/chicken		8
i.	Sandwiches (toasted/freshly prepared)		9
j.	Salad		10
k.	Shwarma/Wrap		11
l.	Hotdogs/Frankfurters/Salami/Russians/Sausage		12
m.	Pies		13
n.	Chinese foods		14
o.	Thai food		15
p.	Curries		16
q.	Other (please indicate):		17

A5 Which of the factors below influence your eating of fast foods? **You may indicate more than one answer.**

		Respondent choice	office use
a.	Time constraints (<i>I lack the time to prepare food/meals</i>)		1
b.	Convenience (<i>I lack the facilities to prepare food/meals</i>)		2
c.	Taste (<i>I like the taste of fast foods</i>)		3
d.	Price (<i>fast foods are relatively inexpensive</i>)		4
e.	Assumed nutritional content (<i>being 'healthier' choices</i>)		5
f.	Availability (<i>fast foods are easily accessible and readily available</i>)		6
g.	Advertising/Media messages		7
h.	Influence of friends		8
i.	Influence of family		9
j.	Other (please indicate):		10

A6 Which of the choices below **best** describe your way of eating during the **week** (*Monday to Friday*)?

		Respondent choice	office use
a.	One meal per day		1
b.	One meal per day plus snacks		2
c.	Two meals per day		3
d.	Two meals per day plus snacks		4
e.	Three meals per day		5
f.	Three meals per day plus snacks		6
g.	Snacks with no actual meals		7
h.	Other (please indicate):		8

A7 Which meal do you **most** often skip during the **week** (*Monday to Friday*)?

		Respondent choice	office use
a.	None/No meal		1
b.	Breakfast		2
c.	Lunch		3
d.	Supper		4

A8 Which of the choices below **best** describe your way of eating during the **weekend** (*Saturday and Sunday*)?

		<i>Respondent choice</i>	<i>office use</i>
a.	One meal per day		1
b.	One meal per day plus snacks		2
c.	Two meals per day		3
d.	Two meals per day plus snacks		4
e.	Three meals per day		5
f.	Three meals per day plus snacks		6
g.	Snacks with no actual meals		7
h.	Other (please indicate):		8

A9 Which meal do you **most** often skip during the **weekend** (*Saturday and Sunday*)?

		<i>Respondent choice</i>	<i>office use</i>
a.	None/No meal		1
b.	Breakfast		2
c.	Lunch		3
d.	Supper		4

A10 Which of the options below **best** describes your own food and beverage intake?

		<i>Respondent choice</i>	<i>office use</i>
a.	Consume types of foods/beverages popular with and consumed by most young adults of my age (<i>similar food and beverage intake as most of my friends, family and/or colleagues</i>)		1
b.	Consume foods/beverages considered healthier choices than those consumed by most young adults of my age (<i>or most of my friends, family and/or colleagues</i>)		2

A11 How **interested** are you in the topic 'food, nutrition and health' (*i.e. food-related health aspects*)?

		<i>Respondent choice</i>	<i>office use</i>
a.	Very interested (<i>will regularly obtain/read information on the topic</i>)		1
b.	Somewhat interested (<i>will occasionally read/obtain information on the topic</i>)		2
c.	Not interested (<i>will not obtain/read information on the topic</i>)		3

A12 Do you consider yourself to have less/more **knowledge** of the topic 'food, nutrition and health' (i.e. food-related health aspects) compared to other young adults (friends, family and/or colleagues of your age) known to you?

		<i>Respondent choice</i>	<i>office use</i>
a.	Much less than most		1
b.	Somewhat less than most		2
c.	About similar to most		3
d.	Somewhat more than most		4
e.	Much more than most		5

CONTINUE ONTO SECTION B

SECTION B: PARTICIPANT FAST FOOD CONSUMPTION ON NUTRITIONAL INFORMATION PROVISION

For the purpose of this study, a **regular beef burger** consists of one white bread roll with one beef patty, a sauce of your choice, lettuce, tomato (1 slice), fried onions (1 tablespoon) and gherkins (3 slices).

B1 Of the two beef burger choices below, which would be your **ONE** beef burger of **choice**?

		Respondent choice		office use
a.	Regular beef burger (see above) with additions (extra items)		Continue with question B2	1
b.	Regular beef burger (see above) with no additions (no extra items)		Continue with question B3	2

B2 If your answer was “**with additions**” for question B1, indicate the **extra item(s)** you would add to the regular beef burger (see above) to make it your beef burger of choice. **You may indicate more than one addition (extra item).**

		Respondent choice	office use
a.	Cheese		1
b.	Fried egg		2
c.	Bacon rasher		3
d.	Extra beef patty		4

B3 Considering your beef burger of choice, which **ONE** of the factors below would you say influenced your choice of beef burger the **most**?

		Respondent choice	office use
a.	Familiarity/Habit/Favourite (the one I usually buy)		1
b.	Taste (the one that tastes the best)		2
c.	Price (cheapest)		3
d.	Assumed nutritional content (being a ‘healthier’ choice)		4
e.	Availability (available at my nearest fast food outlet)		5
f.	Other (please indicate):		6

B4 If nutritional information was provided for beef burgers, would this influence your choice of beef burger?

		<i>Respondent choice</i>	<i>office use</i>
a.	No	Continue with question B5 and then onto Section C	1
b.	Yes	Continue with question B6	2

**CONTINUE ONTO QUESTION B5 IF “No” WAS ANSWERED for QUESTION B4
CONTINUE ONTO QUESTION B6 IF “Yes” WAS ANSWERED for QUESTION B4**

B5 If your answer was “No” to question B4, please indicate why the provision of nutritional information on beef burgers would **NOT** influence your choice of beef burger?

		<i>Respondent choice</i>	<i>office use</i>
a.	I am not interested in nutritional information		1
b.	Nutritional information is not important to me		2
c.	I do not have the time to read and study the nutritional information		3
d.	I do not understand nutritional information (<i>I find it confusing</i>)		4
e.	I am aware/have an idea of the nutritional content of beef burgers but will still buy my original choice even if nutritional information was available (<i>i.e. knowing the nutritional information would not affect my choice</i>)		5
f.	Other (please indicate):		6

CONTINUE ONTO SECTION C

B6 If your answer was “Yes” to question B4, please indicate which **ONE** of the beef burgers would now be your (new) beef burger of choice **considering the energy content per burger**.
Please study the choices carefully before making your selection.

	Beef burger option	Energy content (kJ) per burger	Respondent choice	<i>office use</i>
a.	Regular beef burger	1 879		1
b.	Regular beef burger with cheese	2 154		2
c.	Regular beef burger with fried egg	2 173		3
d.	Regular beef burger with bacon rasher	2 632		4
e.	Regular beef burger with cheese & fried egg	2 448		5
f.	Regular beef burger with cheese & bacon	2 907		6
g.	Regular beef burger with fried egg & bacon	2 925		7
h.	Regular beef burger with cheese, fried egg & bacon	3 201		8
i.	Regular beef burger with extra beef patty	2 819		9
j.	Regular beef burger with extra beef patty & cheese	3 094		10
k.	Regular beef burger with extra beef patty & fried egg	3 113		11
l.	Regular beef burger with extra beef patty & bacon	3 571		12
m.	Regular beef burger with extra beef patty, cheese & fried egg	3 388		13
n.	Regular beef burger with extra beef patty, cheese & bacon	3 847		14
o.	Regular beef burger with extra beef patty, fried egg & bacon	3 865		15
p.	Regular beef burger with extra beef patty, cheese, fried egg & bacon	4 140		16

Source: FoodFinder 3 Dietary Analysis Software Program, 2002

B7 If your answer was “**Yes**” to question B4, please indicate which **ONE** of the beef burgers would now be your (new) beef burger of choice **considering the energy, total fat, saturated fat and cholesterol content per burger**. Please study the choices carefully before making your selection.

	Beef burger option	Energy content (kJ) per burger	Total fat content (g) per burger	Saturated fat content (g) per burger	Cholesterol content (mg) per burger	Respondent choice	office use
a.	Regular beef burger	1 879	20	7	79		1
b.	Regular beef burger with cheese	2 154	25	10	96		2
c.	Regular beef burger with fried egg	2 173	25	8	232		3
d.	Regular beef burger with bacon	2 632	36	13	106		4
e.	Regular beef burger with cheese & fried egg	2 448	31	12	249		5
f.	Regular beef burger with cheese & bacon	2 907	41	16	123		6
g.	Regular beef burger with fried egg & bacon	2 925	41	14	260		7
h.	Regular beef burger with cheese, fried egg & bacon	3 201	47	17	277		8
i.	Regular beef burger with extra beef patty	2 819	36	13	156		9
j.	Regular beef burger with extra beef patty & cheese	3 094	41	17	173		10
k.	Regular beef burger with extra beef patty & fried egg	3 113	42	15	309		11
l.	Regular beef burger with extra beef patty & bacon	3 571	52	19	183		12
m.	Regular beef burger with extra beef patty, cheese & fried egg	3 388	47	18	327		13
n.	Regular beef burger with extra beef patty, cheese & bacon	3 847	57	22	200		14
o.	Regular beef burger with extra beef patty, fried egg & bacon	3 865	57	20	337		15
p.	Regular beef burger with extra beef patty, cheese, fried egg & bacon	4 140	63	24	354		16

Source: FoodFinder 3 Dietary Analysis Software Program, 2002

B8 On what **content in Question B7** did you base your change of choice on?

		Respondent choice	office use
a.	Energy content		1
b.	Total fat content		2
c.	Saturated fat content		3
d.	Cholesterol content		4
e.	A combination of the above contents		5

B9 If the nutritional content of beef burgers are provided, how likely is it that you will buy a beef burger:

B9.1 with lower **energy content**? Please study the **energy content** provided in question C5 (first column) carefully, before indicating your answer.

		Respondent choice	office use
a.	Extremely unlikely		1
b.	Unlikely		2
c.	Likely		3
d.	Extremely likely		4

B9.2 with lower **total fat content**? Please study the **total fat content** provided in question C5 (second column) carefully, before indicating your answer.

		Respondent choice	office use
a.	Extremely unlikely		1
b.	Unlikely		2
c.	Likely		3
d.	Extremely likely		4

B9.3 with lower **saturated fat content**? Please study the **saturated fat content** provided in question C5 (third column) carefully, before indicating your answer.

		Respondent choice	office use
a.	Extremely unlikely		1
b.	Unlikely		2
c.	Likely		3
d.	Extremely likely		4

B9.4 with lower **cholesterol content**? Please study the **cholesterol content** provided in question C5 (fourth column) carefully, before indicating your answer.

		Respondent choice	office use
a.	Extremely unlikely		1
b.	Unlikely		2
c.	Likely		3
d.	Extremely likely		4

CONTINUE ONTO SECTION C

SECTION C: PARTICIPANT DEMOGRAPHIC, BIOGRAPHIC & LIFESTYLE INFORMATION

C1 Based on the listed occupations below, into which **occupational group** do you fall? (if your occupation is not indicated under a specific group, please select “other”, and indicate your occupation).

		Respondent choice	office use
a.	Physicists, Mathematical & Engineering Science <i>Physicists; Chemists; Mathematicians; Statisticians; Analysts; Computer systems designers, Programmers & Related; Architects; Engineers; & Other related professionals & associate professionals</i>		1
b.	Life Science & Health <i>Medical doctors; Dentists or Dental assistants; Veterinarians or Veterinary assistants; Pharmacists or Pharmaceutical assistants; Health professionals; Nursing & Midwifery; Dieticians; Nutritionists; Optometrists; Physiotherapists; & Other related professionals & associate professionals</i>		2
c.	Other Scientists & Technologists <i>Food/Food Science; Biology; Biotechnology; Ecological; Environmental; Horticultural; Landscaping; Nature conservation; Wildlife conservation; Oceanography; Veterinary; & Other related professionals & associate professionals</i>		15
d.	Teaching <i>College, University, Higher education, Secondary education, Primary education, Pre-Primary education & Special education teaching professionals; Education methods specialists; School inspectors; & Other related professionals & associate professionals</i>		4
e.	Business <i>Accountants; Business service agents; Trade brokers; & Other related professionals & associate professionals</i>		5
f.	Legal <i>Lawyers; Judges; & Other related professionals & associate professionals</i>		6
g.	Archivists, Librarians & Related information <i>Archivists, Librarians, & Other related professionals & associate professionals</i>		7
h.	Social Science <i>Sociologists; Psychologists; Social work professionals; & Other related professionals & associate professionals</i>		8
i.	Writers, Artistic, Creative, Entertainment & Sports <i>Authors; Journalists; Composers; Musicians; Singers; Choreographer; Dancers; Actors; Directors; Decorators; Designers; Radio, TV & other announcers; Circus performers; Athletes, Sport persons; & Other related professionals & associate professionals</i>		9
j.	Religious & Related Professionals		10
k.	Finance & Sales <i>Economists; Dealers; Brokers; Insurance representatives; Estate agents; Travel consultants; Technical & Commercial sales representatives; Buyers; & Other related professionals & associate professionals</i>		11
l.	Administrative <i>Secretaries; Bookkeepers; Other related professionals & associate professionals</i>		12
m.	Clerks <i>Secretaries; Keyboard-Operating, Numerical, Material-Recording, Transport, Library, Mail, Cashiers, Tellers; Client Information & Other related clerks</i>		14
n.	Other (please indicate):		

C2 What is your gender?

		<i>Respondent choice</i>	<i>office use</i>
a.	Male		1
b.	Female		2

C3 With **whom** do you live?

		<i>Respondent choice</i>	<i>office use</i>
a.	With my parents		1
b.	With roommates		2
c.	With a partner		3
d.	With a partner and children		4
e.	With my children		5
f.	On my own		6
g.	Other (please indicate):		7

C4 How would you describe/estimate your body weight status?

		<i>Respondent choice</i>	<i>office use</i>
a.	Underweight		1
b.	Optimal/Normal body weight		2
c.	Slightly overweight/Overweight		3
d.	Obese		4

C5 How many days of the **week** do you eat **fruit and/or vegetables**?

		<i>Respondent choice</i>	<i>office use</i>
a.	Never		1
b.	A few days (3 days or less) of the week		2
c.	Most days (4 or more days) of the week		3
d.	Every day of the week		4

C6 How many servings of **fruit** do you usually consume per **day** (*one serving = one medium sized fruit OR ½ cup cut-up fruit or fruit juice*)?

		<i>Respondent choice</i>	<i>office use</i>
a.	None to 1 serving		1
b.	2 – 4 servings		2
c.	More than 4 servings		3

C7 How many servings of **vegetables** do you usually consume per **day** (*one serving = ½ cup raw or cooked vegetables OR one cup raw leafy vegetables*)?

		<i>Respondent choice</i>	<i>office use</i>
a.	None to 1 serving		1
b.	2 servings		2
c.	3 – 5 servings		3
d.	More than 5 servings		4

C8 How many servings of **whole grains** do you usually consume per **day** (*one serving = 1 slice whole grain bread, ½ cup cooked brown rice, ½ cup whole wheat pasta or about 1 cup ready-to-eat whole grain cereal*)?

		<i>Respondent choice</i>	<i>office use</i>
a.	None		1
b.	1 serving		2
c.	2 servings		3
d.	3 servings		4
e.	More than 3 servings		5

C9 Have you had any **alcohol** to drink within the past **month** (30 days)?

		<i>Respondent choice</i>		<i>office use</i>
a.	Yes		Continue with question C10	1
b.	No		Continue with question C12	2

C10 During the past 30 days, on how many **occasions** did you have **at least 1 drink** of alcohol?

		<i>Respondent choice</i>	<i>office use</i>
a.	1 – 2 occasions		1
b.	3 – 5 occasions		2
c.	6 – 9 occasions		3
d.	10 – 19 occasions		4
e.	20 – 39 occasions		5
f.	≥ 40 occasions		6

C11 During the past 30 days, on how many **days** did you have **more than 5 drinks** of alcohol in a row, that is, within a couple of hours?

		<i>Respondent choice</i>	<i>office use</i>
a.	0 days/None		1
b.	1 day		2
c.	2 days		3
d.	3 – 5 days		4
e.	6 – 9 days		5
f.	≥ 10 days		6

C12 What is your smoking status?

		<i>Respondent choice</i>	<i>office use</i>
a.	Non-smoker (<i>have never smoked</i>)		1
b.	Current smoker (<i>smoked in the last 12 months or quit in the past year</i>)		2
c.	Former smoker (<i>quit smoking more than a year ago</i>)		3

C13 Are you currently physically active? (*being physically active means regular moderate exercise [e.g. walking or cycling] or strenuous exercise [e.g. jogging, football and vigorous swimming] for 4 hours or more per week*).

		<i>Respondent choice</i>		<i>office use</i>
a.	Yes		Continue with question C14	1
b.	No		Do not continue	2

C14 Do you take dietary supplements? (*Dietary supplements include vitamins, minerals, herbs or botanicals, and amino acids intended to supplement the diet*).

		<i>Respondent choice</i>	<i>office use</i>
a.	Never		1
b.	Seldom		2
c.	Fairly regularly		3
d.	Regularly		4

Thank you for your time in taking part in this study