

**Characteristics and factors influencing fast-food intake of
young adult consumers from different socio-economic areas in
Gauteng, South Africa**

By

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Degree of Confidentiality:	A

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DECLARATION OF AUTHENTICITY

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ABSTRACT

INTRODUCTION: The aim of this study was to determine the characteristics of and factors impacting on the intake of fast-foods by young adults from different socio-economic areas in Gauteng, South Africa. The population for the study (n = 341) included males (n = 180) and females (n = 161) with a mean age of 24.48 years (SD = 3.492).

METHODS: A descriptive cross-sectional, observational study was performed using an interviewer-administered, validated questionnaire to elicit characteristics of the studied population (gender, education level, income status and income level), reasons for – and frequency of – fast-food intake, specific food choices at certain categories of fast-food outlets, as well as consumers' attitude towards health and healthier meal options. Purposive sampling of shopping malls was done to collect data on three weekend days at grocery stores in the shopping complexes. Statistical analysis included: Pearson Chi-square tests, likelihood ratios, linear by linear associations and Cramer's V and Kendall tau b tests.

RESULTS: The studied population consisted primarily of working young adults with at least secondary education. Almost half (n = 103) of the employed participants from all socio-economic groups earned less than R5 000 per month, but spent more than R200 each month on fast-food. The majority of participants consumed take-away meals from two to three times a month to two to three times per week (85.3% (n = 291)). Socio-economic grouping (SEG) and gender were significantly related to fast-food intake ($p < 0.01$) with a larger proportion of participants (n = 76) in the lower socio-economic grouping (LSEG) showing more frequent use and males consuming fast-food more frequently than females. The most popular fast-foods consumed by participants in descending order were burgers 69.5%, pizza 56.6% and fried chicken 38.4%. A significant difference in the consumption

of fried chicken was observed between the different SEGs, with significantly more participants from the LSEG consuming fried chicken 47.0% ($p < 0.05$). Choice of fast-food outlet concurred with the most popular fast-food choices. Sweetened soft drinks comprised the most popular beverage for more than half of the studied population ($n = 191$). The main reasons for choosing fast-food were time limitations (58.9%), convenience (58.2%) and taste (52.5%). The majority of participants were concerned about health (93.3%), with almost half of the total sample being *always concerned*. The majority of participants indicated concern about overweight and obesity (44.3%). Seventy-eight percent of participants indicated that they would choose a healthier option, if available. Television provided the most effective media influence on food choices.

CONCLUSION: The findings of the study show a clear discrepancy between fast-food intake and health consciousness, indicating a gap between knowledge and practice. In the light of the spread of the obesity epidemic in South Africa, further research on fast-food consumption in other areas in South Africa and in other age groups (especially children and adolescents) is strongly recommended.

OPSOMMING

INLEIDING: Die doel van hierdie studie was om vas te stel wat die eienskappe en faktore is wat 'n uitwerking op die inname van kitskos deur jong volwassenes uit verskillende sosio-ekonomiese areas in Gauteng, Suid-Afrika, het. Die studiepopulasie (n = 341) het manlike (n=180) en vroulike (n = 161) deelnemers ingesluit met 'n gemiddelde ouderdom van 24.48 jaar ($SA^* = 3.492$).

METODES: 'n Beskrywende deursnitwaarnemingstudie is uitgevoer met behulp van 'n geldige vraelys wat deur 'n onderhoudvoerder afgeneem is om die volgende vas te stel: eienskappe van die studiepopulasie (geslag, opvoedingsvlak, inkomstestatus en inkomstevlak), redes vir, en frekwensie van, kitskosinname, spesifieke koskeuses by sekere kategorieë van kitskoswinkels, asook verbruikers se houding teenoor gesondheid en gesonder maaltydopsies. Doelgerigte steekproefneming van inkopiesentrums is gedoen deur data in te samel op drie naweekdae by kruidenierswarewinkels in die inkopiesentrums. Statistiese ontleding het die volgende ingesluit: Pearson chi-kwadraattoetse, aanneemlikheidsverhoudings, lineêr teenoor lineêre verwantskappe asook Cramer se V- en Kendall se tau-b-toetse.

RESULTATE: Die studiepopulasie het hoofsaaklik uit werkende jong volwassenes met ten minste 'n sekondêre opvoeding bestaan. Amper die helfte (n=103) van die werkende deelnemers uit alle sosio-ekonomiese groepe het minder as R5 000 per maand verdien en meer as R200 per maand op kitskos spandeer. Die meerderheid van deelnemers het wegneemetes tussen twee tot drie keer 'n maand en twee tot drie keer 'n week (85.3% (n = 291)) geëet. 'n Beduidende verwantskap tussen sosio-ekonomiese groepering (SEG) en geslag aan die een kant en kitskosinname ($p < 0.01$) aan die ander is gevind, met 'n groter

* Standaardafwyking

proporsie van deelnemers ($n = 76$) in die laer sosio-ekonomiese groepering (LSEG) wat 'n meer gereelde inname van kitskos getoon het en manlike deelnemers wat meer gereeld kitskos geëet het as vroulike deelnemers. Die gewildste kitskos onder deelnemers was, in dalende volgorde, burgers (69.5%), pizza (56.6%) en gebraaide hoender (38.4%). Daar was 'n beduidende verskil ten opsigte van die inname van gebraaide hoender tussen die verskillende SEG's, met beduidend meer deelnemers uit die LSEG wat gebraaide hoender geëet het (47.0% ($p < 0.05$)). Die keuse van kitskoswinkel het ooreengestem met die gewildste kitskoskeuses. Versoete koeldranke was die gewildste drank en is deur meer as die helfte van die studiepulasie ($n = 191$) gekies. Die belangrikste redes vir die keuse van kitskos was tydbeperkings (58.9%), gerief (58.2%) en die smaak (52.5%). Die meerderheid van deelnemers was besorg oor gesondheid (93.3%), met amper die helfte van die totale steekproef wat "always concerned" (altyd besorg) aangedui het. Die meerderheid van deelnemers het kommer oor oorgewig wees en vetsug uitgespreek (44.3%). Agt-en-sewentig persent van die deelnemers het aangedui dat hulle 'n gesonder opsie sou kies, indien so 'n opsie beskikbaar sou wees. Televisie blyk die doeltreffendste media om koskeuses te beïnvloed, te wees.

GEVOLGTREKKING: Die bevindinge van die studie toon 'n duidelike diskrepansie tussen kitskosinname en gesondheidsbewustheid, wat dui op 'n kloof tussen kennis en praktyke. In die lig van die groeiende vetsug-epidemie in Suid-Afrika, word verdere navorsing oor kitskosinname in ander dele van Suid-Afrika en onder ander ouderdomsgroepe (veral kinders en adolessente) sterk aanbeveel.

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LIST OF ABBREVIATIONS

BMI	Body mass index
CNS	Central nervous system
CSFII	Continuing Survey of Food Intakes by Individuals
FF	Fast-food
FFFI	Frequency of fast-food intake
FFO	Fast-food outlets
HSEG	Higher socio-economic group
KFC	Kentucky Fried Chicken
LSEG	Lower socio-economic group
LSM	Living Standard Measurement
MSEG	Medium socio-economic group
NHANES	National Health and Nutrition Examination Survey
RHS	Right-hand side
SEA	Socio-economic area
SEG	Socio-economic group
USDA	United States Department of Agriculture
USA	United States of America
US	United States

LIST OF DEFINITIONS

City of Johannesburg Metropole	A municipal area within Gauteng. (Appendix A) ³
Consumer	An individual who purchases and uses goods or services. ¹
Energy density	The energy content per unit weight of foods, meals or diets. ^{1,2}
Fast-food	Inexpensive food (hamburgers, chicken or milkshakes) prepared and served quickly. Operations that specialise in one or two main entrees, such as hamburgers, pizza, fish or chicken. These operations may also provide salad and/or ice-cream service. Preparation of food products is generally simple and involves one or two steps. Synonyms include junk food, snack food and take-away meals / food. ^{1,2}
Fast-food outlet	A business involving the preparation and serving of meals for immediate consumption on the premises or off the premises, normally requiring short periods of time between the period of ordering and serving of the food, which is served in edible or disposable containers. These include businesses that

	provide delivery of food. Synonym: Fast-Food Restaurant. ²
French fries	Hot, deep-fried potato chips. ¹
Gauteng	One of the nine provinces in South Africa. It is the smallest province in South Africa but the most densely populated. It generates the most wealth. Mining, technology, finance and manufacturing are its main activities. It has the highest income per capita, highest literacy rate and over 90% of its population live in metropolitan areas.
Glycaemic index	A numerical index given to a carbohydrate-rich food, based on the average increase in blood glucose levels occurring after the food is eaten. ²
Health concern	For the purpose of this study, the terms health concern and health consciousness are used interchangeably in referring to apprehension and mindfulness about health.
Higher socio-economic group	Based on the LSM classification of 8 to 10+. ⁴
Lower socio-economic group	Based on the LSM classification of 1 to 4. ⁴
LSM (Living Standard Measurement)	An index that groups the population into ten groups according to access to services and other wealth indicators. ⁴

Medium socio-economic group	Based on the LSM classification of 5 to 7. ⁴
Passive over consumption	Excessive energy ingested without increasing the volume of food eaten. ²
Schwarma	A Middle Eastern Arabic-style sandwich usually composed of shaved lamb, goat, chicken, turkey, beef, or a mixture of meats in pita bread with hummus, tomato and cucumber. ²
Soft drinks	A sweetened still or carbonated non-alcoholic beverage served cold. ²
Shopping mall	Synonym: Shopping complex.
'Vetkoek'	Suet dumpling. A typical South African deep-fried pastry-based food, similar to the American version of a doughnut, but without a sugary frosting. 'Vetkoek' is usually eaten plain or with a savoury or sweet filling, e.g. mince or jam. ⁵
Young adult	For the purpose of this study, person between the age of 19 and 30 years, based on the Dietary Reference Intake age range for younger adults.

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CHAPTER 1

INTRODUCTION AND PROBLEM STATEMENT

1.1 INTRODUCTION

The growth of the fast-food industry has been nothing less than amazing. From its birth in the late 1940s in Southern California, fast-food has, as *per Schlosser*, become “so routine, so thoroughly mundane, that it is now taken for granted like brushing your teeth”.⁶ McDonald’s Corporation alone operates 30,000 restaurants worldwide, annually hires more employees than any American business (about 1 million), and is America’s largest purchaser of beef and potatoes. It therefore is not surprising that such enormous growth has had a proportionate impact on economic, political, social and cultural aspects of American life.⁶

In the 1960s, South Africa started to experiment with the concept and the very first American franchise hamburger concept, called Wimpy, was brought to South Africa by J H Lyons. From this point onwards there was no turning back, and a group of leading franchise companies came together in 1979 to form the Franchise Association of South Africa.⁷ Currently forty one restaurants and fast food providers are listed members of this association.

1.2 WHAT IS CURRENTLY KNOWN

Globally there has been a dramatic increase in money spent on fast-food. American statistics show that money spent on foods eaten away from home in 1970 accounted for 25% of total food spending⁸; by 1999 it had reached a record 47%.⁹ In 2001, there were

about 222,000 fast-food locations in the US, generating sales of more than \$125 billion.¹⁰ A paucity of data exists within the South African context.

1.2.1 Trends in fast-food intake

More dollars were spent on fast-food in the United States (US) than on newspapers, magazines, books, movies, videos and recorded music combined. In 2001, the average American ate three hamburgers and four orders of French fries weekly and one in four adults reported eating fast-foods regularly, according to the Continuing Survey of Food Intake by Individuals (CSFII) conducted by the United States Department of Agriculture (USDA) in 1994-1996.^{6,11,12}

Women and young children ate away from home 50% more often in the 1990s than in the late 1970s, and fast-food restaurants were the venue of choice.¹³ Two age groups within the American population that appear to have made the most dramatic changes in eating patterns are adolescents aged 12 to 18 years and young adults aged 19 to 29 years.¹⁴

The type of foods associated with fast-food consumption are mostly energy dense, including popular foods like fried potato chips, burgers and pizza.¹⁵ Data from three American national surveys demonstrated a 48% increase in the prevalence of soft drink consumption among youth between 6 and 17 years, from a prevalence of 37% in 1977/1978 to 56% in 1994/1998,¹⁶ while daily soft drink consumption increased by 65% in adolescent girls and by 74% in adolescent boys.¹⁷ Milk intake decreased from 72% to 57% in adolescent girls, with serious health implications due to the replacement thereof with low-nutrient energy-dense products like soft drinks.¹⁷

The average portion size of fast-foods has increased from the early seventies, as well as the per capita availability of added sugar and fats. Trends show that the largest portions come from fast-food outlets (FFOs).¹⁸ A typical single serving of Coca-Cola has increased in size from 192ml in the 1950s to 591ml in 2000 globally.¹⁷ Research on the trends of portion sizes of Coca Cola in Denmark showed an increase in available portions, from 190ml (1959) to 1500ml (1991).¹⁹

1.2.2 Factors affecting food choices

What people buy and eat depends not only on the individual, but also on various factors. At the broadest level, the agro-economical, biological, psychological, cultural background and environment shape human food choice and intake by influencing the range and quantities of foods consumed.²⁰ Life events and experiences result in individual preferences (such as taste) that define the choice of food, as well as other aspects (convenience and monetary considerations).²¹

Different models and ways have been suggested to explain food choices. Nearly all models structure the determinants related to the person, the food and the environment.²² Some of these models include: *The model of food acceptance*, by Pilgrim (1957); *Factors influencing food preference*, by Randall and Sanjur Kahn (1981); and *Factors influencing food choice*, by Gains (1994). The *Food Perception Model* is a comprehensive model created by Sijtsema *et al.*²² This model was created for product development, based on four determinants and variables influencing food perception (Figure 1.1) and emphasises the individual's perception of food as not only being complex, but also highly variable.

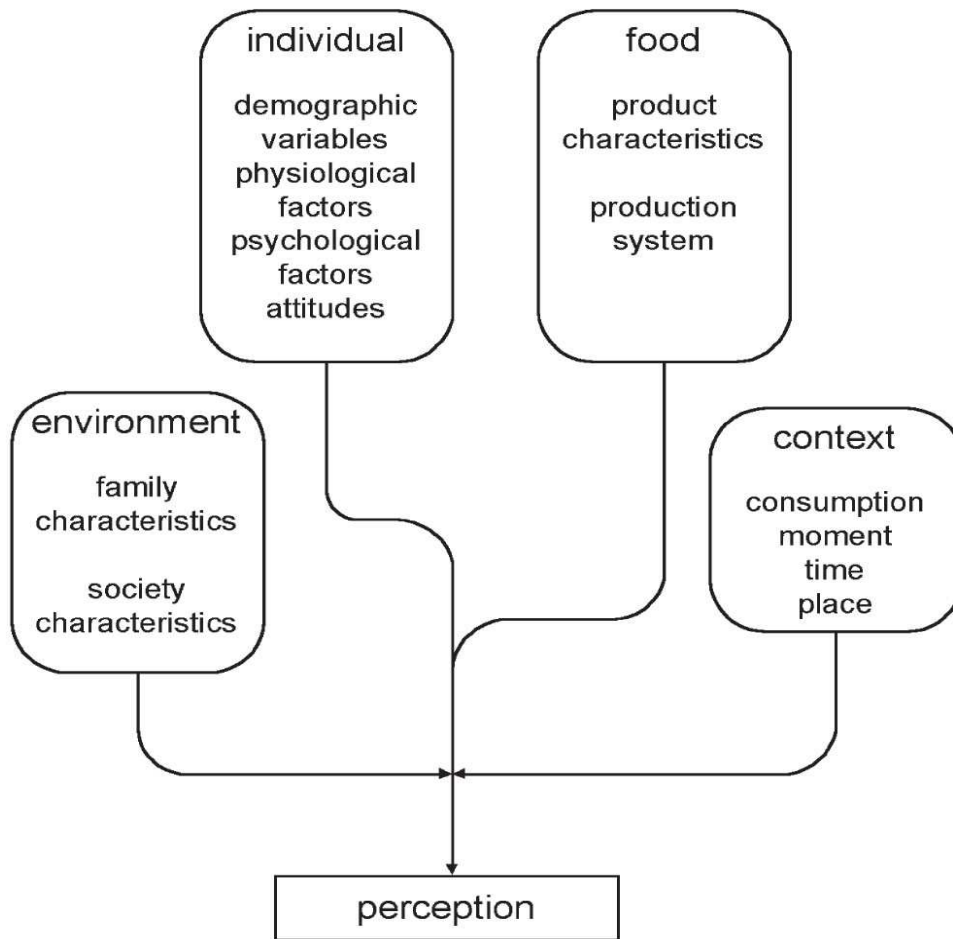


Figure 1.1: Food perception model for product development²²

From another perspective, Bisogni *et al.* described the concept of identity as a role player in food choices.²¹ Identity is described as the mental self-images that a person assigns to himself/herself based on everyday interaction with people, groups and objects. Identities related to eating reveal what is of concern to clients, how clients organise food according to their own preferences, how they express themselves through food and the ways in which they manage situations. Food and food events can, for example, convey group membership, masculinity/ femininity, ethnicity or socio-economic class.^{21,22,23}

A study by Barker *et al.*²³ explained that social stereotypes can contribute to consumers' choices and may hinder dietary change. A low-fat diet was associated with a "healthy", "slim", "fit" and "sporty" person, who was "intelligent", "middle class" and "female", but followers of this type of diet were also seen as "serious" and "highly strung". Conversely, the high-fat diet was associated with an "unhealthy", "overweight", "unfit" and "inactive" person, who was "unintelligent", "working class", "smoking" and "male" but "fun-loving" and "happy". In order to encourage dietary change towards lower-fat diets, it may be necessary to counteract the notions that "low-fat diets are for girls" and that low-fat diets mean denial, boring meals and dreary mealtimes.²³ Understanding these factors can aid in the success of health promotion initiatives in the fast-food sector, among others.

Consumers want to enjoy their food and the sensory characteristics of food will influence this enjoyment. Taste and flavour are important factors in consumer food choice, but not as important as thought previously. Consumers' approval of a specific food is driven by sensory as well as attitudinal (e.g. personal preference and perceptions), physiological (e.g. hunger) and behavioural (e.g. social pressure) factors. Most people can say immediately whether they like something or not, but they don't always know why.²⁴

1.2.3 Factors associated with fast-food intake

What people buy and eat depends not only on the individual, but on various different factors. At the broadest level, the agro-economical, biological, psychological, cultural background and environment shape human food choice and intake, by influencing the range and quantities of foods consumed.

Firstly, socio-demographic factors are associated with fast-food use. Fast-food use, specifically, is common among children and adolescents, young adults, people with higher income and persons living in a suburban area.^{11,10,15} Other factors include longer working hours, women being employed outside the home, and single parent households.²⁴ An American study has indicated that the percentage of individuals who reported eating fast-food was highest among those 10 to 39 years of age and declined among older individuals.¹⁰ Men reported more frequent use of fast-food than women, as did people with high-school and some college education, compared to those with four or more years of tertiary education. Individuals with a higher income and households with four or more members also reported higher intakes. The reported use of fast-food was lowest among people of 60 years of age and older and among people with a household income equal to or below the poverty threshold.¹⁰ South African data shows the converse. In a market research study undertaken for Kentucky Fried Chicken (KFC) in 2002, in the City of Johannesburg Metropole, South Africa, the income group with the highest intake of foods from a fried chicken outlet came from the lower income group categories with a monthly income of < R5 000, or R5 000 to R10 000.²⁵ An American study also showed that black adolescent girls tend to eat more fast-foods than their white counterparts.¹⁸

Secondly, increased fast-food intake is associated with the environment and environmental cues. Larger portions, increased variety and palatability stimulate an individual to eat more. Conditioning (defined as being accustomed to adopting certain habits) can also play a role due to the association of eating out on a special occasion and therefore eating more or choosing foods not normally eaten.²⁶ The media and media messages also contribute to fast-food intake. Research shows that children's and parent's television viewing are correlated.²⁷ A cross-sectional study of pre-school children in Boston, America, showed that the more hours of television children viewed, the more likely

they were to eat fast-food one or more times per week.²⁸ TV or video viewing might influence dietary intake through food advertising or food messages imbedded within programme content. A study of the nutritional content of food advertised during television viewing showed that candy, sweets, soft drinks, and convenience or fast-foods were most frequently advertised, and these foods were eaten mostly as snacks.²⁹ Marketing and increased availability and visibility of FFOs may also contribute to increased visits to such outlets.

Results from a survey conducted on a national representative sample of adults in the European Union, as well as a Ukrainian study, showed that the five most important factors influencing consumer food choices were “quality and freshness”, “price”, “taste”, “trying to eat healthy” and “family preferences”.^{30,31} It has been reported that, when the price of lower-fat healthy food items is reduced, there is an increase in the purchase of these foods.¹⁷ For women, quality / freshness, price, trying to eat healthily and family preference seemed to be rated the most important factors when making food choices, while taste and habit scored highest among men.^{30,31} In the Ukrainian study, the sources most often used for information on healthy eating were friends / relatives and health professionals, the latter being trusted by 92% of respondents. Other perceived factors indicated by participants of this study to affect food choice included mood, convenience, sensory appeal, weight control, familiarity and ethical concerns.³¹

Limited South African data exist on factors affecting fast food intake.

1.2.4 Consequences of increased fast-food intake

The fast-food and food service industries responded to a changing environment by increasing the availability of FFOs (longer operating hours, delivery options, and convenient locations such as shopping malls, drive-through facilities and cinemas) and by increasing the number of convenience foods that can be purchased in grocery stores. Unfortunately, food items promoted by these industries often are energy dense, but nutrient poor, which is of concern to health professionals in light of the growing prevalence of malnutrition, obesity and other lifestyle diseases.¹¹ While the link between obesity and fast-food consumption is evident, new research also demonstrates less obvious risks associated with fast-food consumption, like asthma.³² In the present study, literature on the use of fast-foods among children and adolescents was included, primarily because overweight and obesity in childhood may predispose one to obesity in adult life. Due to the paucity of relevant literature on the fast-food intake of young adults, information in these age groups may provide a clearer picture of the subject.

1.2.4.1 General nutritional consequences

The impact of fast-food intake on nutritional status has been a cause for concern since the early 1970s.^{33,34} The American Dietetic Association (ADA) released a position paper in 1974 to urge the food service industry of America to provide nutrition education and opportunities for improved food practices for consumers. According to this paper, the extent to which fast-food intake influences the nutritional status of an individual (children and adolescents, specifically) depends on the nutritive quality of the items on the menu; the choice of menu items; the amount consumed; and how often fast-foods are consumed.³³

A study on the fast-food consumption of 120 subjects between the ages of 16 and 21 from New Delhi, India, showed that fast-food consumption reflected an inadequate intake of essential nutrients.³⁵ Similar findings have been reported in various US studies. Fast-food use in the US was reported by 37% of adults and 42% of children from 1994 to 1996 and in 1998, was associated with a significantly higher intake of energy, fat, saturated fat, sodium, and carbonated soft drinks, and a significantly lower intake of vitamins A and C, fruits, vegetables and milk.^{10,17} A study focused on adolescents rendered similar results.¹⁵ Frequency of fast-food restaurant use was significantly positively associated with high fat and high sugar choices comprising soft drinks, fried potato chips and burgers. Hence, the significant positive association between total energy intake and fat intake; an inverse association with healthful foods like fruit, vegetables, grains and milk; and a consequent inverse association for calcium, fibre, vitamin A, vitamin C and carotene intake.^{15,18,36}

Foods eaten away from home have been found to contribute more than 25% of the intake of energy and fat.^{10,17} American male and female students who reported eating at a fast-food outlet three times in the preceding week were found to have energy intakes of 40% and 37% respectively higher than those who did not eat at fast-food outlets.¹⁷ Results from the CSFII in 1994-1996 showed that males and females regularly consuming fast-food had a diet with a higher fat content and energy density. Fast-foods provided more than one third of the day's energy, fat and saturated fat.¹⁰ Also, adults who reported eating fast-foods regularly had higher mean body mass values than those who did not eat fast-food and a positive association was found between fast-food consumption and overweight status.¹⁰

Based on a similar initiative in Canada, a report card that was developed in South Africa during 2007 has served as an instrument to evaluate current available evidence (both

published and unpublished, but peer reviewed) concerning behaviours, factors and their determinants that place South African children and youth at risk.³⁷ It also reviewed existing health promotion initiatives, including health education, the school curriculum, and responsible health legislation. According to this report, 58% of SA youth reported consuming fresh fruit and vegetables on four or more days per week. By way of comparison, 27% consumed cool drinks and sweets, and 47% ate cakes and biscuits with the same regularity. Urban primary school learners reported eating fruit or vegetables less than three times per week and sugar was the most frequently reported food item, eaten almost daily. In some instances, lower fruit and vegetable intake was linked to increased risk of obesity.³⁷ The available literature also showed that chips, cheese curls, sweets, 'vetkoek' and fizzy cool drinks were the most commonly bought snacks at school tuck shops, with sandwiches at the bottom of the list.³⁷ In the urban informal sector fast-foods can be purchased from vendors or 'spaza shops'. These are often situated close to schools or are allowed to sell products during school breaks. These vendors typically sell foods of low nutritional value that are high in fats and sugars, such as 'vetkoek', chips and sweets.³⁷

Apart from the fact that energy-dense, nutrient-poor foods are offered for consumption at FFOs, large portion sizes also contribute to the nutritional findings and adverse health effects.^{17,18} The sizes of fast-food portions have increased, especially from the early 1990s until recently. Data from a Danish study have shown that the average McDonalds mega meal (introduced in 2001) included a portion of fries weighing 64g more and a soft drink containing 250ml more than the original medium meal. This mega meal would provide the average adult with 5 262kJ, 51g of fat and 72g of sugar, representing twice the daily amount of fat and all the recommended added sugar for an average South African adult.^{19,38} The trend of "super sizing" and "value-for-money meals" with "extras" leading to

overeating and developing the perspective that quantity is superior to quality is of particular concern. Value-size pricing involves structuring product prices so that the per unit cost is the lowest for larger portion sizes, thereby encouraging the purchase thereof.³⁹ While 62% of American consumers voiced support for a law requiring nutrition labelling on fast-food restaurant menus, and 57.9% of this group rated nutrition important when buying fast-food, only 34% supported a law requiring FFOs to offer lower cost for smaller portions.³⁹ Canadian children who ate supper in front of the TV or at fast-food restaurants more than once per week chose larger portions of potato crisps and French fries, and smaller portions of vegetables. Total calorie intake was thereby increased and diet quality decreased in this group. The same study also found that children whose parents reported higher levels of education were more likely to select larger portions of vegetables.⁴⁰

The proportion of soft drinks that children in the US consumed from restaurants and FFOs increased by nearly 300% between 1977 and 1996.¹⁷ Soft drink intake is of particular concern, due to providing young consumers with 780 kJ/d above the energy intake of a non-consumer and contributing to the rise in childhood obesity over the past few years.¹⁷ FFO use is associated with the intake of sugar-sweetened beverages. Research shows that the odds of becoming obese through the increased consumption of sugar-sweetened beverages are increased (odds ratio 1.6) with each additional daily serving of a sugar-sweetened drink consumed.^{12,17} In a study involving 1474 children age 10 – 14 years in Massachusetts, US, students who reported eating at fast-food restaurants once, two to three times or more than four times per week, reported a higher intake of sugar-sweetened beverages (0.14, 0.57 and 1.84 servings respectively), compared to students who reported no use of fast-food restaurants.⁴¹ Of concern is the finding that soft drinks have tended to replace milk in the diet of the modern child. This change may have serious health implications because milk is a good source of protein, calcium, vitamin B2, B12 and

vitamin D. There is also an increasing body of literature suggesting that dairy calcium may play a role in maintaining a stable body weight.¹⁷

1.2.4.2 Linking fast-food to obesity

The prevalence of obesity is increasing globally. According to the National Health and Nutrition Examination Survey (NHANES) data from 1999 to 2000, 31% of US adults were obese.⁴² In the US, the rate of childhood obesity and overweight has almost tripled since 1974. Currently, 30% of children aged 6-19 years are overweight or at risk of becoming overweight.¹⁷ Some publications state that nearly 50 million adults in the US were obese or morbidly obese in 1999.⁴³ In Australia, the prevalence of obesity doubled from 1985 to 1995, and over 20% of children aged 7 to 15 years are either overweight or obese.⁴⁴

South Africa and other developing countries are following the same trend. Data suggest that up to 10% of children under the age of two years and between 5 and 20% of children under the age of six years are overweight.⁴⁵ An average of 21% of adult men and 28% of adult women are overweight, with the highest incidence occurring among men in the white population and women in the urban black population.⁴⁶ Obesity appears to be due to a combination of genetic and environmental factors that include excessive energy intake and decreased physical activity.^{17, 46}

The venue from which food is obtained has been shown to contribute to overweight. In American males; evidence suggests that an increased BMI was associated with both eating out at restaurants and FFOs. In females an increased BMI was associated with eating at FFOs.⁴⁷ A study among young American adults rendered similar results, showing that fast-food consumption was positively associated with increased BMI. Increases in

fast-food intake and restaurant meals were recorded over a three-year period and changes in BMI measured. Each single unit increase in fast-food consumption (one time/week) was associated with a 0.24 increase in BMI over three years.⁴⁸ A study of fast-food habits showed a 4.5kg gain over 15 years with visiting a fast-food restaurant more than twice a week.⁴⁹ Interestingly enough, a study of adolescents rendered no significant association between frequency of fast-food restaurant use and overweight.¹⁵ On the contrary, BMI was significantly lower in adolescent males visiting fast-food restaurants three or more times per week, while those reporting less frequent use had a higher BMI.¹⁵ The authors are of opinion that this may be due to the fact that adolescent males experience growth and have higher energy needs.

The fast-food macronutrient composition, large portion sizes and frequent pairing with sugary beverages contribute to excessive energy intake.⁴² Most fast-food has a very high energy density, which challenges the control systems of the human appetite and may result in passive over consumption and consequently promote weight gain and obesity.^{19,50} At some typical FFOs the energy density of the entire menu is $\sim 1100\text{kJ}/100\text{g}^{-1}$, which is 65% higher than the average British diet ($\sim 670\text{kJ}/100\text{g}^{-1}$) more than twice the energy density of a recommended healthy diet ($\sim 525\text{kJ}/100\text{g}^{-1}$) and 145% higher than a traditional West African diet ($\sim 450\text{kJ}/100\text{g}^{-1}$).⁵⁰

Furthermore, overweight and obesity in childhood may predispose persons to morbidity in adulthood. Overweight and obesity in children is of particular concern because of the associated developmental abnormalities and the long exposure to enlarged adipose tissue stores acquired through excessive early-onset weight gain.¹⁷ Blood pressure, fasting blood cholesterol and insulin concentration have been shown to be higher in overweight than in

normal weight children.¹⁷ In a review aimed at clarifying the evidence-based dietary aspects that influence the development of childhood obesity (including adolescents), the main role players were lack of breastfeeding, high early energy intake and high intake of sugar-sweetened beverages.³⁶ Australian and South African data show that energy-dense food and beverages are over presented in the school environment, cultivating a preference for high-fat, high-calorie foods.^{37, 44} The fast-food industry recognises this and aggressive marketing of fast-foods to children could have long-term detrimental effects.⁶ Schools are often used for marketing through FFOs sponsoring extramural activities, advertising boards or operating from school tuck shops.³⁷ Placed in perspective, the health consequences connected to fast-food consumption exposes the industry to accusations of putting profit above the public good. Termination of marketing and legislation imposing restrictions on advertising of fast-foods to children will aid the decrease of childhood obesity. In some European countries, legislation has already been implemented.⁶

Our children and youth are key to a healthier future. Protecting children through health legislation, protects adults of the future. To determine where we should focus our efforts, we should also focus on areas that effect childhood health and morbidity.

1.2.4.3 Linking fast-food to insulin resistance

The underlying links between obesity and insulin resistance are complex, but studies are gradually providing clarity on how obesity promotes insulin resistance and how insulin resistance facilitates further weight gain. The increased occurrence of these two conditions over the past 30 years parallel the dramatic increase in fast-food consumption. A few characteristics of fast-food that could possibly contribute to the development of insulin resistance include energy density, high dietary fat content, low fibre content, higher

glycaemic index and fructose content, and lower intake of dairy products.⁴⁹ Energy-dense foods have been shown to interfere with appetite control, and at the same time increase the glycaemic burden on the body. The relationship between dietary fat and carbohydrate seems to play a far greater role than dietary fat alone. The combination of both the fat and carbohydrate load appears to overstress the insulin response and promote further weight gain.⁵¹ Saturated fats, commonly found in fast-food, have also been more closely linked to insulin resistance and hyperinsulinemia than have unsaturated fats.⁵² High-fat diets may also contribute to weight gain and insulin resistance due to the effect on satiety signalling via the Central Nervous System (CNS) insulin and leptin. Hyperinsulinemia is associated with leptin resistance, which promotes reduced energy expenditure and continued food consumption.⁴⁹ Considering these complex changes in physiology based on dietary intake of fast-food, and the health consequences thereof, fast-food may be seen as a primary etiologic agent in the development of obesity and associated conditions.⁴⁹

1.2.5 How can healthy eating be promoted and solutions for change be formulated?

Finding a strategy to improve the general diet of the community can challenge many health promoters and politicians. One strategy to consider is the distribution of information, which has thus far seemed to be relatively unsuccessful. Public awareness of health and the role that diet plays in this as a secondary strategy has also unfortunately yielded little results in terms of improved eating habits.⁴³ Despite its own inherent challenges strategies should focus on changing eating behaviours.

1.2.5.1 Behaviour and change

The many determinants of nutritional behaviour provide a whole set of means for intervening in people's food choices, but closer consideration shows that there are important aspects that hinder dietary change. Any dietary modification may lead to certain gains (like increased health), but to losses, as well (like decreased palatability). Thus, a sustainable change can only be expected if the gains are valued higher than the losses. These aspects need to be carefully considered when designing nutrition and lifestyle-related intervention concepts.

There are various reasons why strategies to change behaviour have failed in the past. These factors include cultural values and ideas, the fact that healthier options are less available, as well as socio-economic and demographic limitations to obtaining healthier options.²⁰

Studies researching food intake have shown that a person tends to continue ingestion of normal habitual and culturally suitable foods, portion sizes and frequency, regardless of the composition of the food items.²⁰ This is of concern with regard to trends in fast-food intake regarding portion sizes and the composition of fast-food, and the impact it has on increased prevalence of obesity and diseases linked to lifestyle.

The media can play an important role in educating the public through raising awareness and can also appeal to the emotions of consumers. *Super Size Me*, a documentary film on fast-food intake, has been shown to be a powerful tool for nutrition education in young adults. It has positively affected several factors thought to mediate behaviour and employ the process of change (i.e. emotional arousal and consciousness raising). The film illustrates the detrimental effects of a diet consisting entirely of fast-food.⁵³

Research and the success rates of various strategies have shown that education on its own is inadequate in promoting healthy eating. Multi-sectoral collaboration is essential and strategies should involve politicians, consumers, stores, restaurants, chefs, fast-food franchises, health workers and schoolteachers.⁴³ Manipulating the prices of foods through imposing taxes on unhealthy food items or offering financial support for healthy food items might help the population to achieve healthier goals. It has been proposed that tax on hamburgers, chips, chocolates, soft drinks and other unhealthy foods should be introduced to help overcome South Africa's ever-growing obesity problem.⁵⁴ Other recommendations have included adding health warnings to fast-food advertisements and only showing or airing these advertisements at certain times of the day.⁵⁴ It has also been shown that price plays a large role in making food choices and lowering the price of fresh fruit and vegetables by 50% has resulted in two- to four-fold increases in sales at school cafeterias in the US.¹⁷ In the South African context, reducing the cost of fresh fruit and vegetables as was the approach adopted by the US is a potential important factor to consider, especially considering the current inflationary pressures being experienced on all food types. Reducing the relative price of 'healthy' food could give it the competitive advantage it requires and drive consumer demand.

Many fast-food outlets have expanded their range of foods to include healthier options. In South Africa, popular burger chains have started to include grilled options (opposed to fried options), salads, yogurt and fruit juice on their menus. Unfortunately, the fast-food industry is driven by consumer demand. American fast-food chains started including healthier options in their menus as early as the 1970s, but most of these projects were abandoned as a result of low consumer interest. A consumer report in 1994 showed that

most people continued ordering the less healthy, high-fat options, even when low-fat fast-food items were available.⁵⁵ Two possible reasons for this exist; firstly, consumers want to indulge in foods they do not eat at home and, secondly, healthier options are often perceived as being inferior in taste to their more fatty counterparts.⁵⁵ It would be beneficial if the perception that healthier choices lack taste could be changed and if these choices could be promoted by fast-food enterprises.¹⁰ On the other hand, educating the public to make informed choices concerning the regular available options, controlling portion size and decreasing the frequency of fast-food intake may prove to provide more sustainable and practical advice with better health outcomes.

According to a Ukrainian study, barriers to healthy eating, in order of preference, included cost, lack of time, self control, selection influences, lack of knowledge, unpleasant foods and resistance to change.³¹ Gedrich has stated that people tend to have a “loss” aversion, which favours stability over change.⁵⁶ The gains of health-orientated dietary changes are mostly related to the distant future (e.g. extension of lifespan), are uncertain (e.g. other possible causes of death besides nutrition) and hardly perceivable (e.g. the *avoidance* of disease cannot be experienced); while the losses refer to the present, are certain and immediately perceivable.⁵⁶ Considering modern society’s focus on the “here and now”, advocating dietary change related to health benefits in the distant future may be challenging.

1.3 MOTIVATION FOR THE STUDY

Obesity is on the increase in South Africa, in adults as well as children. The South African Demographic and Health Survey (SADHS) conducted in 2003 showed that overweight in men increased from 20% to 21% and in females from 27 to 28% between 1998 and 2003,

while obesity in men increased by almost 2% during the same period. These findings, together with other lifestyle-related habits (including inactivity) that were observed in this study can be expected to contribute to the continued development of high blood glucose, hypertension and high blood lipids, which will ultimately result in chronic diseases such as heart disease, stroke, type 2 diabetes mellitus and some cancers.⁴⁶

While there are various causes for overweight, lifestyle and environmental factors contribute significantly. An increased intake of soft drinks, together with the intake of energy-dense foods, adds to the increased occurrence of obesity, especially in a country where rapid urbanisation and changes in dietary habits are occurring. Fast-food consumption is assumed to be one of the contributing factors. Fast-food is also high in sodium and fat, which are associated with hypertension and dyslipidemia. Currently, there is a lack of published South African data on fast-food consumption. This study will shed light on the characteristics of young adult fast-food users, factors influencing fast-food consumption and attitudes towards health and healthier options in a selected group of urbanised young South Africans. The information from this study could benefit key role players in implementing strategies for change.

Results from this study could also be of benefit to the fast-food industry, by offering guidance in providing meals that consumers would not only enjoy and choose to purchase, but that will provide them with healthier options. Results from this study will also provide information on the success of current healthier options on menu's of fast food outlets and ways fast food outlets can improve their menu options.

CHAPTER 2

METHODOLOGY

2.1 AIMS AND OBJECTIVES OF THE STUDY

The aim of this study was to determine the factors which impact on the intake of fast-foods by young adults in Gauteng.

The specific objectives of the study were:

1. To investigate selected characteristics of fast-food users.
2. To determine the frequency of fast-food intake.
3. To determine the specific food choices at certain categories of fast-food outlets.
4. To explore selected factors influencing fast-food intake:
 - Availability
 - Access
 - Affordability
 - Behavioural factors
 - Taste preferences
 - Influence of media messages
5. To describe the attitude of consumers towards healthier meal options.

2.2 OPERATIONALISATION

Factors influencing fast-food intake; the frequency of fast-food intake; specific food choices available from particular categories of fast-food outlets; the attitude of consumers towards healthier meal options; and characteristics of fast-food users were measured with the use of an interview-administered questionnaire developed by the researcher. (Figure 2.1 and 2.2)

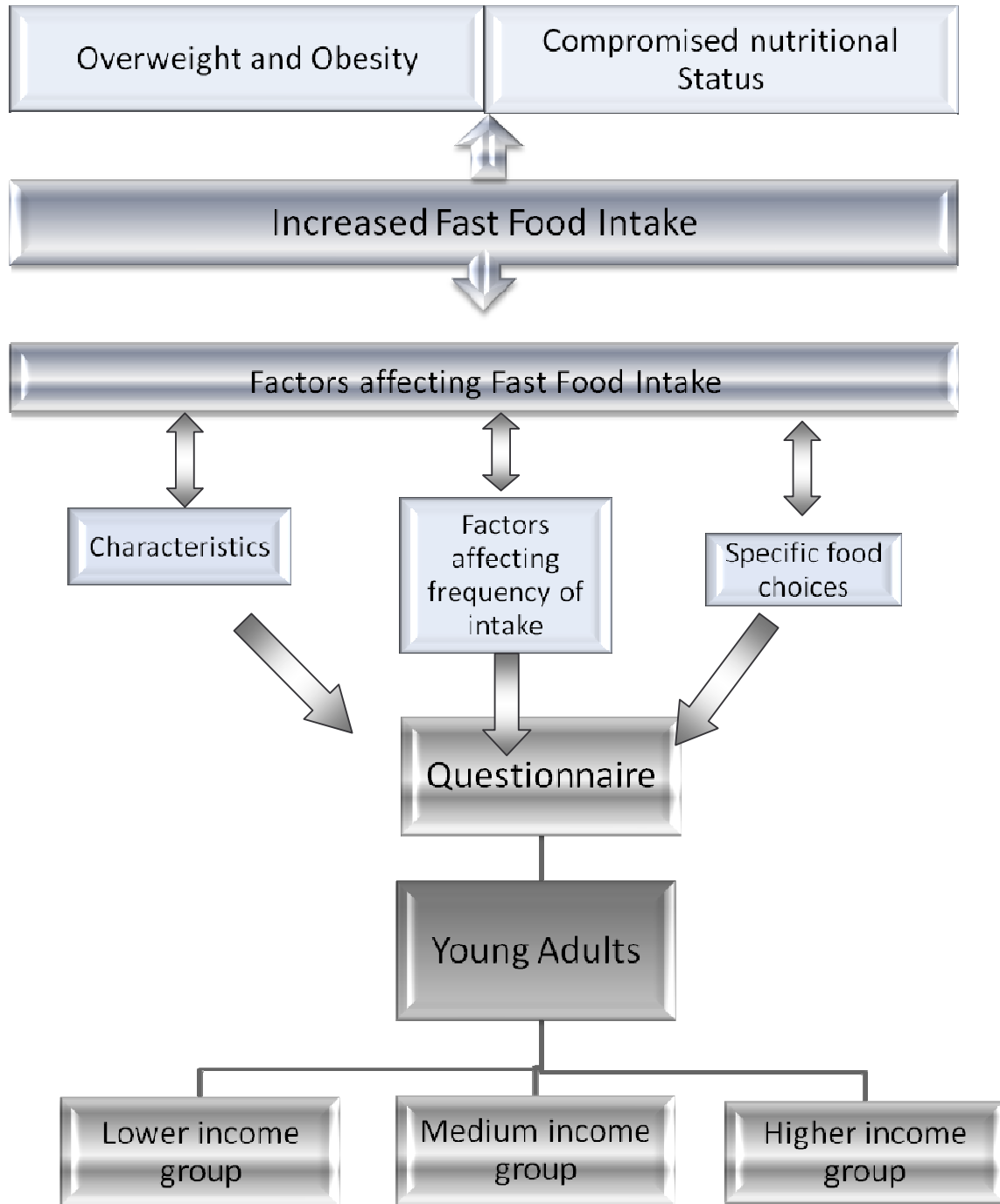


Figure 2.1: Conceptual framework of the operationalisation of the study

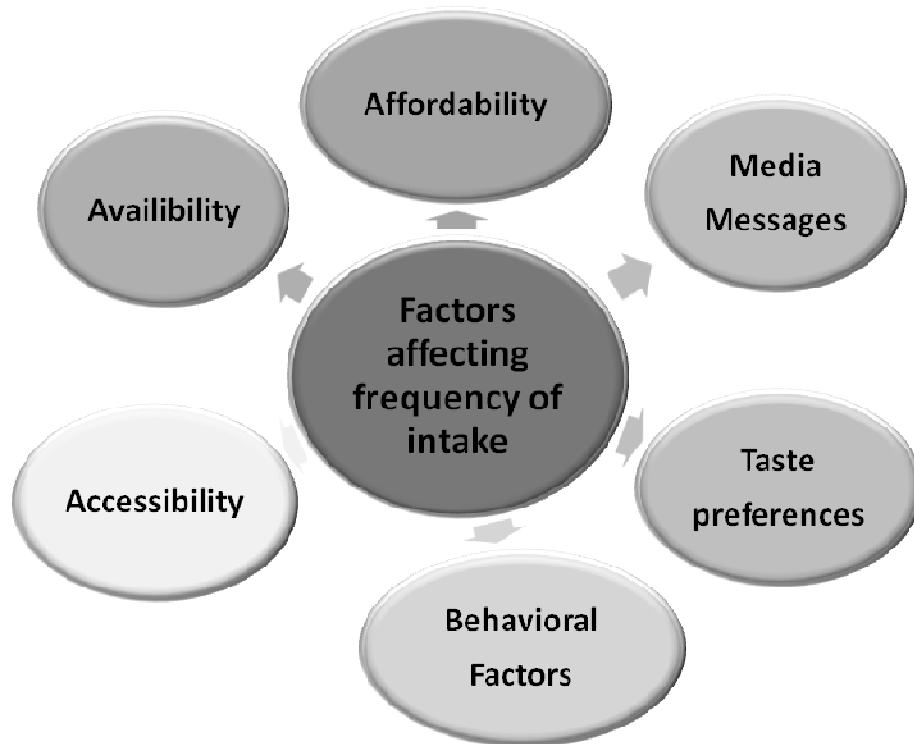


Figure 2.2: Factors affecting the frequency of fast-food intake

2.3 STUDY DESIGN

2.3.1 Type of study

A descriptive cross – sectional, observational study design was used.

2.4 POPULATION AND SAMPLING FOR THE STUDY

2.4.1 Sample selection

Data were collected from consumers in lower, medium and higher socio-economic groupings (based on the LSM classification) shopping at a large grocery store chain in selected shopping malls.^{3, 4} The shopping malls were chosen based on the LSM classification for the population shopping at that mall. This was then used to determine the

socio-economic status of the area based on previous studies on consumer services and economic groupings in the City of Johannesburg (Appendix B).²⁵ One of the limitations of this approach does mean that people from other LSM areas may also visit the mall but they are likely to be in the minority.

The entrance of a large grocery chain store in each shopping mall was chosen as the data collection site in an attempt to obtain a more representative sample from a wider group of possible participants. The sampling of consumers was done on the basis of voluntary participation.

2.4.2 Sample size

The required sample size of participants was determined with the help of a statistician and based on the population density of the City of Johannesburg Metropole area.³ The size of the sample was chosen on the basis of a 95% confidence interval and error percentage of 5%. In order to achieve the most representative sample, it was decided to use a sample of 360 participants, preferably consisting of 180 males and 180 females. To achieve the most representative sample from each SEG, 120 participants per group were necessary.

2.5 SELECTION CRITERIA

2.5.1 Criteria for inclusion

The following list outlines the criteria for inclusion of participants in the study:

- Male or female

- Young adults aged between 19 and 30 years
- All ethnic groups
- Ability to understand English
- Willingness to complete the interviewer-administered questionnaire.
- Citizen of South Africa
- Resident in Johannesburg

2.5.2 Criteria for exclusion

The following list outlines the criteria for exclusion of participants from the study:

- Tourists (living outside of Johannesburg).

2.6 DATA COLLECTION TOOLS

2.6.1 The questionnaire

An interviewer-administered questionnaire comprising 22 closed-ended and 1 open-ended, pre-coded categorical and numerical questions were developed (Appendix C). The literature was searched and examples of questions asked in similar studies were used in developing the questionnaire.^{15,30,31,34} The questionnaire was constructed to elicit characteristics of the sample (gender, education level, income status and income level), reasons for and frequency of fast-food intake, specific food choices at certain categories of fast-food outlets, as well as attitude towards health and healthier meal options.

The questionnaire was administered in English and took approximately 10 minutes to complete. English was the chosen language for the following reasons:

- It is the second most commonly spoken language in the City of Johannesburg area.³

- Training field workers in different languages has time and cost implications.
- It is an official language of communication in South Africa.

The questionnaire was printed in black ink in a legible font type and size. Participants provided consent to participate by completing the questionnaire anonymously.

2.7 QUALITY OF DATA COLLECTED

The quality of data was determined by the following:

1. Experts evaluating the questionnaire. Following the development of the questionnaire, four dietitians who have obtained a BSc Dietetics qualification were asked to assist in further refining of the questionnaire. The format and content was scrutinised and changes made to improve face and content validity.
2. A pilot study to test the questionnaire.
3. Standardisation of the fieldwork by means of a set training programme for the fieldworkers and guidelines on the questionnaire. A standardised method of conducting the interview based on the prompts and questions in the questionnaire was followed. This standardisation took place following the pilot study, after a list of the most common queries and questions likely to be asked had been compiled.

2.7.1 The pilot study

A pilot study was undertaken by the researcher and a fieldworker, to ensure correct use of the questionnaire by field workers and to test participants' understanding of the questions asked in the questionnaire. The pilot sample consisted of consumers visiting a grocery store similar to the one used in the main study, within the City of Johannesburg area. Verbal consent was obtained from the store manager following the delivery of a written letter requesting consent (Appendix D) a week prior to the pilot study. A convenient

sample of 36 consumers in total, made up of 12 from each of the three socio-economic groupings, was used and data were collected according to the methods mentioned in section 2.8. The socio-economic status of groupings was determined by the demographic information elicited by the questionnaire. After discussing the purpose of the study with the store manager, a weekday was chosen for the collection of data, since a more representative sample reflecting the socio economic groupings would be obtainable. After conducting the pilot study, the necessary changes were made to the questionnaire and a list of common queries and questions was compiled and discussed during the briefing session with fieldworkers.

2.7.2 The field workers

Private practising dieticians were used as field workers because of their familiarity with research principles. Prior to the collection of the data, a briefing session was held with fieldworkers to discuss the dates for data collection, the location, the questionnaire and other relevant information needed to collect data (Appendix E).

2.8 DATA COLLECTION

The management of shopping malls in three different socio-economic areas (SEA) were contacted to obtain permission for collecting data from their premises. Once consent had been obtained, the management of a large grocery store within each complex was contacted and a written consent letter stating the purpose and methodology of the study was delivered by hand. Verbal consent to collect data at the entrance of each store was obtained from the store managers. The data were collected at the three shopping malls between 09:00 and 17:00 on three weekend days. Weekend days were used in the attempt to capture a more varied group of potential participants that during the week days.

Two fieldworkers and the researcher were located at the entrance of each large grocery store within the shopping mall.

Potential participants were approached and asked to participate in the study. Screening questions were asked in a polite and sensitive manner. If an adult complied with the criteria, the fieldworkers briefly explained the purpose of the study, indicating that the results obtained from the questionnaire would be anonymous and that all information obtained was to be used purely for academic purposes. Each participant was also given an information leaflet specifying the nature of the study in detail (Appendix F). The questionnaire was then completed according to the instructions. After completion of the questionnaire, free copies of the in-store food magazine were available to thank participants for their participation in the study. This process was repeated until an appropriate number of questionnaires per SEG were completed. One hundred and twenty five questionnaires were completed by shoppers at the shopping mall in the higher socio-economic area, and referred to as the higher socio-economic group (HSEG); 132 questionnaires by shoppers at the shopping mall in the medium socio-economic area, and referred to as the medium socio-economic group (MSEG); and 121 by shoppers at the shopping mall in the lower socio-economic area, and referred to as the lower socio economic group (LSEG). All completed questionnaires were kept in a container separate from uncompleted questionnaires. Unfortunately, fieldworkers did not document all those adults who refused to participate or who did not fit the criteria for inclusion, but this is estimated to have comprised about 15%. The data were collected in March 2008, by the researcher and fieldworkers as specified in section 2.7.2.

2.9 DATA ANALYSIS

Data was captured by the researcher using Excel and SPSS (Statistical Package for the Social Sciences) and analysed with the assistance of a statistician. For continuous variables, means and standard deviations were computed. Appropriate contingency table analyses were used and data were analysed nominally. A variety of statistical tests were used, namely:

- The Pearson Chi-square test for independence. Here the assumption was that two variables were independent and were rejected if the p value of the test was less than 0.05
- Likelihood ratios. These tested the same hypothesis as above but without the assumption.
- Linear-by-linear associations, which tested the same hypothesis but only if both variables were ordinal.
- When a 2x2 contingency table was computed, the Continuity Correlation and Fisher's Exact Test were used.

Symmetric measures were used to measure the strength of associations. When nominal-by-nominal variables were analysed, the Phi test and Cramer's V test were used. The closer the Cramer's V test results were to 1, the stronger the association; the closer to 0, the weaker the association. When ordinal-by-ordinal variables were analysed, Kendall's tau b test was used.

2.10 ETHICS AND LEGAL ASPECTS

A research protocol was submitted to and approved by the committee for Human Research, Faculty of Health Sciences of the University of Stellenbosch, South Africa

(Project number N08/01/001) (Appendix G). Confidentiality was ensured by providing each participant with an information leaflet specifying the nature of the study and confidentiality in detail (Appendix F). Participants provided consent by participating voluntarily.

2.11 BUDGET

The expenses of the study primarily consisted of remuneration of fieldworkers, printing costs of the questionnaires, stationery for data collection, telephone and internet costs and transport to and from the data collection sites. The Division of Human Nutrition, Faculty of Health Sciences of the University of Stellenbosch awarded strategic funds for the execution of the study to aid in financing expenses incurred in the execution of the study.

CHAPTER 3

RESULTS

3.1 THE SAMPLE

3.1.1 Sample description

The number of participants interviewed at the three different shopping malls in the higher, medium and lower socio-economic areas was 378; 341 of the completed questionnaires could be included in the sample. Nine of the 37 questionnaires excluded from the data set did not fit the criteria for inclusion, two participants only filled in their gender and date of birth, and twenty-five were spoiled because of incomplete information for questions 21 and 22. One participant did not want to disclose income status, and therefore the rest of the questionnaire could not be used. An undocumented number of potential participants who were approached also indicated verbally that they did not consume fast-food and therefore did not complete the questionnaire.

The mean age of the sample was 24.48 years (SD = 3.492). The total sample of young adults included 118 (35%) participants from the HSEG, 106 (31%) from the MSEG and 117 from the LSEG (34%). The sample of 341 participants was made up of 180 (53%) females and 161 (47%) males.

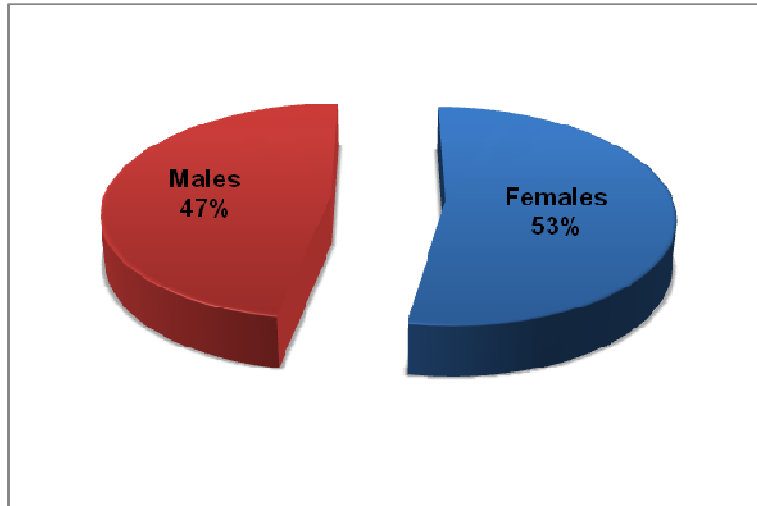


Figure 3.1: Gender distribution of the total sample (n = 341)

Fifty-two per cent (n = 178) of the total sample had obtained tertiary education, 44% (n = 152) high school education, 3% (n = 9) primary school education and 1% (n = 2) did not receive any schooling (Figure 3.2).

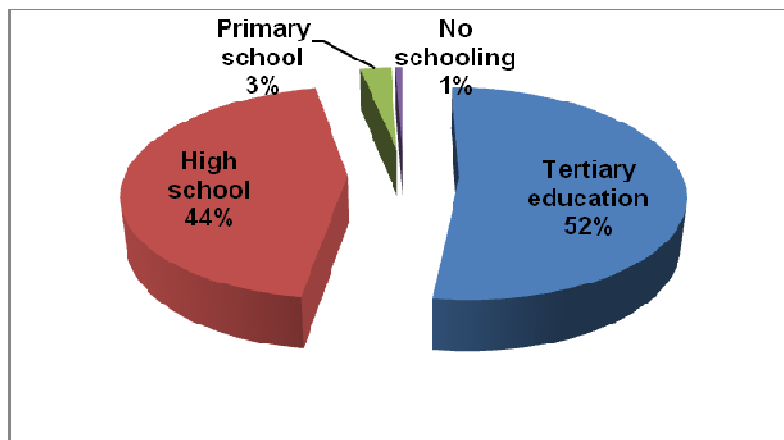


Figure 3.2: Level of education of the total sample (n = 341)

The level of education within the different socio-economic groupings (SEGs) is depicted in Table 3.1. It is interesting to note that the number of participants from the LSEG who had received secondary education was similar to those who had received tertiary education (n

= 57 and n = 54) while considerably more participants from the MSEG only completed high school compared to tertiary education (n = 59 and n = 43).

Table 3.1: Level of education of participants in different socio-economic groups (SEGs) (n = 341)

Socio-economic group (SEG)		Number (N)	Valid percentage (%)	Cumulative percentage (%)
High socio-economic group (HSEG)	Primary school	1	.8	.8
	High school	36	30.5	31.4
	Tertiary education	81	68.6	100.0
	Total	118	100.0	
Medium socio-economic group (MSEG)	No schooling	2	1.9	1.9
	Primary school	2	1.9	3.8
	High school	59	55.7	59.4
	Tertiary education	43	40.6	100.0
	Total	106	100.0	
Low socio-economic group (LSEG)	Primary school	6	5.1	5.1
	High school	57	48.7	53.8
	Tertiary education	54	46.2	100.0
	Total	117	100.0	

In the total sample, 71% (n = 242) were employed, 21% (n = 71) were students and 8% (n = 28) were unemployed (Figure 3.3).

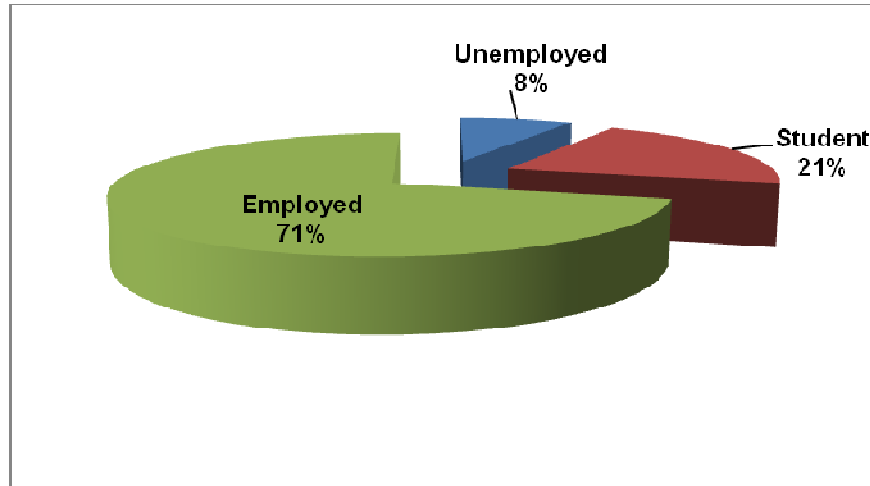


Figure 3.3: Employment status of the total sample (n = 341)

It became evident that the largest percentage of participants earned less than R10 000 per month (70% (n = 170)) with only 74 participants (30%) earning more than R10 000 per month.

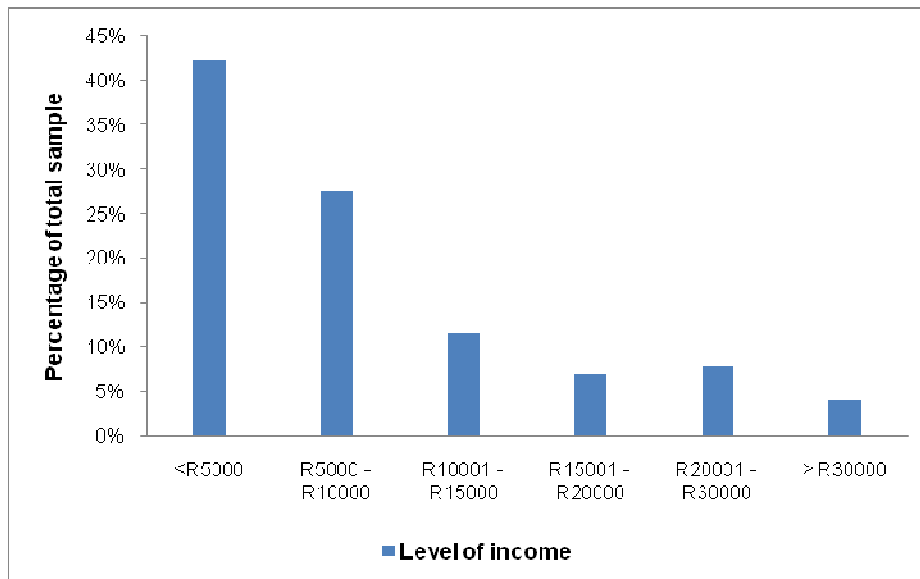


Figure 3.4: Income levels of the total sample (n = 341)

3.2 OUTCOMES OF THE STUDY IN TERMS OF OBJECTIVES

3.2.1 Frequency of fast-food intake

To determine the frequency of fast-food intake (FFFI), the question ‘How often do you have take-away meals?’ was asked. The frequencies participants could choose from were: Less than once per month; at least two to three times a month; at least once a week; two to three times per week or more; or daily. Within the total sample, the highest numbers of participants who had take-away meals ranged between two to three times a month and two to three times per week (85.3% (n = 291)) with only 50 participants consuming fast-food either less than once per month or daily (14.7%).

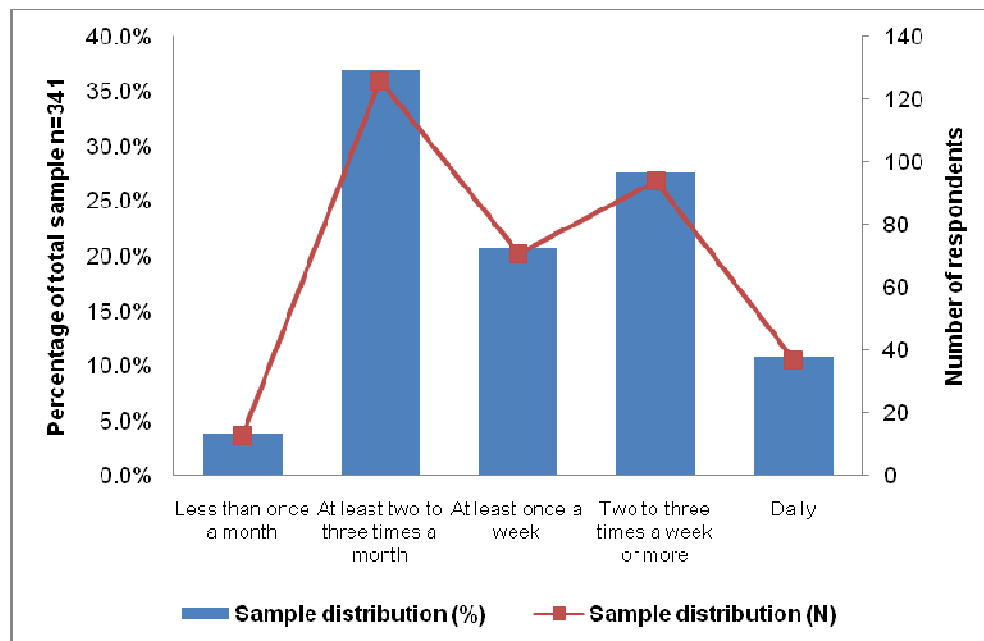


Figure 3.5: Frequency of fast-food intake of participants (n = 341)

3.2.1.1 Frequency of fast-food intake within different socio-economic groups (SEGs)
 Upon further investigation into the frequency of fast-food intake within the different SEGs, it became apparent that there was a relationship between frequency of fast-food intake

and socio-economic grouping, as tested by the Pearson Chi-square test ($p = 0.01$) and the Likelihood ratio ($p = 0.009$). The majority of participants in the HSEG, MSEG and LSEG chose the option 'At least two to three times a month' (34.7% ($n = 41$), 42.5% ($n = 45$) and 34.2% ($n = 40$) respectively), as one would expect from the findings from the total sample. The categorised histogram (Figure 3.6) shows that there was a noteworthy difference between the different groups with regard to the pattern of frequency of fast-food intake. Within the HSEG, an even spread of fast-food use was observed over all categories besides 'Less than once per month' and 'Daily', which were poorly represented (4.2% ($n = 5$) and 5.9% ($n = 7$) respectively). The proportion of participants who used fast-food at least once a week was larger in the HSEG (28.0% ($n = 33$)) than in the MSEG and LSEG (17.9% ($n = 19$) and 16.2% ($n = 19$) respectively). Within the MSEG, just over half of the participants ($n = 54$) used fast-food once a week or more often. The LSEG was conspicuously underrepresented in the 'Less than once per month category' (7.7% ($n = 1$)) compared to 38.5% ($n = 5$) in the HSEG and 53.8% ($n = 7$) in the MSEG. Strikingly, 56.8% ($n = 21$) of participants who consumed fast-food daily fell within the LSEG, which is considerably more than participants from the HSEG and MSEG (18.9% ($n = 17$) and 24.3% ($n = 9$) respectively).

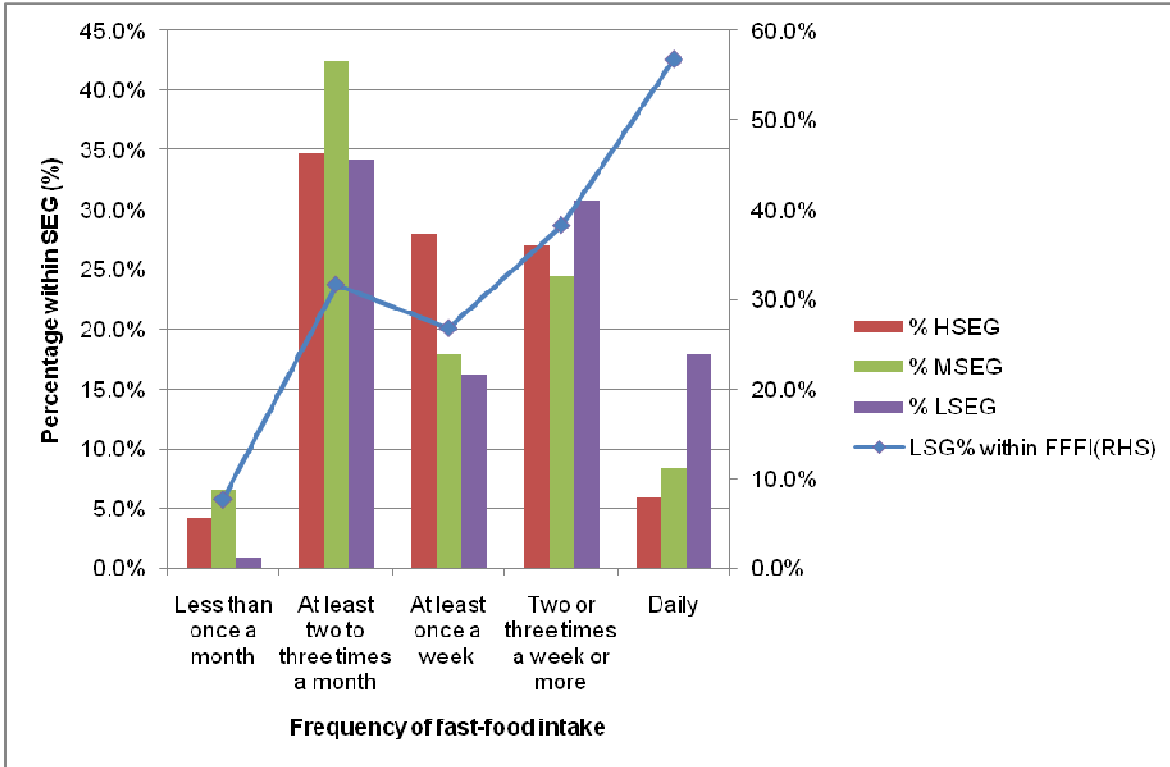


Figure 3.6: Frequency of fast-food intake of participants in each socio-economic group (SEG) (n = 341)

3.2.1.2 Frequency of fast-food intake within genders

The Pearson Chi-square test and Likelihood ratio showed that gender makes a significant difference in the frequency of fast-food intake ($p = 0.001$). Males consumed fast-food more often than females. The majority of females (44.4% ($n = 80$)) had fast-food at least two to three times a month, while only 28.6% ($n = 46$) of males fell into this category. Only 6.7% ($n = 12$) of females had fast-food on a daily basis, while 15.5% ($n = 25$) of males fell into this category.

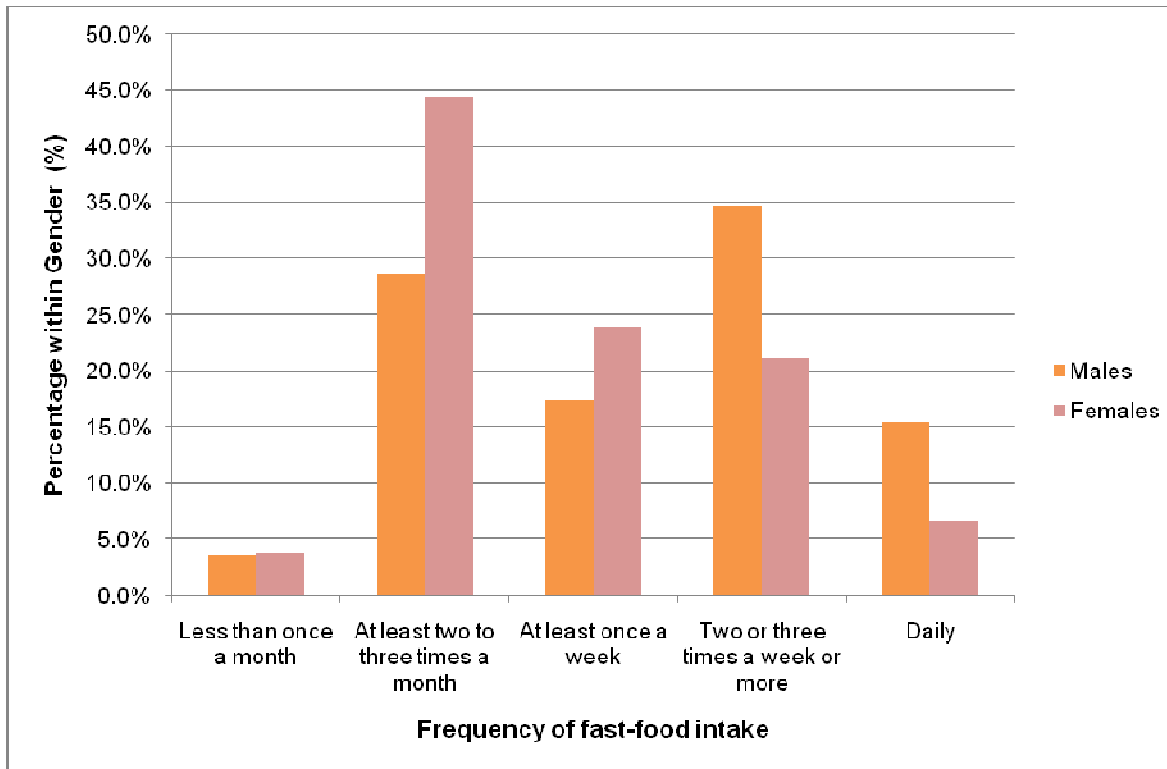


Figure 3.7: Frequency of fast-food intake in males and females (n = 341)

3.2.1.3 Fast-food frequency and level of education

The Pearson Chi-square test for independence showed that the frequency of fast-food intake was independent of the level of education ($p = 0.6$), with no significant difference between these variables. Education level was regrouped due to the smallness of the number of participants falling within the 'No schooling' and 'Primary schooling' group. The regrouped categories were 'Primary schooling, at most' (including participants with no schooling and primary schooling), 'High school' and 'Tertiary education'. Only two participants had obtained no schooling and nine had obtained Primary school education only. Statistics for all levels of education show that most participants consumed fast-food at least two to three times per month (37.0% ($n = 126$)), followed by two to three times per week (27.6% ($n = 94$)), at least once a week (20.8% ($n = 71$)) and daily (10.9% ($n = 37$)) and less than once per month (3.8% ($n = 13$)).

3.2.1.4 Frequency of Fast-food intake and employment status

The Pearson Chi-square and Likelihood ratio tests indicated that the frequency of fast-food intake was dependent on income status ($p = 0.001$). Students consumed fast-food less often than employed participants. Significantly more students (46.5% ($n = 33$)) had fast-food 'At least two to three times a month' compared to the other fast-food frequencies within this group. A similar percentage of employed participants had fast-food at least two to three times per month and two to three times per week or more (35.1% ($n = 85$) and 31.8% ($n = 77$) respectively). Only 28 participants (8.2% of the total sample) were unemployed and they revealed fairly similar percentages within the different frequencies of fast-food intake, except for having fast-food less than once a month, with no participants choosing this option. What was striking about this group was that 71% ($n = 20$) of unemployed persons had fast-food at least once per week or more and that 21.4% ($n = 6$) of this group consumed fast-food daily (Figure 3.8).

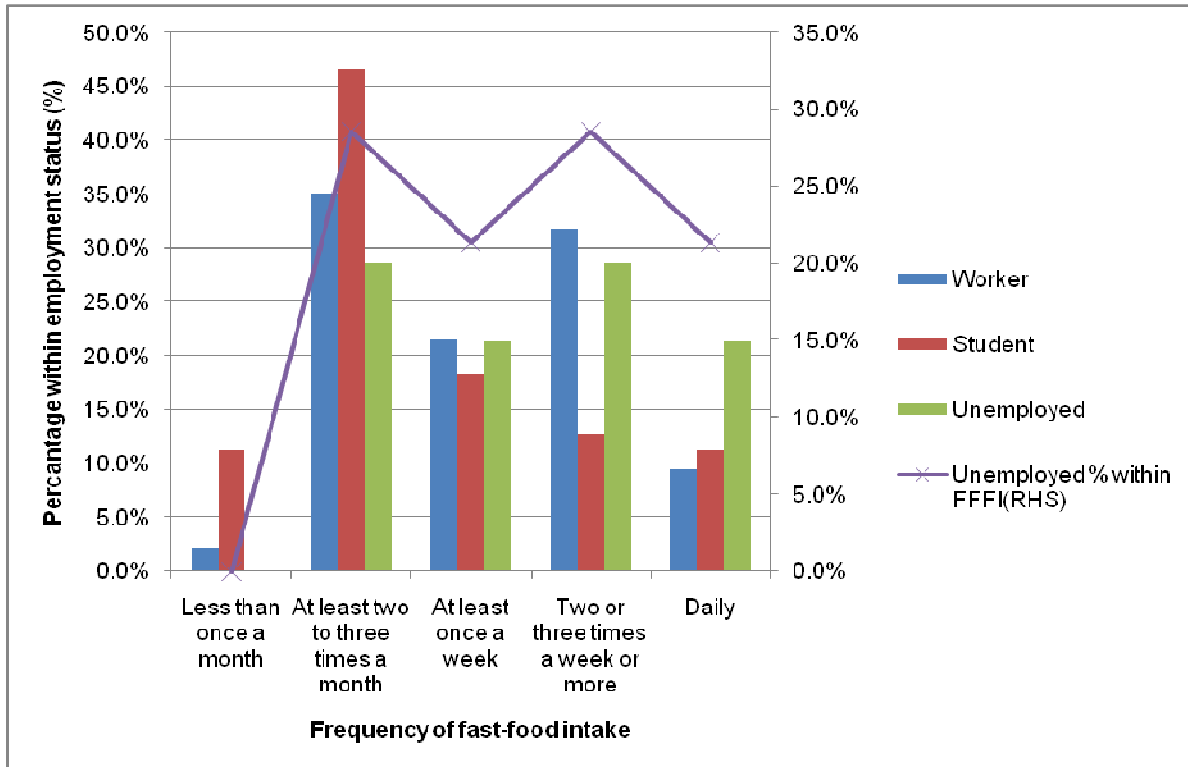


Figure 3.8: Frequency of fast-food intake and employment status of participants
(n = 341)

3.2.1.5 Frequency of fast-food intake and level of income

The Pearson Chi-square and Likelihood ratio tests showed that the frequency of fast-food intake is independent of income level (Pearson Chi-square, $p = 0.475$; Likelihood ratio, $p = 0.355$). Due to low representation within the income levels above R10 000, the levels of income were regrouped for the purpose of analysis. Income level was regrouped into a lower-income group (< R5 000 per month), a medium-income group (R5 000 to R10 000 per month) and a higher-income group (> R10 000). The pattern of frequency of fast-food intake within the regrouped income levels remained the same. Of interest was the finding that 50% ($n = 12$) of participants that consumed fast-food daily fell within the < R5000 income level group, while only 16.7% ($n = 4$) fell above the R10 000 income level.

3.2.1.6 Money spent on fast-food per month

To determine how much money participants spent on fast-food per month, the question 'How much money do you spend on fast-food per month (for yourself)?' was asked. Participants could choose from the following options: < R50, R50 to R100, R100 to R150 or > R200. Approximately half of participants from the total sample spent more than R200 on fast-food per month (49.0% (n = 167)). Only 6.2% (n = 21) spent less than R50 on fast-food per month (Figure 3.9).

The Pearson Chi-square test showed that money spent on fast-food per month was independent of socio-economic grouping ($p = 0.672$). The MSEG and LSEG followed the trend of the total sample, with the highest percentage of participants spending more than R200 per month on fast-food (43.4% (n = 46) and 54.8% (n = 63) respectively). In the HSEG, the majority of participants spent more than R200 per month (49.2% (n = 58)), followed by almost similar percentages spending R100 to R150 per month and R50 to R100 per month (21.2% (n = 25) and 22.9% (n = 27)) but this difference was not significant (Figure 3.9).

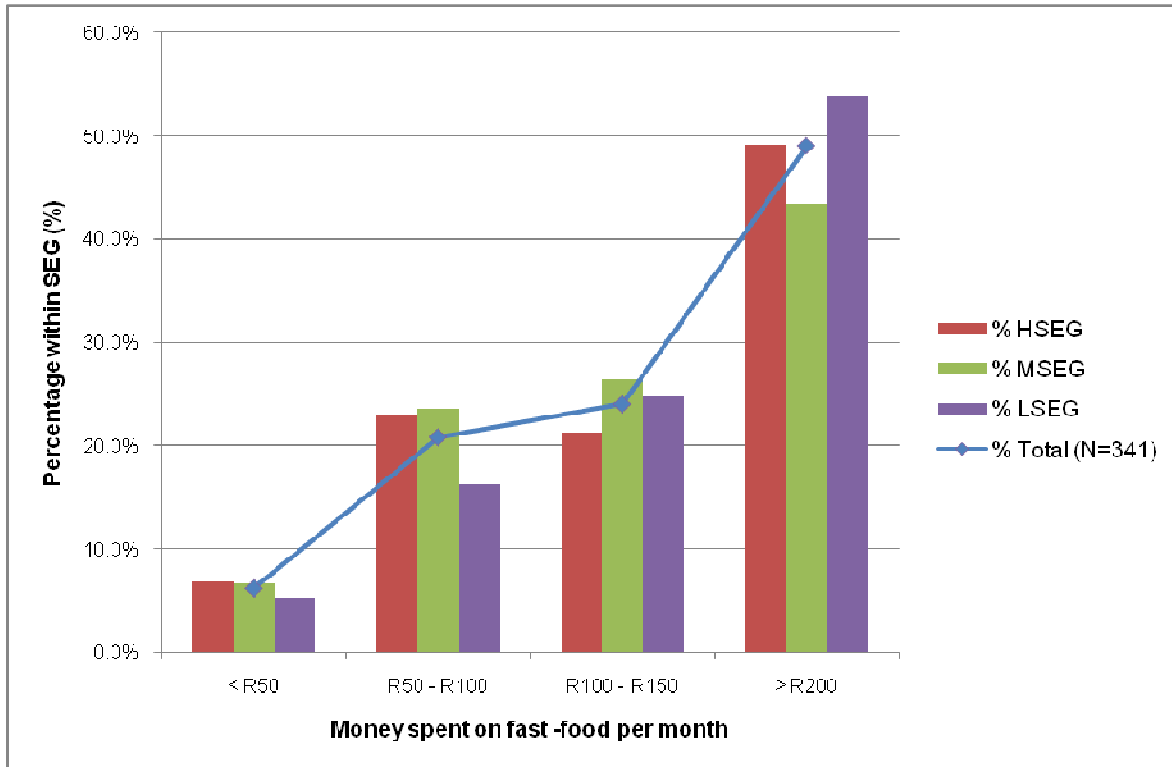


Figure 3.9: Money spent on fast-food per month within the total sample (n = 341) and within each socio-economic group (SEG)

3.2.1.7 Money spent on fast-food per month and level of education

As indicated by the Chi-square test ($p = 0.035$), there were significant differences in the trend of money spent on fast-food per month with regard to the different levels of education.. The highest percentage of participants with high school and tertiary education spent more than R200 on fast-food per month (43.4% ($n = 66$) and 55.1% ($n = 98$) respectively). Within the high school group there was only a slight difference in the number of participants spending R100 to R200 and R50 to R100 on fast-food per month (27.0% ($n = 41$) and 24.3% ($n = 37$)), while there were considerable differences in money spent on fast-food per month within the tertiary education group, with (55.1% ($n = 98$) spending more than R200, 22.5% ($n = 40$) spending R100 to R150 and 16.9% ($n = 30$) spending R50 to R100 per month). Fast-food consumption by participants with at most primary

schooling revealed a different trend. The highest percentage of participants in this group spent R50 to R100 on fast-food per month (36.4% (n = 4)), followed by 27.3% (n = 3) spending less than R50 or more than R200 (n = 6) and 9.1% (n = 1) spending R100 to R150 (Figure 3.10).

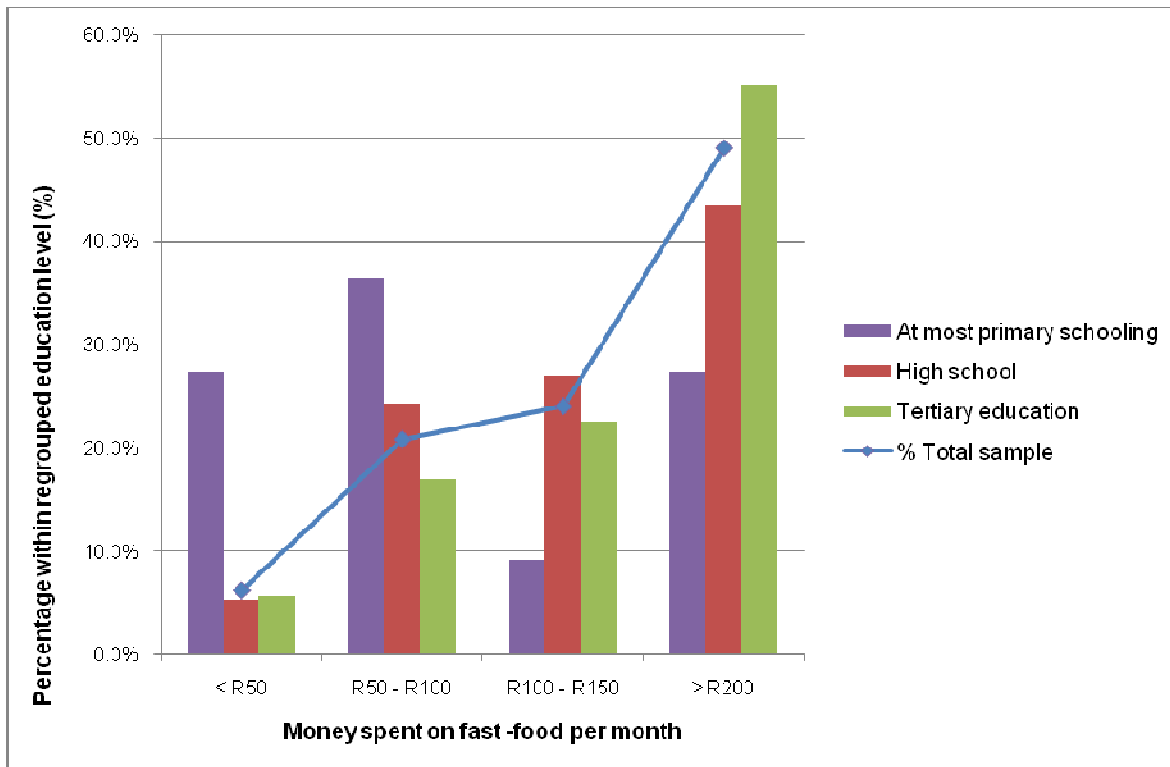


Figure 3.10: Money spent on fast-food per month and level of education of participants (n = 341)

3.2.1.8 Money spent on fast-food per month and income level

The Chi-square test showed that money spent on fast-food per month and income level were somehow related when testing the data nominally (Likelihood ratio, $p = 0.014$). For nominal-by-nominal analysis, Cramer's V indicated that the strength of the association was weak. When testing these variables ordinally, Kendall's tau b showed no relationship between money spent on fast-food and income level ($p = 0.472$). Income level was

regrouped into a lower-income group (< R5 000 per month), a medium-income group (R5 000 to R10 000 per month) and a higher income group (> R10 000).

Patterns in expenditure on fast-food differed for the different income levels. More than 50% of participants within each regrouped income level category spent more than R200 on fast-food per month. Sixty-four per cent (n = 43) of the medium-income group spent more than R200 on fast-food per month, compared to half (n = 53 and n = 39 respectively) of the participants in the lower- and higher-income groups. Only 9% (n = 6) of participants from the medium-income group spent R50 to R100 on fast-food per month – considerably less than participants from the lower and higher income groups (24.3% (n = 25) and 20.3% (n = 15) respectively).

Sixty-four per cent (n = 7) of participants who spent less than R50 on fast-food per month, fell within the income level category of < R5 000 per month, while there were no participants from the R5 000 to R10 000 income per month group and 36.4% (n = 4) from the > R10 000 per month income group (Table 3.2).

Table 3.2: Money spent on fast-food per month within regrouped levels of income (n = 244)

Money spent on fast-food per month		Regrouped income levels			Total
		< R5 000	R5 000 – R10 000	> R10 000	
< R50	Count	7	0	4	11
	% within money spent on fast-food per month	63.6%	.0%	36.4%	100.0%
	% within regrouped income levels	6.8%	.0%	5.4%	4.5%
	% of total	2.9%	.0%	1.6%	4.5%
R50 - R100	Count	25	6	15	46
	% within money spent on fast-food per month	54.3%	13.0%	32.6%	100.0%
	% within regrouped income levels	24.3%	9.0%	20.3%	18.9%
	% of total	10.2%	2.5%	6.1%	18.9%
R100 - R150	Count	18	18	16	52
	% within money spent on fast-food per month	34.6%	34.6%	30.8%	100.0%
	% within regrouped income levels	17.5%	26.9%	21.6%	21.3%
	% of total	7.4%	7.4%	6.6%	21.3%
> R200	Count	53	43	39	135
	% within money spent on fast-food per month	39.3%	31.9%	28.9%	100.0%
	% within regrouped income levels	51.5%	64.2%	52.7%	55.3%
	% of total	21.7%	17.6%	16.0%	55.3%
Total	Count	103	67	74	244
	% within money spent on fast-food per month	42.2%	27.5%	30.3%	100.0%
	% within regrouped income levels	100.0%	100.0%	100.0%	100.0%
	% of total	42.2%	27.5%	30.3%	100.0%

Note: For nominal-by-nominal data, the approximate significance from the likelihood ratio is equal to 0.014 and Cramer's V value is 0.160. For ordinal-by-ordinal data, the approximate significance for Kendall's tau b is 0.472.

3.2.1.9 Money spent on fast-food per month and frequency of fast-food intake

A highly significant relationship was revealed between money spent on fast-food per month and frequency of fast-food intake when tested nominally with the Pearson chi square test and ordinally by using Kendal's tau b ($p = 0.0001$). The largest percentage of participants consuming fast-food at least once a week, two to three times a week or more, or daily spent more than R200 on fast-food per month (46.5% ($n = 33$), 73.4% ($n = 69$) and 62.2% ($n = 23$) respectively). These percentages were higher than the percentage of consumers within each fast-food intake category spending less than R200 per month. An even spread of expenditure on fast-food per month was seen within the group of participants consuming fast-food at least two to three times a month ($\pm 30\%$ spending $> R200$ per month ($n = 39$), $R100$ to $R150$ per month ($n = 40$) and $R50$ to $R100$ per month ($n = 40$)), apart from a small percentage spending $< R50$ per month (5.6% ($n = 7$)). Forty-six per cent ($n = 6$) of participants consuming fast-food less than once per month spent $R50$ to $R100$ on fast-food per month, while almost half ($n = 3$) of participants falling within this group indicated spending either $< R50$ per month or $> R200$ per month on fast-food. (Figure 3.11)

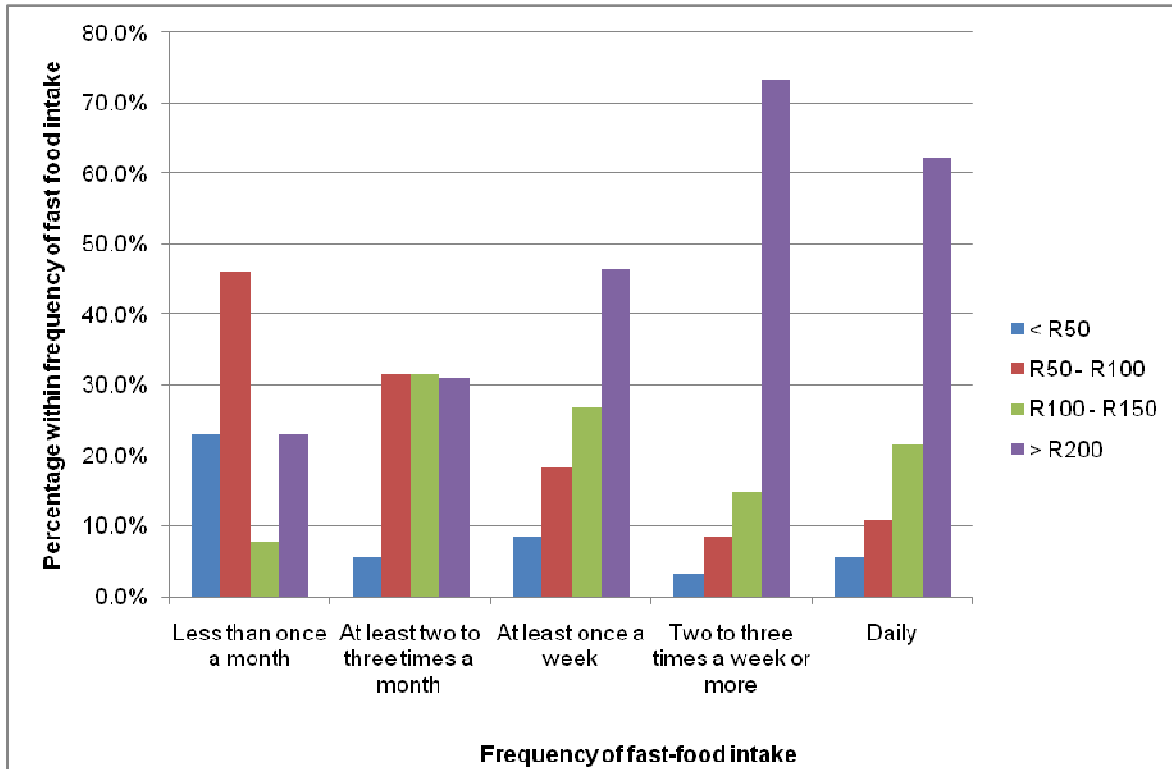


Figure 3.11: Money spent on fast-food per month and frequency of fast-food intake of participants (n = 341)

3.2.2 Choices at fast-food outlets

To determine specific choices at fast-food outlets, participants were asked questions relating to their choice of fast-food outlet, food, beverage and serving size.

3.2.2.1 Food choices at fast-food outlets

To determine specific food choices at fast-food outlets, participants were asked 'What are the three most popular items you would buy (at these outlets)?' Participants could choose three items from a list of 18 items (Figure 3.12).

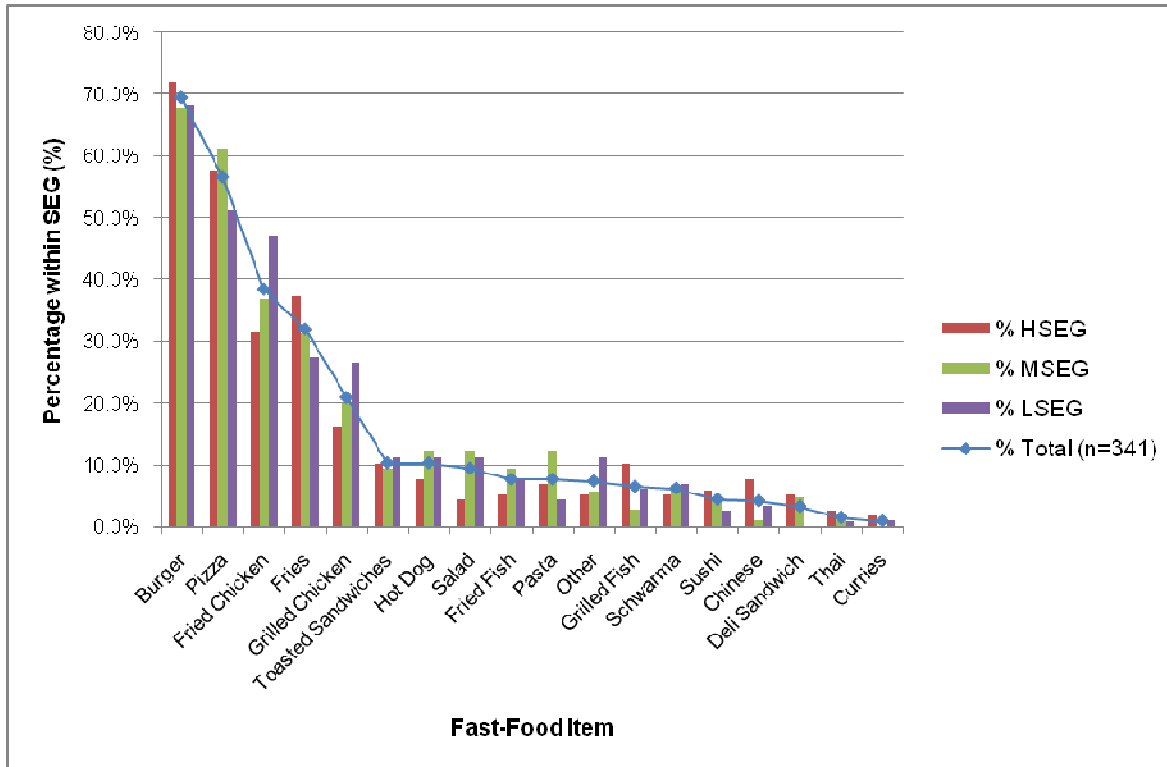


Figure 3.12: Fast-food items purchased by participants in the total sample (n = 341) and in each socio-economic group (SEG)

The three most popular fast-food choices of participants from the MSEG and LSEG were burgers (67.9% (n = 72) and 68.4% (n = 80)), pizza (61.3% (n = 65) and 51.3% (n = 60)) and fried chicken (36.8% (n = 39) and 47.0% (n = 55)). Burgers and pizza were also ranked first and second (72.0% n = 85) and 57.6% (n = 68)) by the HSEG, but fries were ranked third (37.3% (n = 44)) and fried chicken fourth (31.4% (n = 37)). Significantly more participants from the LSEG than from the HSEG and MSEG purchased fried chicken (47.0% (n = 55) compared to 31.4% (n = 37) and 36.8% (n = 39); $p = 0.044$). There was also a significant association between the different socio-economic groups and purchasing of 'deli' sandwiches and Chinese food ($p = 0.05$ and $p = 0.04$ respectively). Participants from the HSEG (5.1% (n = 6)) and MSEG (4.7% (n = 5)) purchased 'deli' sandwiches while no participants in the LSEG chose this option. Double the number of participants (n = 9)

from the HSEG, compared to the LSEG (n = 4), bought Chinese food, while only one participant from the MSEG indicated Chinese food as a popular food choice (Figure 3.12).

3.2.2.2 Choice of fast-food outlets

To determine the most popular fast-food outlets from which consumers purchase fast-foods, the participants were asked ‘Which three fast-food outlets do you most often buy take-outs from?’ (Figure 3.13).

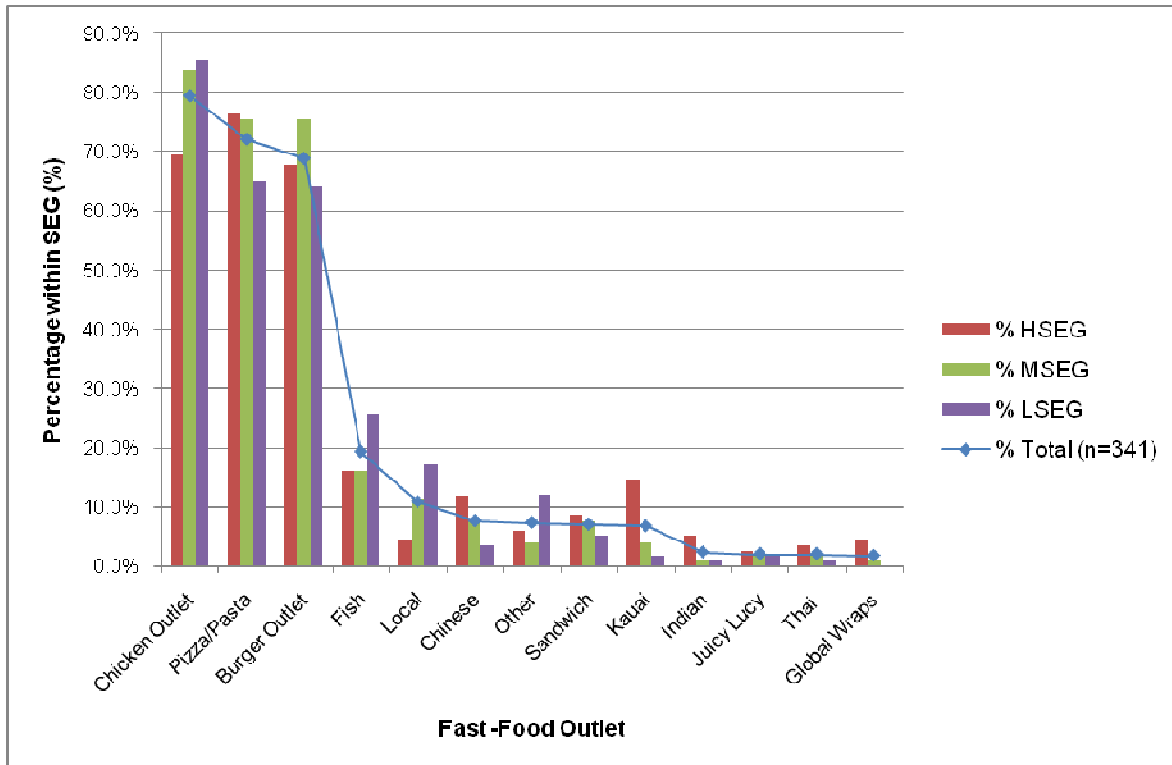


Figure 3.13: Fast-food outlets visited by participants in the total sample (n = 341) and in each socio-economic group (SEG)

In the MSEG and LSEG the three most popular fast-food outlets in decreasing order were Chicken outlets (84% (n = 89) and 85.5% (n = 100) respectively), Pizza / Pasta (75.5% (n

= 80) and 65.5% (n = 76) respectively), and Burger outlets (75.5% (n = 80) and 64.1% (n = 75) respectively). Participants from the HSEG purchased fast-food from Pizza/Pasta outlets most often (76.3% (n = 90)), followed by Chicken and Burger outlets in close second (69.5% (n = 82)) and third (67.8% (n = 80)) places. A significant difference was observed with regard to the three SEGs and choice of Chicken outlet (Pearson Chi-square, $p = 0.004$). Considerably more participants in the LSEG (85.5% (n = 100)) and MSEG (85.5% (n = 89)) purchased fast-food from Chicken outlets. Noticeably more participants from the LSEG than from the HSEG and MSEG purchased fast-food from a fish outlet (25.6% (n = 30) compared to 16.1% (n = 19) and 16.0% (n = 17)), but this observation was not significant (Pearson Chi-square, $p = 0.105$). Participants from the LSEG more often purchased fast-food from a local outlet (n = 20) than those from the HSEG (n = 5) and the MSEG (n = 12) ($p = 0.006$). Upon further questioning by the field workers, participants indicated that the local outlets included informal vendors selling fast-foods in the streets and also included so-called Spaza shops that sold fried meats, chicken, 'vetkoek', traditional mealie meal porridge and sausage. 'Other' fast-food outlets in the LSEG included pie shops (n = 3), a local rib and steak restaurant called Spur (n = 6) and a local supermarket (n = 1) ($p = 0.049$). Very few participants from the MSEG (n = 4) and HSEG (n = 7) purchased fast-food from 'Other' fast-food outlets; these outlets included Spur, a schwarma shop and supermarkets. Considerably more participants from the HSEG (n = 17) purchased fast-food from Kauai, a food franchise selling healthier fast-food. The reason for this finding may be due to the availability of this outlet in the shopping mall where the data were collected (Figure 3.13).

The Pearson Chi-square, Likelihood ratio and Continuity Correction all confirmed that choice of fast-food outlet visited is independent of gender. No noteworthy differences between males and females and their choice of fast-food outlet were revealed.

3.2.2.3 Beverage choices at fast-food outlets

To determine specific beverage choices at fast-food outlets, participants were asked ‘Please choose the drink you have MOST often when you buy (at these outlets)’. In the total sample, the three beverages most frequently consumed with a fast-food meal were soft drinks (56.0% (n = 191)), pure fruit juice (13.8% (n = 47)) and unflavoured water (7.6% (n = 26)). Flavoured water scored a very close fourth place with 7.0% (n = 24) of the sample consuming this beverage with a fast-food meal (Table 3.3).

Table 3.3: Beverages purchased with fast-food meals in the total sample (n = 341)

	Frequency (n)	Per cent (%)	Valid per cent (%)	Cumulative per cent (%)
Soft drink	191	56.0	56.0	70.7
Pure fruit juice	47	13.8	13.8	97.7
Unflavoured water	26	7.6	7.6	14.7
Flavoured water	24	7.0	7.0	7.0
Diet soft drink	16	4.7	4.7	75.4
Milk shake	13	3.8	3.8	79.8
Coffee / tea	9	2.6	2.6	83.9
Other	8	2.3	2.3	100.0
Smoothie	5	1.5	1.5	81.2
Iced coffee / tea	2	.6	.6	76.0
Total	341	100.0	100.0	

Upon further investigation, it became apparent that there was a relationship between the beverage most often bought at a fast-food outlet and socio-economic grouping, as tested by the Pearson Chi-square test and the Likelihood ratio. This association was highly

significant (Pearson Chi-square, $p = 0.001$; Likelihood ratio, $p = 0.000$). Cramer's V was 0.153, which means that the strength of the association was not that strong. Compared to other beverages, more than half of the participants in the LSEG, MSEG and HSEG purchased soft drinks and the percentage was considerably higher than other beverage choices. In the HSEG, the second most popular beverage was unflavoured water (11.9% ($n = 14$)), followed by pure fruit juice (11.0% ($n = 13$)). In the MSEG, flavoured water ranked second (10.4% ($n = 11$)), followed by milk shakes (6.6% ($n = 7$)). Twenty-four percent ($n = 28$) of participants from the LSEG would purchase fruit juice when visiting a fast-food outlet, while 6.8% ($n = 8$) would purchase flavoured water (Figure 3.14).

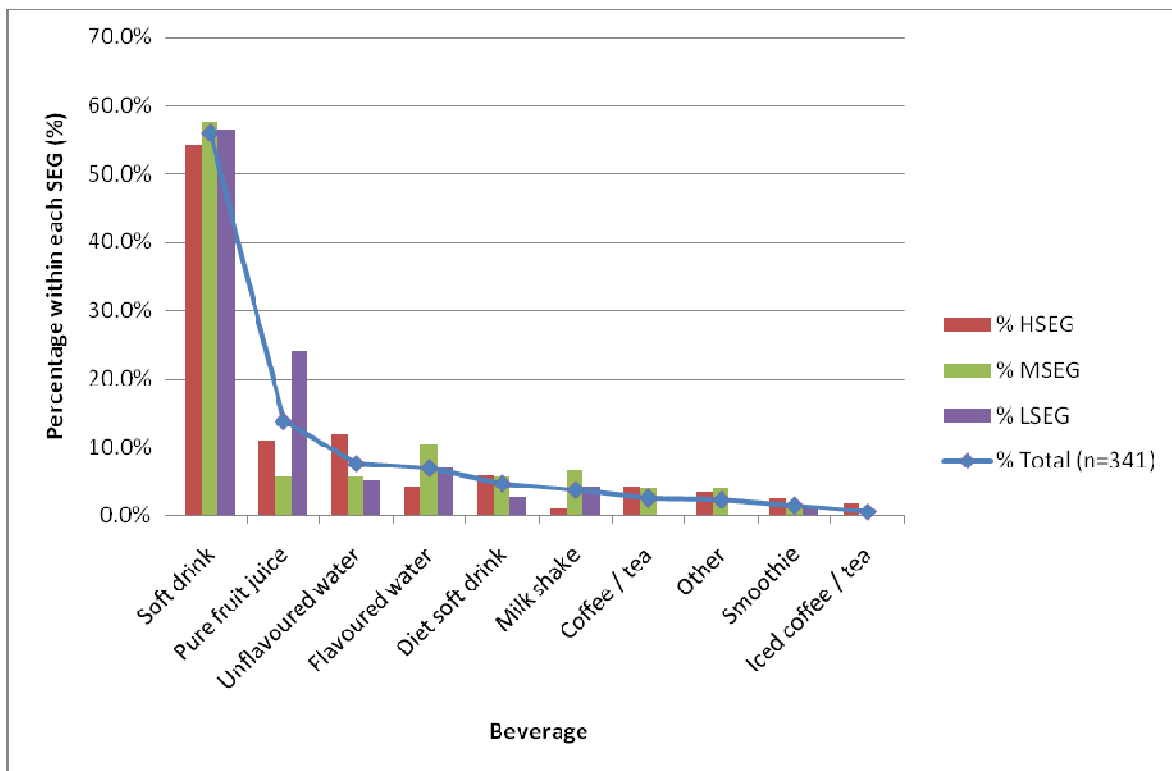


Figure 3.14: Most popular beverages purchased with fast-food meals within the total sample ($n = 341$) and in each socio-economic group (SEG)

The Pearson Chi-square test showed that the beverage choice at fast-food outlets was gender-dependent ($p = 0.01$). Both males and females most often purchased soft drinks

(64.6% (n = 104) and 48.3% (n = 87)); considerably more often compared to other beverages, while more males than females purchased soft drinks. The second beverage of choice, for males as well as females, was fruit juice (11.2% (n = 18) and 16.1% (n = 29)), followed by unflavoured water for males (9.3% (n = 15)) and flavoured water for females (10.0% (n = 18)). Three times more females (n = 12) than males (n = 4) purchased diet soft drinks with fast-food meals.

3.2.2.4 Serving size at fast-food outlets

When purchasing a fast-food meal, the predominant serving size chosen by the studied group as a whole, as well as in different SEGs, was the 'Regular' portion (> 50% (n = 200)), while 20 to 24% (n = 76) chose the 'Large' portion, 16.5% (n = 56) the 'Small' portion and only 2.4% (n = 8) the 'Super-size' portion. Of interest was the finding that participants in the MSEG chose a regular portion much more often (n = 68) than the other portion sizes and that double the amount of participants (n = 25) in the LSEG would go for a smaller portion than in the MSEG (n = 12). This relationship was not significant (p = 0.501). (Figure 3.15)

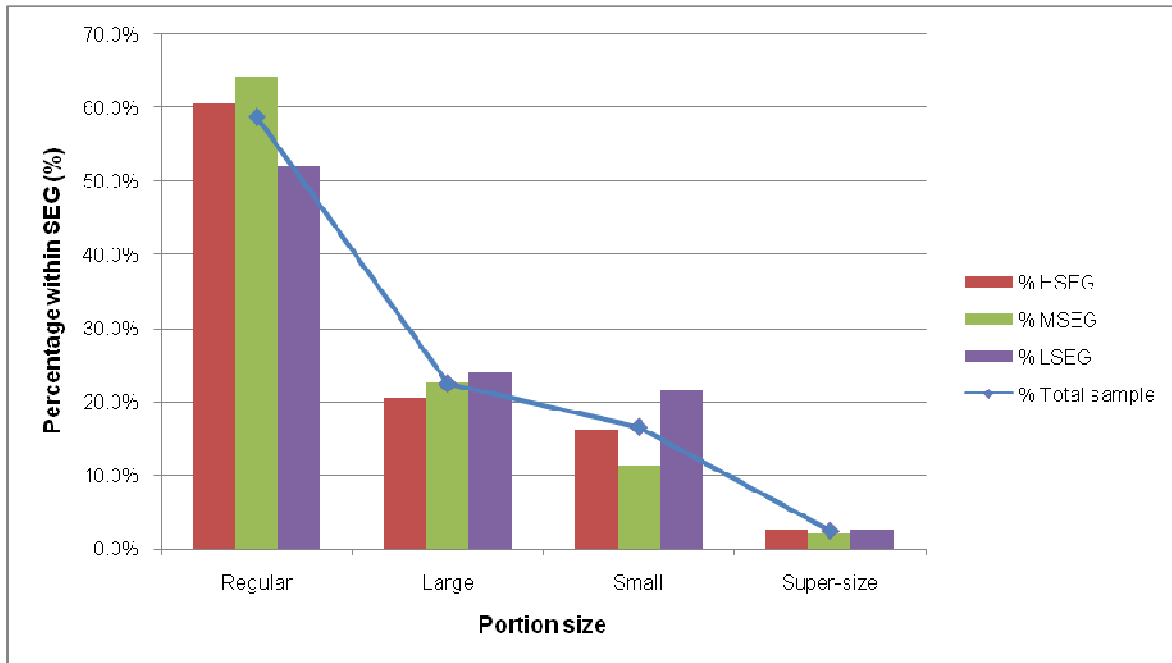


Figure 3.15: Serving size for the total sample (n = 341) and each socio-economic group (SEG)

A highly significant relationship was observed between gender and serving size ($p = 0.000$). Within gender, double the number of males compared to females would choose the large serving size (30.6% ($n = 49$), compared to 15.0% ($n = 27$)), while more females than males would choose the small serving size (21.7% ($n = 39$) compared to 10.6% ($n = 17$)). Only eight participants (2.4%) chose the super-size option, all of them males.

3.2.3 Factors influencing fast-food intake

Food choices are determined by various factors and people base their choices on different reasons. In the present study questions relating to food choices, including fast-food, and the influence of the media were asked.

3.2.3.1 Reasons for purchasing a specific food

Figure 3.16 provides a summarised description of the reasons for choosing a specific meal or type of food provided by the total sample and the different SEGs. Participants were informed that this question applied to all foods, not only fast-foods. The Likelihood ratio confirmed the result obtained from the Pearson Chi-square test ($p = 0.03$), i.e. that the variables are dependent, implying that the differences in the different SEGs and reasons for purchasing specific foods do not occur by chance.

Most participants ($n = 138$), from all SEGs, indicated that their main reason for choosing a specific food was taste. Almost half of the participants ($n = 53$) from the HSEG indicated that their main reason for choosing a food was taste, followed by how they felt on the specific day (15.4% ($n = 18$)) and convenience (11.1% ($n = 13$)). The other reasons were chosen by fewer than 10 participants from the HSEG. In the MSEG, taste and mood were the first and second most chosen reasons (37.7% ($n = 40$) and 17.0% ($n = 18$)), while price was the third most selected reason for choosing a food or a meal (16% ($n = 17$)). The highest number of participants from the LSEG chose taste, appearance and price (38.5% ($n = 45$), 14.5% ($n = 17$) and 12.0% ($n = 14$)), while one would have expected that price would play a more important role in this group. Fifty per cent ($n = 17$) of all the participants in the total sample who indicated that appearance was the main reason for choosing a food were from the LSEG. Considerably fewer participants from the LSEG chose a food based on their mood (9 participants from the LSEG compared to 18 each from the MSEG and HSEG). Also of interest was that more than 70% of all the participants who chose food based on how good it would be for their health fell in the LSEG ($n = 10$) and MSEG ($n = 9$). (Figure 3.16).

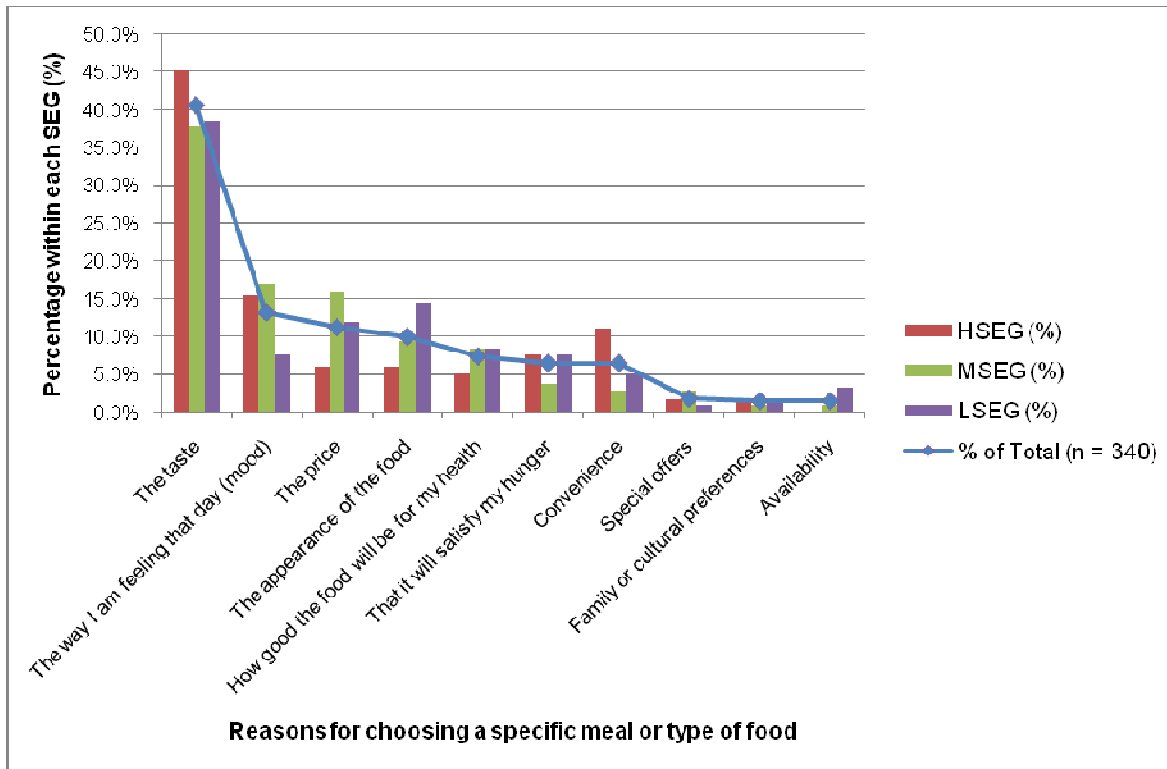


Figure 3.16: Reasons for choosing a specific meal or food within the total sample (n = 340) and in each socio-economic group (SEG)

The reasons for choosing a specific meal or type of food were independent of gender. What was of interest was that almost double the number of females (n = 29) compared to males (n = 16) would choose a food based on their mood, while males (n = 13) would more often choose a meal that was convenient or would satisfy their hunger, than would females (n = 9).

3.2.3.2 Reasons for choosing fast-foods

To explore the factors that could influence fast-food intake further, participants were asked to choose the three most relevant reasons for having a fast-food meal from a list of 10

options. Within the total sample, time limitations (58.9% (n = 201)), convenience (58.1% (n = 198)) and taste (52.5% (n = 179)) provided the three main reasons for purchasing fast-food (Figure 3.17).

Within the reasons '*Convenience*', '*Taste*', '*Cannot cook or do not like cooking*' and '*Availability of fast-food outlets and drive throughs*', a significant difference was observed between the HSEG, MSEG and LSEG ($p < 0.05$). Upon further investigation within the different SEGs, it became evident that time and convenience played a much more important role in the HSEG (64.4% (n = 76) and 61.0% (n = 72) respectively) and MSEG (60.4% (n = 64) and 66.0% (n = 70) respectively) than in the LSEG (52.1% (n = 61) and 47.9% (n = 56) respectively), where taste was rated the highest (57.3% (n = 67)). Of interest was the finding that most participants from the HSEG indicated that their main reason for choosing any food was taste (45.3% (n = 53)), while more participants in this group chose time limitations (64.4% (n = 76)) and convenience (61.0% (n = 72)) as their reasons for choosing a fast-food.

The main reason for participants from the LSEG choosing fast-food was taste, which concurs with participants from this group's main reason for choosing any food (57.3% (n = 67) versus 38.5% (n = 45)). In this group, appearance didn't play such an important role when choosing fast-food than it did when choosing any meal / type of food (6.0% (n = 7) versus 14.5% (n = 17)). A larger percentage of participants from the LSEG (35.9% (n = 42) and 19.7% (n = 23)), compared to the MSEG (20.8% (n = 22) and 8.5% (n = 9)) and HSEG (29.7% (n = 35) and 8.5% (n = 10)) indicated that cooking ability and availability of fast-food influenced their fast-food intake (Figure 3.17).

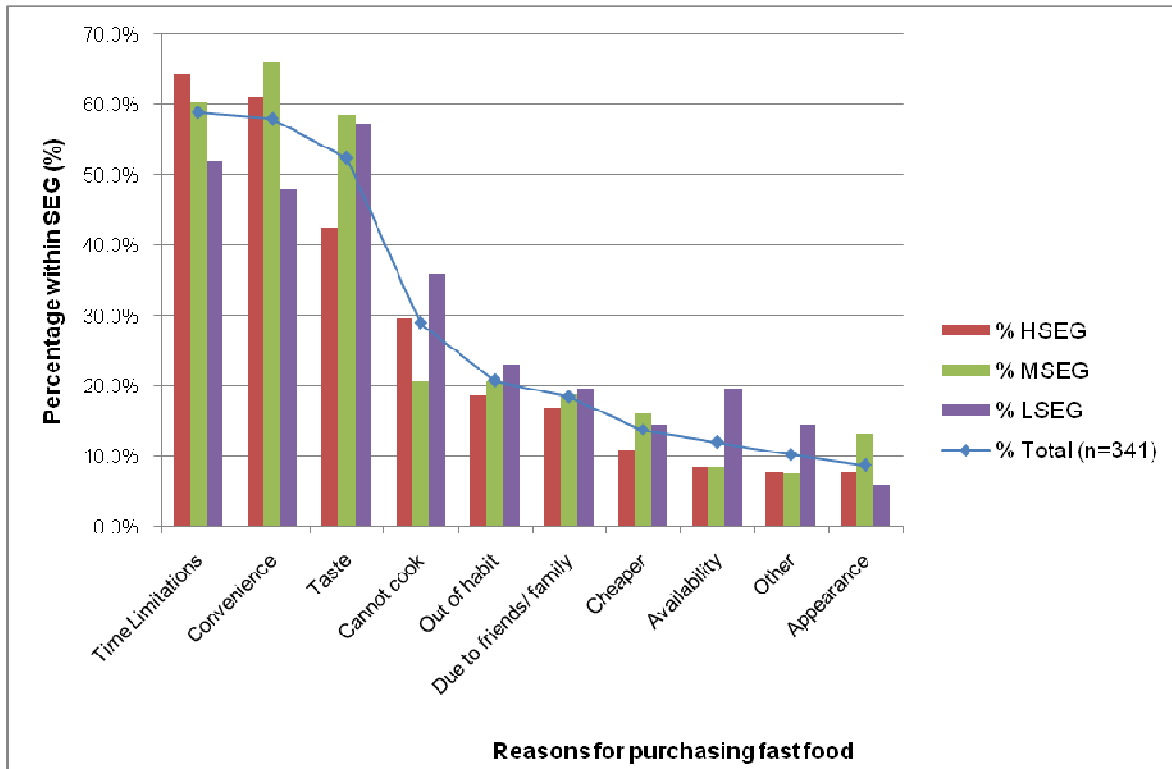


Figure 3.17: Reasons for purchasing fast-food within the total sample (n = 341) and in each socio-economic group (SEG)

Very few differences between males and females were observed in the reasons for fast-food intake. Of interest was the finding that, considering the total number of males and females indicating that family and friends influence their intake of fast-food, almost 30% more were females (n = 40) compared to males (n = 23). More males (n = 24) than females (n = 17) indicated that the availability of fast-food was their reason for having it. These findings were independent, as tested by the Continuity Correction Chi square test.

3.2.3.3 The influence of media messages

To explore the influence of media messages on fast-food intake, participants were asked whether advertisements on billboards, television, radio and/or flyers led to fast-food purchase. Participants could choose from an even-numbered scale to indicate how frequently media messages resulted in the purchase of fast-food. Within the total sample, 38.1% (n = 130) of participants indicated that media messages never resulted in fast-food purchasing, while 29.3% (n = 100) indicated that it did sometimes, 19.6% (n = 67) indicated that it always did and 12.9% (n = 44) that it seldom did.

Highly significant differences were observed within the three SEGs with regard to the frequency of media messages influencing fast-food purchases (Pearson Chi-square and Likelihood ratio, $p = 0.001$). Participants from the MSEG and LSEG were more frequently influenced by media messages than participants from the HSEG. Within the HSEG, 43.2% (n = 51) of participants indicated that media messages never resulted in the purchasing of fast-food, while only 11.9% (n = 14) indicated that they were always influenced by media messages. Almost 60% (n = 62) of participants within the MSEG and more than 50% (n = 62) of participants within the LSEG indicated that media messages sometimes or always resulted in fast-food purchasing. Of all the participants indicating that media messages seldom resulted in fast-food purchasing, 54.5% (n = 24) were from the HSEG, 29.5% (n = 13) from the MSEG and 15.9% (n = 7) from the LSEG.

The Likelihood ratio confirmed the result from the Pearson Chi-square test ($p = 0.25$), implying that the frequency of media messages resulting in fast-food purchases is independent of gender. No significant differences between males and females were observed with regard to the influence of media messages.

Participants who indicated that media messages resulted in fast-food purchasing (seldom, sometimes or always) were asked which media communication encouraged most fast-food purchasing (n = 211). The highest number of participants within the total group and in each SEG indicated that television announcements or advertisements most often resulted in fast-food purchasing (80.6% (n = 170), while magazine advertisements (5.7% (n = 12)) and flyers or hand-outs (1.9% (n = 4)) influenced very few participants. The type of media communication encouraging fast-food purchasing was independent of SEG (Pearson Chi square, p = 0.48; Likelihood ratio, p = 0.38) and gender (Pearson Chi square, p = 0.33; Likelihood ratio, p = 0.33).

3.2.4 Attitude towards health and healthier meal options

To establish if consumers were concerned about health, main health concerns and whether the implementation of healthier options on fast-food menu's would be accepted and chosen by consumers, various questions were asked to participants in the present study.

3.2.4.1 Health concern

To determine the attitude of consumers towards health, participants were asked how concerned they were about health. Participants could choose from an even-numbered scale to indicate how often they experienced concern. Within the total sample, the majority of participants indicated that they were *sometimes* or *always concerned* about health (38.1% (n = 130) and 49.6% (n = 169)), while very few indicated that they were *seldom* or *never concerned* (5.6% (n = 19) and 6.7% (n = 23) respectively). Concern about health differed significantly across SEGs (Pearson Chi-square p = 0.011). While the majority of

participants from the HSEG and LSEG were *always concerned* with health (55.1% (n = 65) and 53.8% (n = 63)), only 38.7% (n = 41) of the MSEG were *always concerned* with health, while 50.9% (n = 52) of participants in this group were *sometimes concerned* with health. Thirty-six percent (n = 42) of participants in the HSEG and 29.1% (n = 34) of participants in the LSEG were only *sometimes concerned* about health. Almost 60% (n = 11) of all participants that were *seldom concerned* about health were from the LSEG, while 26.3% (n = 5) and 15.8% (n = 3) were from the HSEG and MSEG respectively (Figure 3.18).

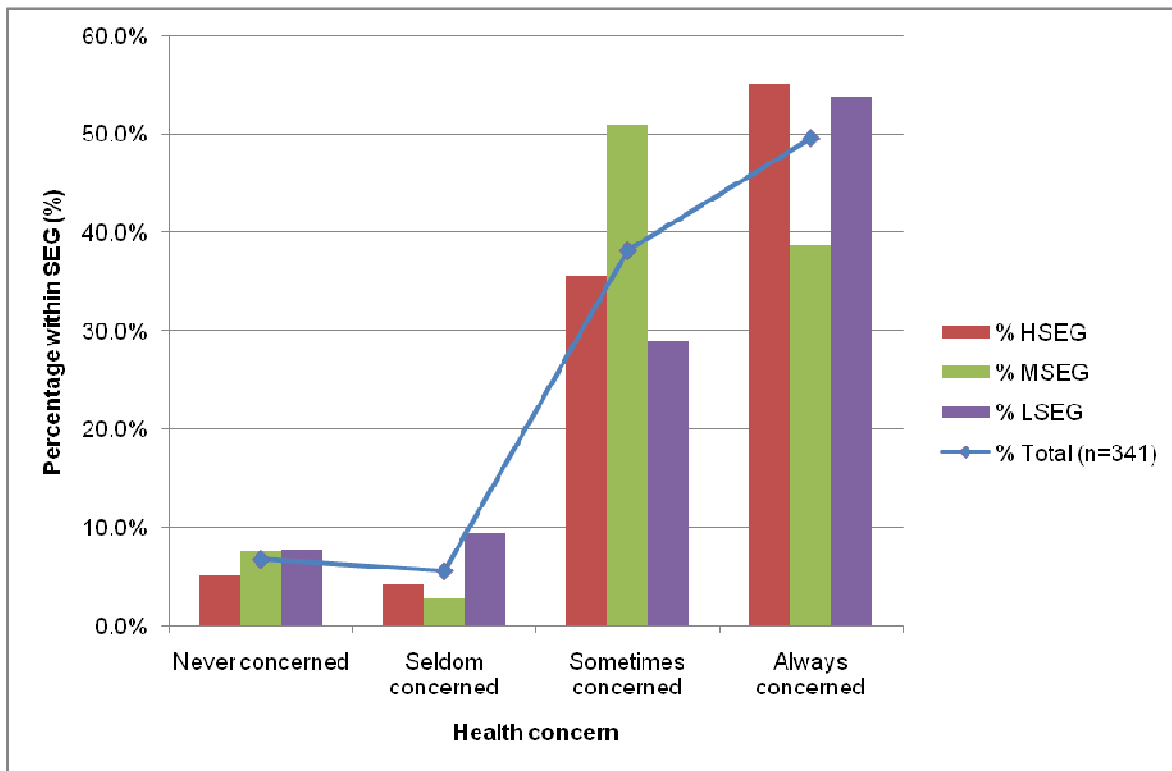


Figure 3.18: Health concern in the total sample (n = 341) and in each socio-economic group (SEG)

No gender differences were observed with regard to health concerns (Pearson Chi square, $p = 0.104$; Likelihood ratio, $p = 0.096$)

3.2.4.2 Health concern and level of education

A relationship was found between level of education and health concern, as confirmed by the Pearson Chi-square test ($p = 0.014$). Cramer's V test determining the strength of the association was 0.153, which indicates that the relationship between health concern and education was not very strong. A large percentage of participants who had tertiary education were *always concerned* with health (55.6% ($n = 99$)), compared to 43.4% ($n = 66$) who had secondary education and 36.4% ($n = 4$) who had primary schooling, at most. Within the secondary education group, more participants were *sometimes concerned* about health (44.7% ($n = 68$)) than in the other education groups (tertiary education, 33.1% ($n = 59$); at most primary schooling, 27.3% ($n = 3$)). A larger percentage of participants with primary schooling, at most, were *seldom concerned* about health (27.3% ($n = 3$)), compared to the percentage of participants with secondary and tertiary education (5.3% ($n = 8$) and 4.5% ($n = 8$) respectively) (Figure 3.19).. It should be noted that only 11 participants fell into the group 'At most primary education'.

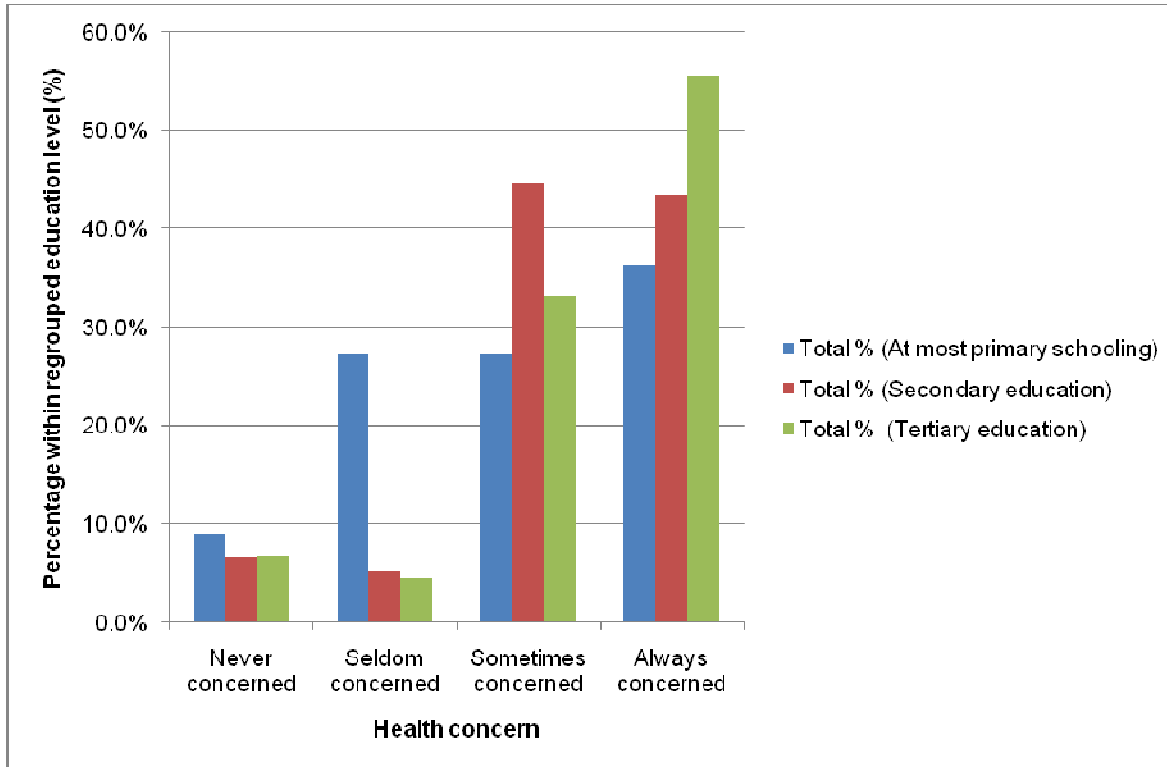


Figure 3.19: Health concerns and level of education within the total sample (n = 341)

3.2.4.3 Health concern and frequency of fast-food intake

To determine whether there was a relationship between being concerned about health and the frequency of fast-food intake, contingency tables of these two categorical variables were drawn up and appropriate Chi-square tests were computed. Frequency of fast-food intake was regrouped in order to adhere to the assumption of the Chi square test, that no expected frequency within the cross tabulation would be less than 5. Frequency of fast-food intake was regrouped into three groups: 2-3 times per month at most; about once a week; or at least 2-3 times per week or more. Interestingly, there was no statistically significant relationship between health concern and frequency of fast-food intake. Of the participants who were *always concerned* about health (n = 169), 42% (n = 71) had fast-

food at most two to three times per month, 37.3% (n = 63) had fast-food at least 2-3 times per week or more, and 20.7% (n = 35) had it at least once a week. Within the group that was *never concerned* about health (n = 23), 47.8% (n = 11) of the participants had fast-food at least two to three times per week or more, 30.4% (n = 7) at most two to three times per month and 21.7% (n = 5) about once a week.

The relationship between health consciousness and frequency of fast-food intake in males and females was also examined. Males and females in each category of health concern were independent with regard to their frequency of fast-food intake, except in the instance of males and females who indicated that they were *always concerned* about health. In this group, there was a significant difference between males and females with respect to the frequency of fast-food intake (Pearson chi-square, $p = 0.010$), although the Cramer's V test for the strength of association indicated that this relationship was not very strong (Cramer's V, 0.224). The majority of the males who indicated that they were *always concerned* about health had fast-food two to three times per week (34.7% (n = 26)), followed by 28.0% (n = 21) who consumed fast-food at least two to three times per month, daily (17.3% (n = 13)), at least once a week (16.0% (n = 12)) or less than once per month (4.0% (n = 3)). Women who were *always concerned* about health followed a different pattern. Almost 50% (n = 43) of women in this category consumed fast-food two to three times per month, followed by a quarter of the women (n = 23) who had fast-food once a week and 19.1% (n = 18) who had fast-food two to three times a week. Only a small percentage of the group consumed fast-food daily (6.4% (n = 6)). It appears that the more concerned women were about health, the less frequently they purchased fast-food (Table 3.4).

Table 3.4: Frequency of fast-food intake in males and females who were always concerned about health (n = 169)

Always concerned about health		Frequency of fast-food intake					Total
		Less than once per month	At least two to three times a month	At least once a week	Two or three times a week or more	Daily	
Males	Count	3	21	12	26	13	75
	% within gender	4.0%	28.0%	16.0%	34.7%	17.3%	100.0%
	% of total	1.8%	12.4%	7.1%	15.4%	7.7%	44.4%
Females	Count	4	43	23	18	6	94
	% within gender	4.3%	45.7%	24.5%	19.1%	6.4%	100.0%
	% of total	2.4%	25.4%	13.6%	10.7%	3.6%	55.6%

Note: For nominal-by-nominal data, the approximate significance from the Pearson chi-square test and likelihood ratio is equal to 0.010 and Cramer's V value is 0.280.

3.2.4.4 Main health concerns

Participants who indicated that they were concerned about health (seldom, sometimes or always; (n = 318)), were asked what they worry about most when they think about health. Most participants indicated that they worried most about overweight and obesity (44.3% (n = 141)), followed by heart disease and cancer in a close second place (19.2% (n = 61) and 18.6% (n = 59)). Substantially more participants in the HSEG were concerned about diabetes (19.2% (n = 19)), compared to the MSEG (8.2% (n = 8)) and LSEG (4.6% (n = 5)), while the LSEG (23.1% (n = 25)) and MSEG (19.4% (n = 19)) were more concerned about heart disease than the HSEG (15.2% (n = 17)), but these findings were not statistically significant (p = 0.23) (Figure 3.20).

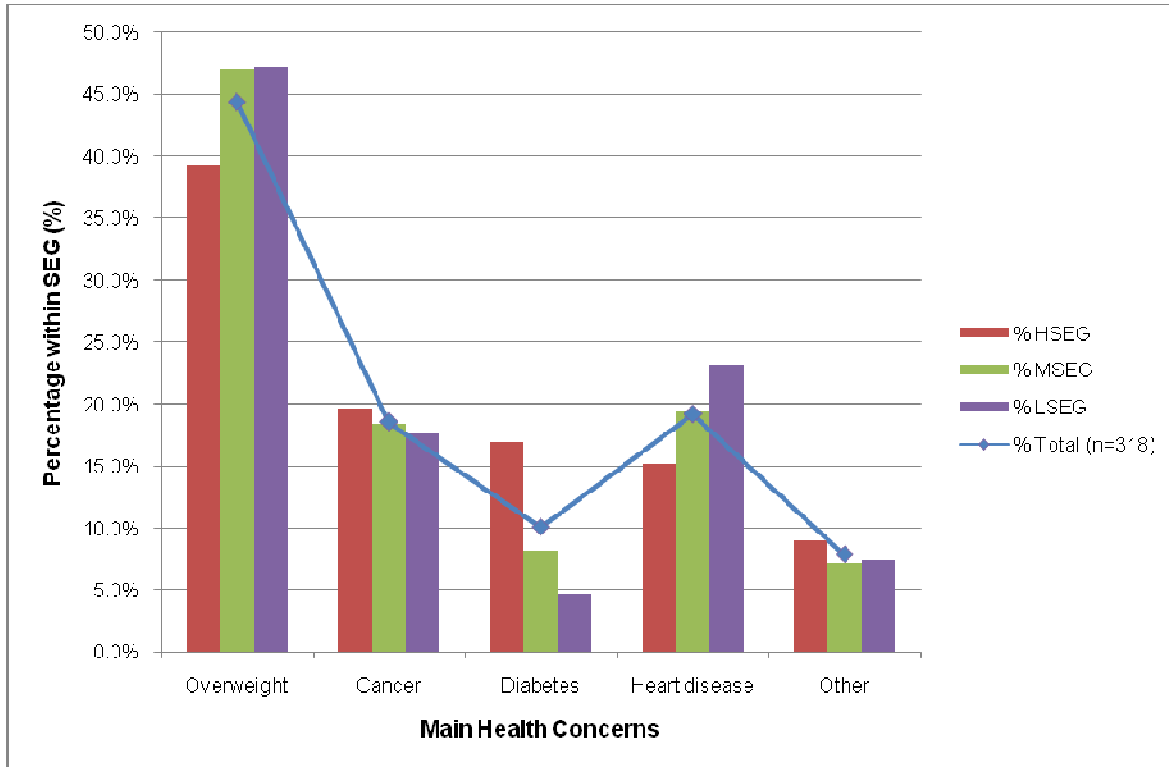


Figure 3.20: Main health concerns of participants who were concerned about their health (n = 318)

3.2.4.5 Attitude towards healthier meal options

To study the participants' attitude towards healthier meal options, they were asked whether they would choose a healthier option on a fast-food menu if it was available. Seventy-eight per cent (n = 265) of the total sample indicated that they would choose a healthier option. More males (56.6% (n = 43)) than females (43.4% (n = 33)) indicated that they would not choose a healthier meal if available. Choosing a healthier option or not was independent of socio-economic status and gender, with no statistically significant differences within SEGs and gender.

A highly significant relationship was found (Pearson Chi-square $p = 0.0001$) on investigation of the relationship between choosing a healthier meal option (Yes or No) and

the level of health concern. More than half of the participants ($n = 265$) who would choose a healthier option if available on a fast-food menu (Yes group), were *always concerned* about health (54.7% ($n = 145$)), while less than 10% ($n = 24$) were *seldom* or *never concerned* about health. Although a larger percentage of participants who would not choose a healthier option (No group) were *never concerned* about health and were more than participants in the Yes group (15.8% ($n = 12$) compared to 4.2% ($n = 11$)), the majority of participants in the No group were *sometimes concerned* about health (44.7% ($n = 34$)), followed by *always concerned* (31.6% ($n = 24$)) and *never concerned* (15.8% ($n = 12$)) (Figure 3.21).

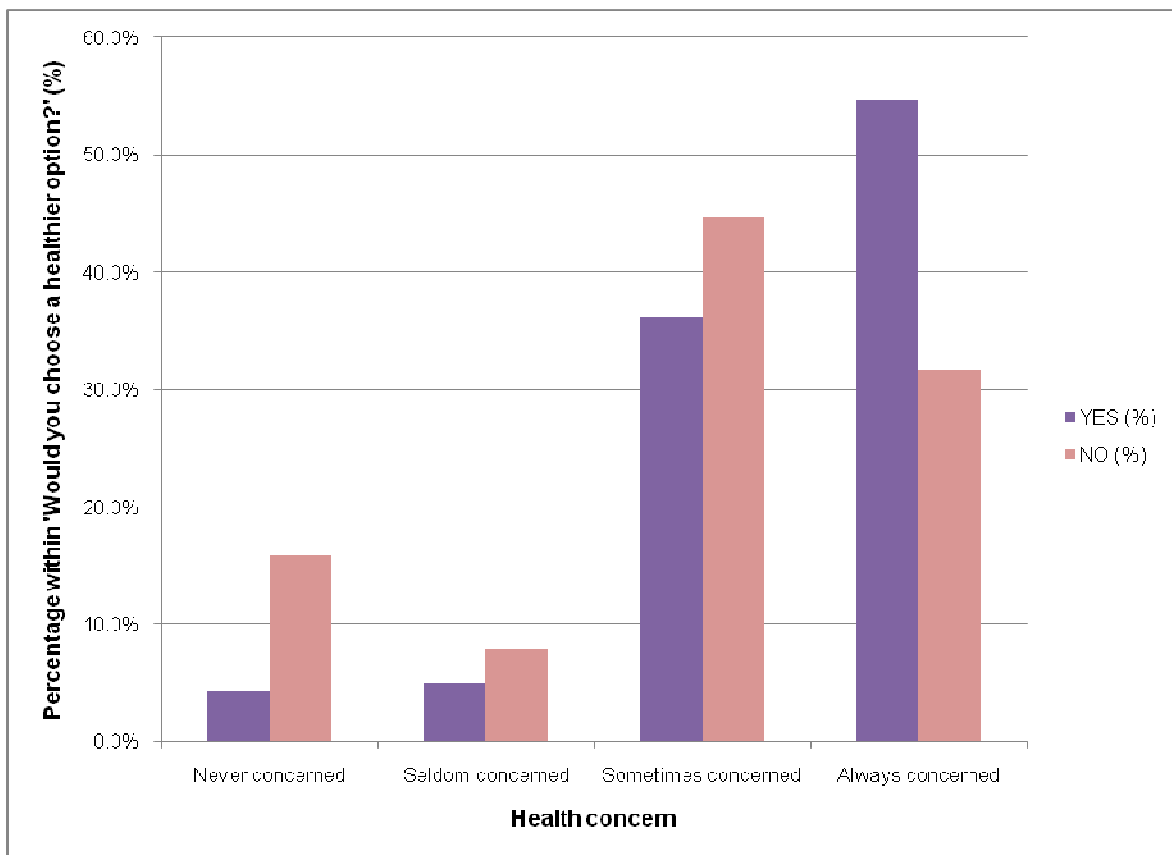


Figure 3.21: Relationship between choosing a healthier meal option (Yes or No) and the level of health concern of participants ($n = 341$)

Participants stating that they would not choose a healthier option ($n = 76$) were asked to indicate their main reasons for not choosing the healthier option. A list of seven options was provided, from which participants could choose one option. Twenty-five (33.8%) of these participants were from the HSEG, 27 (36.5%) from the MSEG and 22 (29.7%) from the LSEG. The majority of participants indicated that they did not like the taste or that they went to a specific fast-food restaurant to eat a specific fast-food meal (73.0% ($n = 54$)). Very few participants chose other options, with counts of less than 10 persons in each category (Figure 3.5).

In the HSEG and the LSEG, the largest number of participants indicated that they did not like the taste of healthier options (52.0% ($n = 13$) and 45.5% ($n = 10$) respectively), while the majority of participants from the MSEG (40.7% ($n = 11$)) indicated that they went to a specific fast-food restaurant to eat a specific fast-food meal and therefore would not choose a healthier meal option, compared to 28.0% ($n = 7$) from the HSEG and 22.7% ($n = 5$) from the LSEG (Table 3.5). These differences were not significant (Pearson Chi-square test, $p = 0.201$; Likelihood ratio, $p = 0.112$).

Table 3.5: Main reason(s) for not choosing a healthier option (n = 74) in different socio-economic groups (SEGs)

Main reason(s) for not choosing a healthier option		SEG			Total
		HSEG	MSEG	LSEG	
I do not like the taste	Count	13	8	10	31
	% within SEG	52.0%	29.6%	45.5%	41.9%
	% of total	17.6%	10.8%	13.5%	41.9%
It is more expensive	Count	5	2	3	10
	% within SEG	20.0%	7.4%	13.6%	13.5%
	% of total	6.8%	2.7%	4.1%	13.5%
I am self-conscious	Count	0	1	2	3
	% within SEG	.0%	3.7%	9.1%	4.1%
	% of total	.0%	1.4%	2.7%	4.1%
I go to a specific fast-food restaurant (e.g. Steers) to eat a specific food (e.g. burger)	Count	7	11	5	23
	% within SEG	28.0%	40.7%	22.7%	31.1%
	% of total	9.5%	14.9%	6.8%	31.1%
I am unsure of what the healthier options are	Count	0	2	0	2
	% within socio-economic group	.0%	7.4%	.0%	2.7%
	% of total	.0%	2.7%	.0%	2.7%
There are no healthier options	Count	0	0	1	1
	% within SEG	.0%	.0%	4.5%	1.4%
	% of total	.0%	.0%	1.4%	1.4%
Other	Count	0	3	1	4
	% within SEG	.0%	11.1%	4.5%	5.4%
	% of total	.0%	4.1%	1.4%	5.4%
Total	Count	25	27	22	74
	% within SEG	100.0%	100.0%	100.0%	100.0%
	% of total	33.8%	36.5%	29.7%	100.0%

Note: For nominal-by-nominal data, the approximate significance from the Pearson Chi-square test is $p = 0.201$ and from the Likelihood ratio, $p = 0.112$; Cramer's V value is 0.327.

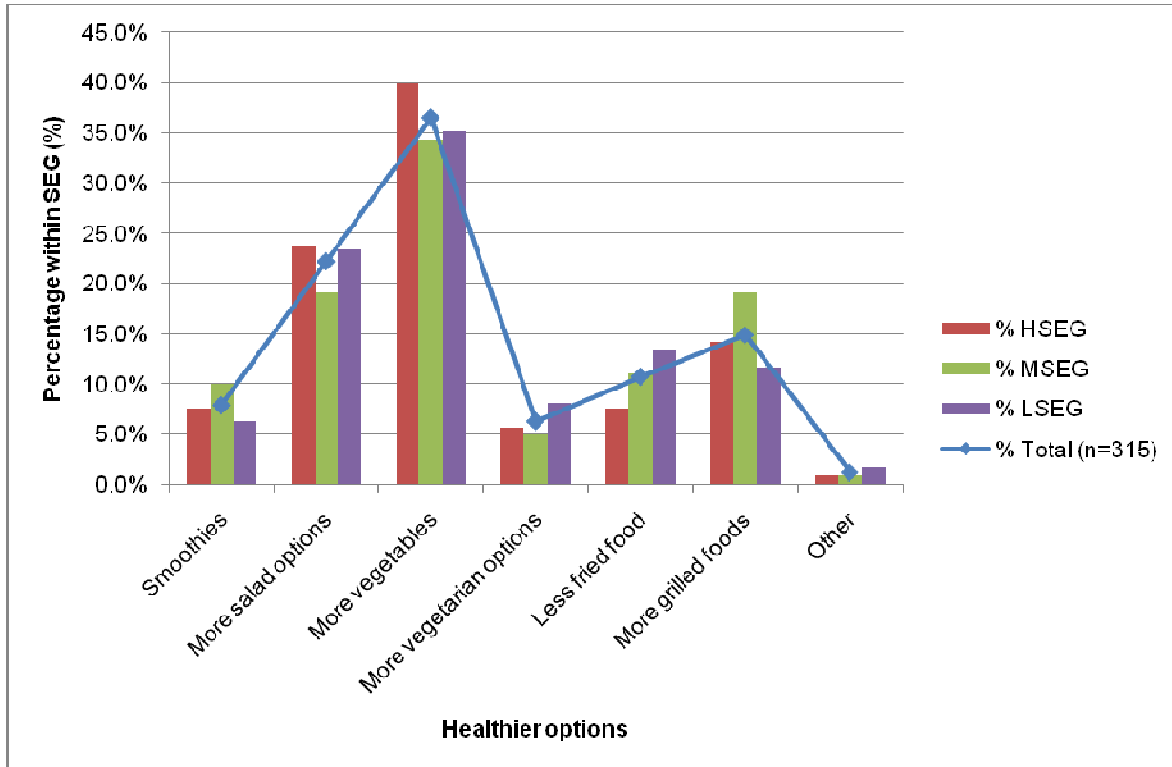
Reasons for not choosing a fast-food meal and gender were independent (Pearson Chi-square test, $p = 0.537$; Likelihood ratio, $p = 0.404$). Of interest was the finding that, 60.9% ($n = 14$) of the participants indicating that they went to a specific fast-food restaurant to eat a specific fast-food meal were males and 39.1% ($n = 9$) were females. Both participants

who indicated that they were unsure about what the healthier option was (6.3% (n = 2)), were females, while seven males, compared to three females, responded that healthier options were more expensive.

3.2.4.6 Type of healthier options consumers would like to see more often on the menus of fast-food outlets

Consumers were asked to indicate what type of healthier options they would like to see on the menus of fast-food restaurants. This question was asked to further explore the attitude of consumers towards healthier meal options. Consumers could choose one option from a list of seven. This question was answered by 315 of the total sample of 341 consumers, and included some consumers who indicated that they would not choose a healthier option if it was offered on the menu at a fast-food restaurant. The results from these participants were included to further investigate whether the absence of specific healthier options was the reason for not choosing a healthier option and what those healthier options were. One hundred and five (33.4%) responses came from the HSEG, 99 (31.4%) from the MSEG and 111 (35.2%) from the LSEG.

Figure 3.22 illustrates which healthier options consumers would like to see more often on fast-food menus. The three most popular options concerned more vegetable options (36.5% (n = 115)), followed by more salad options (22.2% (n = 70)) and more grilled foods (14.9% (n = 47)).



**Figure 3.22: Healthier meal options consumers would like to see on fast-food menus
(n = 315)**

Socio-economic status was independent of the healthier meal options consumers would like to see on menus of fast-food outlets, as tested by the Pearson Chi-square test ($p = 0.855$). Differences between males and females and the type of healthier option they would like to see on the menu's of fast-food outlets were observed, but these differences were not statistically significant (Pearson Chi-square, $p = 0.750$). A similar percentage of males and females would like to see more vegetables on the menus of fast-food outlets, while more females than males (25.5% ($n = 42$) compared to 18.7% ($n = 28$)) would like more salad options on the menu. Slightly more males than females would like more grilled options on the menu (16.7% ($n = 25$) compared to 13.3% ($n = 22$)).

The last question on the questionnaire was an open-ended question asking participants whether they believed that fast-food could be part of a healthy lifestyle. Forty nine per cent (n = 156) of the total sample indicated that it could ('Yes'), while 39.0% (n = 129) of the sample indicated that it could not ('No'). Some participants were unsure (0.8% (n = 3)), while others said that it could only sometimes be part of a healthier lifestyle (0.8% (n = 3)).

Participants who indicated 'Yes', supplied several reasons and conditions to their answer. Some mentioned that fast-food could be part of a healthy lifestyle if one consumes it in moderation (1.5% (n = 5)), while others (0.6% (n = 2)) said that it could be healthy if one chooses a healthy option or chooses the correct type. Five participants said that it depends on the choice you make and how much of it you eat. Of the participants who said 'No', four indicated that fast-food was too fatty, oily or fattening.

CHAPTER 4

DISCUSSION

4.1 FINDINGS OF THE STUDY

Objective 1

The purpose of the study was to determine the factors which impact on the intake of fast-foods by young adults (age 19 to 30 years) in Gauteng. The sample consisted primarily of young working adults with at least secondary education, from low, medium and high socio-economic groups. The prevalence of a high percentage of persons with tertiary education in this study can be attributed to the fact that the sample was obtained in a highly urbanised area and in a province that is regarded as a centre of learning in South Africa, with many universities and schools of higher learning.⁵⁷ Almost half of the participants in all SEGs earned less than R5 000 per month, which was most likely influenced by the relatively young age of participants, implying short duration of employment with relatively little time to have obtained significant income growth.

Objective 2

The majority of the participants consumed fast-food at least once per week or more often (59.3% (n = 202)). A study from the University of New Delhi in India presented similar findings for adolescents and young adults.³⁵ In the total sample of 120 participants, only 16% were 'low fast-food eaters', 63% were 'moderate' and 21% 'high fast-food eaters'.³⁵ Furthermore, a previous study in the USA demonstrated that living in suburban areas was associated with increased numbers of adults eating fast-food,¹¹ while another study showed that frequency of fast-food restaurant use did not differ significantly in respect of urban or rural residence.⁵⁸

SEG was significantly associated with fast-food consumption with a larger proportion of participants in the LSEG showing more frequent use than participants in the HSEG. Substantially more of all participants consuming fast-food daily belonged to the LSEG. These findings coincide with other findings in the young adult market. In a sub-study of a larger American study, Project EAT (Eating Among Teens), it was found that frequency of fast-food restaurant use was associated with certain demographic variables.¹⁵ Seventy-five per cent of teens participating in this study indicated eating at a fast-food restaurant in the previous week and a greater proportion of females from the lower socio-economic grouping reported visiting a fast-food restaurant three or more times during the previous week, compared to females from the higher socio-economic grouping.¹⁵

In the present study, participants from the MSEG displayed less frequent fast-food consumption than those from the HSEG and LSEG. This group also spent less money on fast-food per month than the HSEG and LSEG, but this finding was not significant. Males consumed fast-food more frequently than females ($p = 0.001$). Substantially more females than males had fast-food two to three times per month (44.4% *versus* 28.6%), while more males than females had fast-food two to three times per week (34.8% *versus* 21.2%). More than double the amount of males compared to females had fast-food daily. These results are consistent with findings from other studies.^{10,15} In a study undertaken among American students, a greater proportion of males (23.7% ($n = 560$)) than females (22.1 ($n = 519$)) reported visiting a fast-food restaurant more than or equal to three times in the previous week.¹⁵ The reasons for less frequent use of fast-food in this study were not mentioned, although females who perceived themselves to be in good or excellent health were less likely to visit a fast-food restaurant on a regular basis.¹⁵

FFFI did not differ significantly by level of education and level of income in the present study. This is consistent with findings in some studies.^{49,58} Other studies, however, found differences between income level and race.^{11,59,60} Higher household income, living in a suburban area and being of the African American race were associated with fast-food intake in a study by Bowman *et al.*¹¹ Other studies showed the opposite with regard to income, with subjects from lower income neighbourhoods and with lower monthly income consuming fast-food more often.^{59,60} In the present study, employment status was associated with FFFI ($p = 0.001$). As one would expect, employed participants consumed fast-food more often than students and participants who were unemployed. An interesting finding was that 71% of unemployed persons had fast-food at least once per week or more and that 21.4% of this group consumed fast-food daily, compared to 9.5% among employed participants and 11.3% among students.

Almost half of the total sample spent more than R200 per month on individual fast-food purchases. A significant relationship was found between money spent on fast-food per month and level of education and income ($p < 0.05$). Participants with a tertiary education spent more on fast-food than participants with a secondary education. Most participants with primary education, at most, spent R100 or less per month on fast-food. It should be noted that only 11 (3.2%) participants fell into this group. These findings are consistent with a previous American study that showed that households with higher income spent more on food away from home than those with a lower income.¹³

A highly significant relationship was shown to exist between money spent on fast-food per month and FFFI ($p < 0.005$). Expenditure was consistent with fast-food frequency, as one would expect, with the majority of participants consuming fast-food at least once a week,

two to three times a week or more, or daily, spending more than R200 on fast-food per month (46.5% (n = 33), 73.4% (n = 69) and 62.2% (n = 23)).

Objective 3

In the present study, the top five fast-foods consumed by participants in descending order were burgers, pizza, fried chicken, fries and grilled chicken. These findings coincide with findings globally, with the exception of fried chicken. Mahna *et al.* found that the most popular food items consumed by adolescents and young adults in New Delhi were pizza, burgers, ice-cream, French fries and sandwiches.³⁵ There were similar findings in an American study, with Mexican food also being a popular choice.¹³ A significant difference in the consumption of fried chicken occurred between the different SEGs in the present study, with significantly more participants from the LSEG consuming fried chicken ($p < 0.05$). Choice of fast-food outlet concurred with the most popular fast-food choices, with chicken, pizza/pasta and burger outlets scoring the highest. As with fried chicken, a significant difference among the SEGs was recorded with regard to popularity of chicken outlets, with more respondents from the LSEG and MSEG buying from these outlets. These findings are supported by market research done for KFC in 2002, which showed that the highest intake of foods from a fried chicken outlet was related to the monthly income categories $< R5\ 000$, or $R5\ 000$ to $R10\ 000$.²⁵ In a market research study exploring consumers' choice of brands in 2008, the top three fast-food chains as rated by South Africans were KFC, Chicken Licken and Nando's, all of them outlets for fried or grilled chicken.⁶¹ The other top brands, in descending order, were Steers, McDonalds, Wimpy, Spur steak ranches, Hungry Lion, Debonairs Pizza and Pie City.

Participants from the HSEG showed a slightly different pattern in fast-food and outlet choice than the MSEG and LSEG. The top three foods in this group were burgers, pizza

and fries, followed by fried chicken in fourth place. The largest percentage of participants in this group bought fast-food from pizza/pasta outlets, followed by chicken and burger outlets.

The choice of beverage consumed at fast-food outlets as revealed in the present study was consistent with previous international studies.^{13,16,41} Soft drinks, chosen by more than half of the study population (56% (n = 191)), were found to be the most popular beverage with pure fruit juice and unflavoured water taking the second and third places (13.8% (n = 47) and 7.6% (n = 26) respectively). Outcomes from a market research study exploring South African's top fast-food brands provide insight into these findings. In the category drinks (soft drinks, cold drinks and fruit juices) the top six brands chosen by South African consumers were soft drink brands (Coca Cola, Fanta and Sprite taking the three top positions), with Liqui-Fruit, a 100% fruit juice brand, achieving 7th place. Of interest was that Coca Cola was South African's overall favourite brand.⁶¹ These findings are of concern because of the association of soft drink consumption with increased energy and lower calcium intake.^{12,16,17} Furthermore, these beverages have a high glycaemic index, energy density and sugar content,^{40,49} all factors that contribute to the development of insulin resistance and obesity, which are rising health concerns in the South African community.

The predominant serving size chosen by participants in the total sample and in all SEGs was the regular portion size, with less than a quarter of participants ordering a large serving and only 2.4% ordering a super-sized serving. Previous studies have shown that the average serving size of fast-foods has increased over the years, with the largest portions consumed at fast-food restaurants.^{17,18,19} Therefore, even though it may seem as if participants from the present study consume acceptable portions, the 'regular portion'

may also be much bigger than what is acceptable.¹⁹ Most fast-foods have extremely high energy density, which challenges human appetite control systems and is likely to result in consumption of excess energy and hence promote weight gain.⁵⁰ Highly significant gender differences were seen in relation to serving size. Within gender, double the number of males compared to females chose the large serving size (30.6% compared to 15.0%), while more females than males would choose the small serving size (21.7% compared to 10.6%). These findings were not surprising, considering the difference in the total energy needs of genders.³⁸

Objective 4

Various factors affect food choice, including economic, psychological, environmental and cultural factors. In the present study, the main reasons for choosing any food concerned taste (40.6%), mood (13.2%), price (11.2%) and appearance (10.0%). Health, hunger and convenience were indicated as reasons by less than a quarter of the study sample. In a study on fast-food restaurant patrons, price and taste were both rated equally important (93% (n = 143)).³⁹ These findings differed from a study conducted with a nationally representative sample of adults in the European Union, which showed that the five most important factors influencing consumers' food choice was quality and freshness (74%), price (43%), taste (38%), 'trying to eat healthy' (32%) and family preference (29%).³⁰ In the present study, participants' responses to this question may have been influenced by the position of the question in the questionnaire, following other questions solely relating to fast-food consumption. Significant differences between the different SEGs ($p < 0.05$) and reasons for choosing a specific food or meal were identified. Almost half of the participants in the HSEG indicated that their main reason for choosing a food was taste, followed by how they felt (mood) (15.4%) and convenience (11.1%). In the MSEG and LSEG price

played a more important role and was identified as the third most important reason for choosing a food. Price has an obvious influence on food choice; another study has found that the cost of food is a much more important element in selection among people with a low income, compared to those who are better off.⁶² Of interest in the present study was that selecting healthier food was more important to participants from the MSEG and LSEG than those from the HSEG, although the majority of the participants from the HSEG indicated that they were *always concerned* about health.

Health concerns generally are associated with the more educated groups in a society.³⁰ In the present study, a relationship was found between health concern and level of education ($p < 0.05$), with a larger percentage of participants with tertiary education indicating that they were *always concerned* about health. Considering that a larger percentage of participants from the HSEG had tertiary education, compared to the LSEG and MSEG, one would expect the healthiness of a food to play a more important role than what was reported. Another finding that differed from previous studies was that no association was shown to exist between gender and reasons for choosing a specific food. Previous studies found that females were more likely to choose a food based on health and taste than other groups (males, income and racial groups).^{30,63}

The main reasons for choosing fast-food differed from the reasons for choosing any food or meal, with time limitations scoring highest (58.9%), followed by convenience (58.2%) and taste (52.5%). It would appear that taste was a less important reason for consuming fast-food. A study of fast-food patrons by O'Dougherty *et al.* rendered similar results, but with taste and convenience scoring highest.³⁹ In this study, significant differences within the different SEGs were revealed with regard to 'convenience', 'taste', 'cannot cook' and 'availability of fast-food restaurants' ($p < 0.05$). Time and convenience played a much

more important role in the HSEG and MSEG than in the LSEG, where taste was rated highest. Most participants from the HSEG indicated that their main reason for choosing any food was taste, while more participants in this group chose time limitations and convenience as their reasons for choosing fast-food. The reason for this finding might be that participants in this group do not view fast-food as necessarily being tasty, but purely convenient when there is little time at hand. Perceived time constraints and convenience strongly influence adolescent food choices.⁶⁴ In adolescents from low income families in California, convenience was a major driving factor determining food choices. Adolescents also indicated that they would rather eat at fast-food restaurants because the food is served quickly.⁶⁴ In the present study the highest percentage of participants of the LSEG chose taste, which concurs with this groups' reason for choosing any food. Formerly the converse has been found, with sensory appeal rated as less important by the low-income group compared to either of the medium- or high-income groups in the UK.⁶²

Environmental variables, including media messages, can influence fast-food intake. A large proportion of participants in the present study indicated that media messages never influenced fast-food purchasing (38%), followed by participants indicating that it only sometimes influenced fast-food use (29.3%). Upon further investigation it became evident that a highly significant difference existed between SEGs and the influence of media messages, with more than 50% of participants in the LSEG and MSEG indicating that media messages at least sometimes resulted in fast-food purchases ($p < 0.005$). Findings from a consumer study showed that one of South Africa's favourite advertisements (television, billboard, radio or print) was a fast-food chain advertisement from KFC.⁶¹ Bearing in mind that fried chicken was the most popular fast-food choice of participants in the LSEG in the present study, this warrants further investigation into this group's favourite media messages and fast-food consumption.

Television viewing was shown to be the media communication that most often resulted in fast-food purchases (81%). Previous studies, more specifically of children and adolescents, have found that television and video viewing influence fast-food intake and that children's and parents' television viewing practices are similar^{27,28} and therefore of interest in the present study. In a study by French *et al.*, weekday television viewing was significantly positively associated with fast-food intake.¹⁵ Males watching more than 5 and females watching more than 4.8 hours of television per day ate at a fast-food restaurant more than three times during the previous week.¹⁵

Objective 5

In the present study, the majority of participants were concerned about health, with almost half of the total sample identified as *always concerned* (49%). Participants from the HSEG and LSEG were more concerned about health than participants from the MSEG, with the highest percentage of participants reporting *always being concerned* about health and the smallest percentage *seldom or never being concerned* about health belonging to the HSEG ($p < 0.05$). As previously mentioned, these findings contradict findings concerning a small percentage of participants in this group who have indicated that their choice of food is based on how healthy a food is. No gender differences were found in relation to health concern.

No statistically significant relationship was found between health concern and frequency of fast-food intake, and a large percentage of participants who indicated that they were *always concerned* about health reported consuming fast-food two to three times per week or more. Almost half of the total sample indicated that they felt that fast-food could be part of a healthy lifestyle if consumed in moderation and if a healthier choice was made. This

might explain the high frequency of fast-food consumption among participants that were always concerned about health.

Regarding gender, a significant relationship was found between males and females who were *always concerned* about health and FFFI ($p < 0.05$). Females that were *always concerned* about health consumed fast-food less frequently (two to three times per month) than males in this group (two to three times per week or more). A previous American study reported a significant relationship between FFFI and attitude towards health in both adolescent females and males.¹⁵ Among adolescents who reported three or more fast-food restaurant visits per week, irrespective of gender, fewer recorded caring about their health than was the case for those who ate at fast-food restaurants less frequently ($p < 0.001$).¹⁵ The same study reported that the focus on perceived benefits of healthy eating was significantly lower amongst females, in the case of those visiting fast-food restaurants three or more times per week, compared with those visiting fast-food restaurants two or fewer times per week.¹⁵

The majority of participants indicated that, when thinking about health, their greatest concern was overweight and obesity (44.3%). Considering the high frequency of fast-food intake in this group, this is interesting and a possible indication that participants do not realise that there is a relationship between fast-food intake, increased energy intake and obesity.^{17,47} The same may apply to participants' knowledge of other health consequences related to high FFFI, considering the large percentage of participants who express concerned about health. A previous American study showed that FFFI did not distinguish between females or males in terms of weight perceptions, concern about weight gain, self-weighing behaviour or current dieting.¹⁵

Considering the large percentage of participants who are concerned about health, participants' positive attitude toward healthier options was no surprise. Seventy-eight percent of the total sample indicated that they would choose a healthier option if it were available. A highly significant relationship was found between choosing a healthier option and level of health concern ($p < 0.005$). More than half of the participants who would choose a healthier option if available on a fast-food menu were *always concerned* about health. What was noteworthy, was that the largest percentage of participants that would not choose a healthier option were *'sometimes' concerned* about health. The three most popular healthier items that participants indicated they would like to see on fast-food menus were vegetables (36.5%), salads (22.2%) and grilled foods (14.9%). Although there was no significant relationship with gender, more males than females indicated that they would not choose a healthier option. Social stereotyping can dictate food choice and studies have found that 'lower fat' diets are associated with 'females', while 'higher fat' diets are associated with 'males'.²³ Males and subjects with lower levels of education also appeared more likely to resist dietary changes, as found in previous studies.⁶⁵ The majority of participants who would not choose a healthier option indicated that they did not like the taste of healthier options and that they went to specific fast-food outlets (for example an Italian fast-food restaurant) to eat a specific fast-food (for example a pizza). The latter has also been reported by American fast-food consumers.⁵⁵ It must be acknowledged that, in the American context, a number of attempts have been made to sell healthier options following increased customer demand. Thus, hamburgers and chicken dishes with less fat and fewer calories have been marketed in the past, but these options were not necessarily profitable or accepted.^{6,55}

4.2 LIMITATIONS OF THE STUDY

Limitations of the study include the following:

- The number of participant refusals and participants who indicated that they did not consume fast-food at all was not documented. Of the 131 participants that were questioned within the MSEG, questionnaires from 25 participants' were spoilt due to the misinterpretation of questions 20 to 22 by one of the field workers. This specific fieldworker did not complete the full training course and was called upon at the last minute to collect data due to the appointed fieldworker falling ill on the day of data collection.
- Participants' responses to the question on their reasons for purchasing any food or meal may have been biased by the position of the question in the questionnaire, following other questions relating solely to fast-food consumption.
- From the results of the study, it seems as if the MSEG presented with more characteristics of a lower socio-economic group, as found in previous studies, than the LSEG in this study. Grocery stores where data were collected were chosen on the basis of the LSM criteria for the area. The LSM criteria form a marketing research tool used in market research to subdivide the South African market. It cuts across race and other outmoded techniques of categorising people, and, instead, groups people according to their living standards, using criteria such as degree of urbanisation and ownership of cars and major appliances. These criteria do not include education or physical level of income, which is often used to classify socio-economic groupings in international studies. Therefore characteristics of consumers in the different socio-economic groups in the present study could possibly be different from international studies.

- The data were collected on three days over the weekend, with data from the MSEG being collected on a Friday, which, being a working day, possibly attracted a different group of consumers than on a Saturday or Sunday.
- Participants commented on the questionnaire being lengthy and fieldworkers noticed that a large percentage of participants were in a hurry to complete the questionnaire, which could have influenced their responses to the questions and could therefore have biased the results.
- Fries or potato chips were not often chosen by individuals in the LSEG and MSEG, which may be due to participants in this group not viewing fries as a separate entity when buying fast-foods. Fast-food items like burgers or fried chicken are often served as part of a value meal or a so-called 'combo' meal and therefore participants might not have chosen it as an option for a fast-food meal they often consume.
- Individuals could not always distinguish between fried and grilled chicken, or fish, and some individuals saw this as one and the same thing.
- One other limitation included the paucity of data concerning similar studies in the South African setting, which may have helped with developing a more culture-specific and authentic questionnaire.
- Because participants' weight was not evaluated, the relationship between obesity and fast-food intake could not be determined from this study.

CHAPTER 5

CONCLUSION AND RECOMMENDATIONS

5.1 CONCLUSIONS AND RECOMMENDATIONS

Very little is known about fast-food use among South Africans, with the exception of a few studies undertaken by fast-food companies. Unfortunately, the information from these consumer-based studies is often unavailable to the public. The present study is the first South African study to report on the characteristics and factors influencing the fast-food intake of consumers in Gauteng. Findings point to the need for further research in this area to assess the nutritional status of fast-food users, improve the nutritional quality of food choices at FFOs and to educate fast-food users about the nutritional value of fast-foods. Research on a younger study population may have value, considering the nutritional status of children in South Africa and the aggressive marketing strategies of the fast-food industry towards children.

The study findings show a clear discrepancy between the type of fast-foods regularly consumed and health consciousness, indicating a gap between knowledge and practices. From this study it is evident that consumers would choose healthier options and are predominantly concerned about health, but that despite this they still choose less healthy options (for example fried versus grilled chicken options). This lack of knowledge of existing healthier options available at certain fast-food outlets poses an opportunity for health professionals and the fast-food industry to educate the public on making healthier choices from existing fast-food menus. Consumers often hold the perception that only certain foods are healthier options (for example salad even though it may be a starchy salad with a high fat content) and through proper education health professionals can teach consumers that other, already available options at fast-food outlets can also be chosen.

The fast-food industry can also play a role in educating the consumer by ensuring appropriate nutritional labelling of fast-food items, as well as by teaching consumers to interpret these values correctly.

Media messages, especially audio visual material, can be a powerful tool in educating South Africans to make healthier fast-food choices. Results from a study done on the knowledge and psychosocial effects of a film illustrating the detrimental effects of a diet consisting entirely of fast-food represent a potentially powerful tool for nutrition education.⁵³ Nutrition practitioners and other role players should consider similar visual material within the South African context and screening on popular television networks as a consciousness-raising and emotional arousal tool in educating fast-food users on health, nutrition and healthier food choices.

In the present study it was evident that taste plays a very important role when choosing a food, especially in the LSEG. In the HSEG and MSEG convenience and time constraints were an important driving force in purchasing fast-food. Therefore, trying to discourage fast-food use to improve nutrition would not work as a health promoting strategy. In the light of the high percentage of participants indicating that they would choose a healthier option if available, fast-food establishments should rather be encouraged to improve the quality and healthfulness of items on the menu. Because taste plays an important role, it may be of value to incorporate dietitians and food technologists to develop recipes that are not only healthy, but also tasty and quick to prepare.

In light of the growing obesity epidemic in South Africa and the findings of the present study that point out similar trends in fast-food consumption than what was internationally found, further research on fast-food consumption in other areas in South Africa and other age groups (especially children and adolescents) is strongly recommended.

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Appendix A:

Map of the City Of Johannesburg Metropolitan Municipal Area



APPENDIX B**LIST OF SHOPPING MALLS ACCORDING TO SOCIO-ECONOMIC GROUPING**

SHOPPING MALL	SOCIO-ECONOMIC GROUPING
South Gate	Lower socio-economic grouping
Westgate: Princess Crossing	Medium socio-economic grouping
Cresta Centre	Higher socio-economic grouping

Appendix C:
The questionnaire

INTERVIEW ADMINISTERED QUESTIONNAIRE ON FAST-FOOD INTAKE

DATE OF COMPLETION OF QUESTIONNAIRE:

				2	0	0	8
D	D	M	M	Y	Y	Y	Y

SUBJECT NUMBER:

Dear sir/ madam. Would you mind answering a few questions for research purposes?

Please note that this research is purely academic, the questionnaire is anonymous and therefore your privacy is completely respected. By answering this questionnaire you hereby give consent voluntarily to use the information obtained from it. You also state that you were not placed under any pressure to participate in the study. We will also provide you with an information brochure on the research study that you can read at your own leisure with more detailed information on the study.

1. Gender:

1. Male		M
2. Female		F

2. What is your date of birth

{If the participant were born between 1977 - 1989, continue with the rest of the questionnaire. If the participant does not fall in this range, thank the participant for their time and continue to the next possible participant}

3. Are you a South African Citizen?

1. Yes		Y
2. No		N

4. Do you live in Johannesburg?

1. Yes		Y
2. No		N

5. How often do you have take-away meals? (Choose the most relevant option)

1. Less than once per month		
2. At least two to three times a month		
3. At least once a week		
4. Two to three times per week or more		
5. Daily		

{If the participant answered yes to questions 3 and 4 and answered question 5 above (therefore, do consume fast-food), continue with the rest of the questionnaire. If the participant answered no to one or more, thank the participant for their time and continue to the next possible participant}

6. How much do you earn per month?

1. <R 5 000		1
2. R 5 000 – R10 000		2
3. R10 001 – R15 000		3
4. R15 001 – R20 000		4
5. R20 001 – R30 000		5
6 > R 30 000		6
7. Unemployed		7
8. Student		8

7. What is your highest level of education? (Or what is the level of studying / schooling you completed)

1. No schooling		1
2. Primary school		2
3. High school		3
4. Tertiary education		4

Instructions:

- a. Please listen to each statement carefully and answer spontaneously.
- b. There are no right or wrong answers

Definitions:

Fast-food/ Take-out meals: Food that are prepared, bought and eaten away from home. These foods are prepared and served for immediate use, on the premises or off the premises. These foods normally require short amounts of time between the period of ordering and serving of the food.

Healthy: The state of being well in body and mind. Having, showing or promoting good health.

Healthy meal: A meal that will promote good health.

SECTION A: FAST-FOOD INTAKE

8. Do you most often get take- aways for breakfast, lunch, supper or as a snack OR in-between meals?

Choose only one option

1. Breakfast		B
2. Lunch		L
3. Supper		S
4. Snack		SN

9. Why do you have fast-foods or take-away meals? **Choose the three most relevant reasons.**

1. Time limitations		1
2. I do NOT like cooking or cannot cook		2
3. I like the taste (of take-outs)		3
4. I like the appearance (of take-outs)		4
5. Out of habit		5
6. Due to the availability of fast-food outlets and “drive trough’s”.		6
7. Because my friends or family have them.		7
8. It is convenient		8
9. It is cheaper than cooking food		9
10. Other reason (Please state): _____ _____		10

10. Which **3 fast-food outlets** do you most often buy your take-outs (take-aways) from?

1. Burgers (eg Mc Donalds, Steers, Wimpy)		
2. Chicken (eg Chicken Licken, KFC [Kentucky Fried Chicken] Nando’s)		
3. Chinese food		
4. Fish (eg Fish Aways, Ocean Basket, Something Fishy)		
5. Global wraps		
6. Indian food		
7. Juicy Lucy		
8. Kauai		
9. Local café or retail outlet		
10. Pizza / Pasta (eg Debonairs, Panarotti’s, Pizza Perfect Romans Pizza)		

11. Sandwich shops (eg Bread Basket, Subway)		
12. Thai food		
13. Other (Please state): _____ _____		

11. What are the **3 most popular** items you would buy at these outlets?

1. Burgers		
2. Toasted sandwich		
3. Deli sandwiches (not toasted)		
4. Hot Dog		
5. Schwarma (Pita with filling)		
6. Fries / Hot Potato Chips		
7. Fried chicken (in a batter)		
8. Grilled chicken (no batter)		
9. Fried fish or seafood (in a batter)		
10. Grilled fish or seafood (no batter)		
11. Salad		
12. Pizza		
13. Pasta		
14. Sushi		
15. Chinese food		
16. Curries		
17. Thai food		
18. Other (Please Specify) _____		

12. What serving size of **FOOD** do you usually choose? **Only choose one**

1. Small		Sm
2. Regular		Reg
3. Large		Lar
4. Super – size		SS

13. Please choose the **drink** you have **MOST** often when you buy at these outlets:

1. Flavored water		
2. Unflavored water / bottled water		
3. Soft drink (e.g. Coke, Fanta, Sprite)		
4. Diet Soft drinks (e.g. Coke lite)		
5. Iced coffee / tea		
6. Milk shakes		
7. Smoothie		
8. Coffee / Tea		
9. Pure fruit juice		
10. Other (Please Specify)		

14. How much money do you spend on fast-food per month (for yourself)?

1. <R50		1
2. R50- R100		2
3. R100 – R150		3
4. > R200		4

15. Do adverts on billboards, television, radio or magazines and flyers result in your buying fast-foods?

Choose only one option

1. Always		4
2. Sometimes		3
3. Seldom		2
4. Never		1

(If they answered NEVER to this question, proceed to question 17)

16. Which type of media communication/ announcement encourages you the **Most** to buy fast-foods?

Choose only one option

1. TV		TV
2. Radio		R
3. Billboards		BB
4. Magazine adverts		M
5. Flyers or Handouts		FL

17. What is normally your **main reason** for choosing a specific meal/ type of food? **Choose only one option**

1. The appearance (quality and freshness) of the food		
2. The price		
3. The taste		
4. Family or cultural preferences		
5. How I am feeling that day (Mood)		
6. How good the food will be for my health		
7. What will fill my hunger		
8. Convenience		
9. Availability		

10. Special offers		
--------------------	--	--

18. How concerned are you about health?

1. Always concerned		4
2. Sometimes concerned		3
3. Seldom concerned		2
4. Never concerned		1

19. What do you most worry about when you think about health? **Choose only ONE option**

Cancer		CA
Heart disease		HD
Diabetes		DM
Overweight / Obesity		OB
Other (Please specify)		OTHR

20. If healthier options were available on the menu of a fast-food restaurant, would you choose them?

1. Yes		Y
2. No		N

{If the participant answered NO to question 20, please proceed to question 21. If the participant answers YES, please proceed to question 22}

You can also ask question 21 and then directly go into 'Why not? What is your main reason?'

21. What would your main reason be for NOT purchasing a healthier option? **Choose ONE option**

1. I do not like the taste		
2. It is more expensive		
3. My family or friends prefer the standard options		
4. I am self-conscious about choosing the healthier option		
5. I go to a specific fast-food restaurant (e.g. Steers) to eat a specific food (e.g. burger) and therefore would not choose the healthier option (e.g. chicken salad).		
6. I am unsure of what the healthier options are		
7. There are no healthier options		
8. Other (Please specify) _____		

22. What types of healthier options would you like to see on fast-food menus? **Choose ONE option**

1. Smoothies		
2. More salad options		
3. More vegetables		
4. More vegetarian options		
5. Less fried food		
6. More grilled foods		
7. Other (Please specify) _____		

23. Do you believe that fast-foods can be part of a healthy lifestyle?

Thank you for your co-operation.

Appendix D:
Written letter of consent to store manager

To whom it may concern.

RE: CONSENT TO COLLECT DATA FOR MASTERS RESEARCH

For the purposes of completing my Masters degree, which focuses on fast-food consumption in the South African market, I have to interview members of the general public and would appreciate your consenting to my making use of your premises for the data collection exercise.

The methodology to be applied entails two field workers, stationed in front of one of the major retail chain stores (i.e. Pick & Pay / Checkers), interviewing members of the general public by way of a two minute questionnaire. Participation is totally voluntary and patrons will not be harassed to complete the questionnaire.

It is envisaged that not more than two days will be required to finalise the collection, and it is proposed that the data be collected on two Saturdays in and during February 2008 or March 2008.

Given the nature of the research and the limited impact on patrons I would appreciate if you could please let me have your written consent in this regard, and await your response at your earliest convenience.

Kind Regards

Maryke van Zyl

RD (SA)

Appendix E:**Field-worker notes****FIELD WORKER NOTES**

Interviews will take place on Fridays, Saturdays and Sundays in March. We will discuss times that suit you.

When you approach the patron / possible participant, start by asking:

'Do you mind taking part in a 2 minute questionnaire from Stellenbosch University? It is on Fast-food intake.' If the patron is hesitant, re-assure them that it will only take 2 minutes and is for research purposes. Also provide them with the consent information brochure.

We will get a magazine sponsored from Pick& Pay that you can use as an incentive to get them to participate. Also assure them that all information will be kept confidential and they don't have to supply their name.

If they agree, ask them how old they are? If 19-30years, continue with the questionnaire. Otherwise, thank them for their participation and move on to the next potential participant.

Go through the questionnaire thoroughly. The participant has to be:

- 19- 30 years
- A South African Citizen
- A resident of the greater Johannesburg region
- Consume fast-food

If not, thank them and move on to the next participant.

Then continue with the questionnaire.

Please read the questions as they are on the form and do not 'lead' participants to answer the questions in a specific way.

Emphasise the questions that require more than one answer OR require ranking (1st, 2nd, 3rd choice)

BRING ON THE DAY:

- A clip board
- Pencil and pen
- If you have a name badge indicating that you are a dietician, please bring that.

Please wear comfortable shoes, black and white or navy and white. Dress comfortable but not too casual. The patrons are more likely to answer your questions if you look professional.

Appendix F:

Participant Information leaflet

TITLE OF THE RESEARCH PROJECT:

Characteristics and factors influencing fast-food intake of young adult consumers from different socio economic areas in Gauteng

REFERENCE NUMBER:

PRINCIPAL INVESTIGATOR: Maryke van Zyl (M Nutrition Student)

CONTACT NUMBER: 011 7935201

You are being invited to take part in a research project. Please take some time to read the information presented here, which will explain the details of this project. Please ask researcher any questions about any part of this project that you do not fully understand. It is very important that you are fully satisfied that you clearly understand what this research entails and how you could be involved. Also, your participation is entirely voluntary and you are free to decline to participate. If you say no, this will not affect you negatively whatsoever. You are also free to withdraw from the study at any point, even if you do agree to take part. This study has been approved by the **Committee for Human Research at Stellenbosch University** and will be conducted according to the ethical guidelines and principles of the international Declaration of Helsinki, South African Guidelines for Good Clinical Practice and the Medical Research Council (MRC) Ethical Guidelines for Research.

What is this research study all about?

The aim of this study is to determine factors affecting fast-food intake of consumers in Gauteng. The study will be performed in three shopping malls at the entrance of a large grocery store within the shopping mall. Participants will be asked to complete a short interviewer administered questionnaire, including questions on factors affecting fast-food intake, frequency of intake, specific choices at fast-food restaurants and characteristics of the consumer. Three hundred and sixty participants (180 males and 180 females) will be asked to take part in the study and 120 participants per shopping mall will be questioned.

What will your responsibilities be?

To complete the accompanying questionnaire. . By answering this questionnaire you declare that you participate voluntarily, that you were not placed under any pressure to participate in the study and you give consent that information obtained may be used for scientific purposes.

Are there any risks involved in your taking part in this research or will you benefit from taking part?

There are no risks or direct benefits involved in taking part in the study. The study will benefit health professionals and the fast-food industry, to guide them in providing meals that the consumer would not only enjoy and choose to purchase, but that provide them with healthier options.

Will my privacy be respected?

The questionnaire is anonymous and therefore your privacy is completely respected. All information collected will be treated confidentially

If you have any further questions, please feel free to contact the Maryke van Zyl at 011 793 5201.

Thank you for your participation.

APPENDIX G

RESEARCH PROTOCOL

TITLE

Characteristics and factors influencing fast food intake of young adult consumers from
different socio economic areas in Gauteng.

A Research thesis

presented to the Department of Human Nutrition

of the Stellenbosch University

in partial fulfillment

of the requirements for the degree of

Master of Nutrition

By

Maryke van Zyl

Research Study Leaders: Dr NP Steyn

: Mrs. M Marais

Statistician: Prof D G Nel

Date: 09 November 2007

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1. LITERATURE REVIEW

1.1. Introduction

The growth of the fast-food industry has been nothing less than astonishing. From its birth in the late 1940s in Southern California, fast food has, as per Schlosser, become “so routine, so thoroughly mundane, that it is now taken for granted like brushing your teeth”.¹ McDonald’s Corporation alone operates 30,000 restaurants worldwide, annually hires more employees than any American business (about 1 million), and is this nation’s largest purchaser of beef and potatoes. It is not surprising, therefore, that this enormous growth has had a proportionate impact on economic, political, social, and cultural aspects of American life.¹

In the 1960’s, South Africa started to experiment with the concept and the very first American franchise hamburger concept called Wimpy, was brought to South Africa by J H Lyons. From this point onwards there were no turning back and in 1979 a group of leading franchise companies came together to form the Franchise Association of South Africa.²

1.2. What is currently known/ Recent findings

Trends in fast food intake / Changes in fast food consumption:

Globally there has been a dramatic increase in money spent on fast food. More dollars are now spent on fast food in the United States (US) than on newspapers, magazines, books, movies, videos, and recorded music combined: \$110 billion in 2001. The average American eats three hamburgers and four orders of French fries weekly and one in four American adults reported eating fast foods.^{1,3}

American statistics show that in 1970, money spent on foods eaten away from home accounted for 25% of total food spending; by 1999 it had reached a record 47% of total food spending. In 2001, there were about 222,000 fast food locations in the US, generating sales of more than \$125 billion.⁴ The average portion size of fast foods has increased from the early seventies, as well as the per capita availability of added sugar and fats. Trends show that the largest portion sizes are from fast food outlets.⁵ The typical single serving of Coca-Cola has increased in size from 192ml in the 1950’s to 591ml in 2000.⁶

Factors affecting food choices

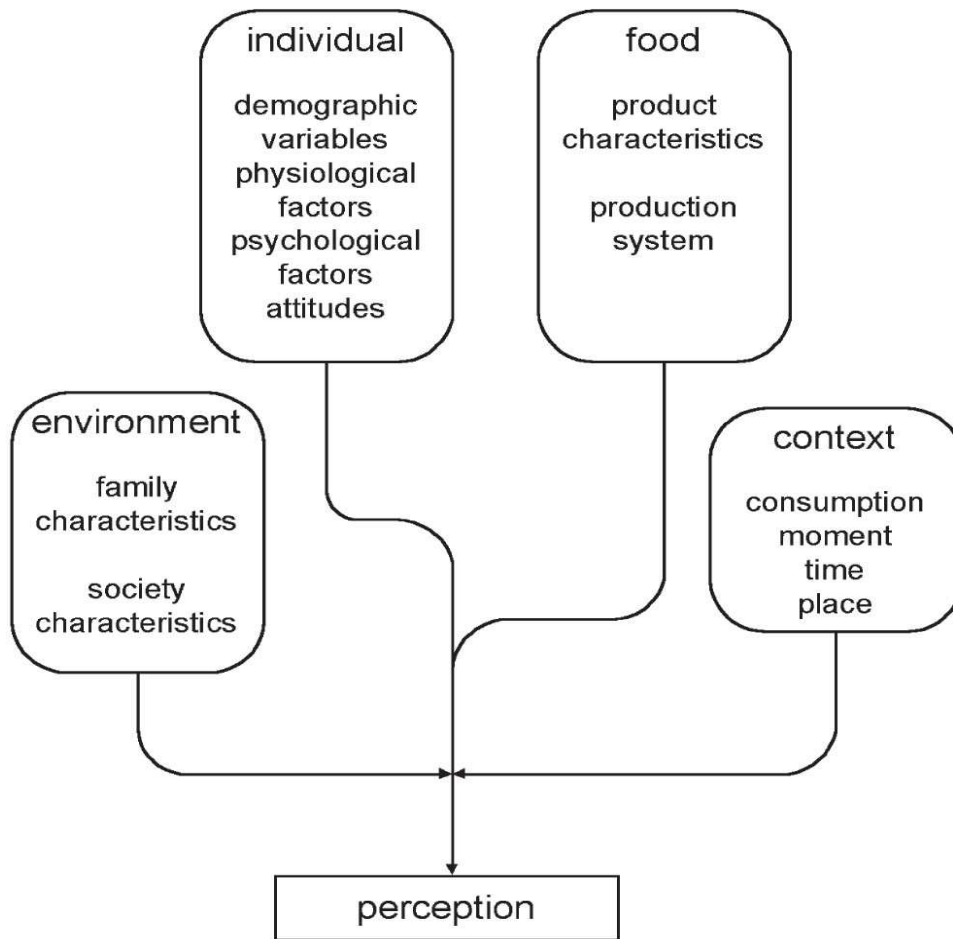
What people buy and eat depends not only on the individual, but on various factors. At the broadest level, the agro-economical, biological, psychological, cultural background and environment shape human food choice and intake, by influencing the range and quantities of foods consumed.⁷ An individual's life course events and experiences result in individual preferences (such as taste) and other aspects (convenience and monetary considerations) that define their choice of food.⁸

Different models and ways have been suggested to explain food choices. Nearly all models structure the determinants related to the person, the food and the environment.⁹ The Food Perception Model is a comprehensive model created by Sijtsema et al. A comprehensive conceptual model was created, based on the determinants and variables influencing food perception see (Figure 1).

By distinguishing four determinants of food perception this model emphasizes the fact that the individuals perception of food is not only complex but also highly variable.

From another perspective, Bisogni *et al.* described the concept of identity as a role player in food choices.⁸ Identity is described as the mental self-images that a person assigns to himself/herself based on everyday interaction with people, groups and objects. Identities related to eating reveal what is of concern to clients, how clients organize food according to their own preferences, how they express themselves through food and the ways in which they manage situations. Food and food events can, for example convey group membership, masculinity/ femininity, ethnicity or socio-economic class.^{8,10, 11} Understanding these factors can aid in the success of health promotion initiatives in the fast food sector, among others.

Consumers want to enjoy their food and the sensory characteristics of a food will influence this enjoyment. Taste and flavour are important factors in consumer food choice, but not as important as thought previously. Consumers' approval of a specific food is driven by sensory as well as attitudinal (e.g. personal preference and perceptions), physiological (e.g. hunger) and behavioral (e.g. social pressures) factors. Most people can say immediately if they like something or not, but they don't always know why.¹²



Food perception model for product development.

Figure 1: Food perception model for product development.⁹

Factors associated with fast food intake

Firstly, socio-demographic factors are associated with fast-food use. Specifically, fast-food use is common among children and adolescents, young adults, people with higher income and living in a suburban area.^{3,4} Other factors include longer working hours, women employed outside the home, and single parent households.¹² Studies have indicated that the percentage of individuals who reported eating fast food was highest among those 10 to 39 years of age and declined in older individuals.⁴ Men reported more frequent use of fast food than women, as did people with high school and some college education compared to those

with four or more years of tertiary education. Individuals with higher income and households with four or more members also reported higher intakes. The reported use of fast food was lowest among people 60 years of age and older and among people with a household income of 100% of the poverty threshold or less.

⁴ An American study also showed that black adolescent girls tend to eat more fast foods than their white counterparts. ⁵

In a South African market research study done for Kentucky Fried Chicken (KFC) in 2002, in the City of Johannesburg Metropole, the income group with the highest intake of foods from a fried chicken outlet was in the categories <R5 000 or R5 000 to R10 000 monthly income. ¹³

Secondly increased food intake is associated with the environment and environmental cues. Larger portions, increased variety and palatability stimulate an individual to eat more. Conditioning (defined as being accustomed to adopting certain habits) can also play a role due to the association of eating out with a special occasion and therefore eating more or choosing foods not normally eaten. ¹⁴ Marketing and increased availability and visibility of fast food outlets also contribute to increased visits to fast food outlets.

A survey conducted on a national representative sample of adults in the European Union, as well as an Ukrainian study showed that the five most important factors influencing consumers food choices were “quality and freshness”, ‘price’, ‘taste’, ‘trying to eat healthy’ and ‘family preferences’. It has been reported that when the price of lower fat healthy food items are reduced, there is an increase in the purchase of these foods. ⁶ For women quality / freshness, price, trying to eat healthy and family preference seemed to be most important while taste and habit scored the best in men. ^{15,16} In the Ukrainian study, the sources most often used for healthy eating information were friends/ relatives and health professionals, the latter being trusted by 92%. Other factors affecting choice included mood, convenience, sensory appeal, natural content, weight control, familiarity and ethical concerns. ¹⁶

Consequences of increased fast food intake

The fast food and food service industries responded to a changing environment by making fast food outlets increasingly available (longer operating hours, delivery options, and convenient locations such as shopping malls and cinemas) and by increasing the number of convenience foods that can be purchased in grocery stores. Unfortunately, food items promoted by these industries are often high in fat, sugar and sodium and

thus are highly energy dense which is of concern to health professionals in the light of the growing obesity “epidemic” in the world.³

The prevalence of obesity is increasing globally. In the US the rate of childhood obesity and overweight have almost tripled since 1974. Currently 30% of children aged 6-19 years are overweight or at risk to become overweight.⁶ Some publications state that in 1999 nearly 50 million adults in the US were obese or morbidly obese.¹⁷

South Africa and other developing countries are following the same trend. Data suggests that up to 10% of children under the age of 2 years and between 5-20% of children under the age of 6 years are overweight. An average of 7.9% adult men and 27.5% woman are obese, with the highest incidence occurring for men within the white population and for woman within the black population.¹⁸ Obesity appears to be due to a combination of genetic and environmental factor that include excessive kilojoule intake and decreased physical activity.⁶

Furthermore, overweight and obesity in childhood may predispose persons to morbidity in adulthood. Overweight and obesity in children is of particular concern because of the associated developmental abnormalities and the long exposure to enlarged adipose tissue stores acquired by excessive early-onset weight gain. Blood pressure, fasting blood cholesterol and insulin concentration has been shown to be higher in overweight than normal weight children.⁶ The preference of high fat, high kilojoule foods in adults has been attributed to tastes cultivated in childhood. The fast food industry recognize this and aggressive marketing of fast foods to children are of particular concern. Termination of marketing and legislation imposing restrictions on advertising of fast foods to children will aid in the decrease of childhood obesity. In some European countries, legislation has already been implemented.¹

Nutritional

From the early 70's, the impact of fast food intake on nutritional status was already a cause for concern.^{19,20} The American Dietetic Association (ADA) released a position paper in 1974 to urge the food service industry of America to provide nutrition education and the opportunity for improved food practices to the consumer. According to this paper, the extent to which fast food intake influence the nutritional status of an individual (specifically children and adolescents) depend on 1) the nutritive quality of the menu items, 2) the choice of menu items, 3) the amount consumed and 4) how often fast foods are consumed.¹²

Male and female students who reported eating at a fast food outlet 3 times in the past week were found to have energy intakes of 40% and 37% higher than those who did not eat at a fast food outlet.^{6,12} The United States Department of Agriculture's (USDA) study on Continuous Survey of Food Intake by Individuals (CSFII) in 1994-1996 showed that males and females regularly consuming fast food had a diet with a higher fat content and energy density. Fast foods provided more than one third of the day's energy, fat and saturated fat. Also, adults who reported eating fast foods regularly had higher mean body mass values than those who did not eat fast food and a positive association was found between fast food consumption and overweight status.¹²

An Indian study on fast food consumption in 120 subjects between the ages of 16 – 21 years showed that fast food consumption reflected an inadequate intake of essential nutrients.²¹ Fast-food use in the US, reported by 37% of adults and 42% of children in 1994–96 and in 1998, was associated with a significantly higher intake of energy, fat, saturated fat, sodium, and carbonated soft drinks, and significantly lower intake of vitamins A and C, fruits, vegetables, and milk.^{4,6} Other similar studies reported similar results.^{5,10} Foods eaten away from home have been found to contribute more than 25% of the intake of calories and fat.^{4,6} Portion size plays a role.^{5,6} The trend of “super sizing” and “value for money meals” with “extra’s” are of particular concern, leading to overeating and the perspective of quantity versus quality.¹²

The proportion of foods and soft drinks that children consumed from restaurants and fast food outlets increased by nearly 300% between 1977 and 1996 in the United States.⁶ Soft drink intake is of particular concern, providing the consumer with 780 kJ/d above the energy intake of non-consumers and contributing to the rise in childhood obesity in the past few years.⁶ Of concern, is the finding that soft drinks have tended to replace milk in the diet of the modern child. This change may have serious health implications because milk is a good source of protein, calcium, vitamin B2, B12 and vitamin D.

Although fast food restaurants have extended their menu's to include a broader range of foods, hamburgers and french fries continue to be the leaders in terms of sales volume in the US.⁴

How can healthy eating be promoted and solutions for change be formulated?

Behavior and change

Finding a strategy to improve diets are of concern to many health promoters and politicians. There are various reasons why strategies to change behavior have failed in the past. These factors include the fact that healthier options are less available, cultural values and ideas, as well as socio-economic and demographic limitations to obtaining healthier options.⁷

Research and success rates of various strategies have shown that education on its own is inadequate in promoting healthy eating. Multi-sectoral collaboration is essential and strategies should involve politicians, consumers, stores, restaurants, chefs, fast food franchises, health workers and schoolteachers.¹⁷ Manipulating prices of foods through taxes on unhealthy food items or financial supports for healthy food items might help the population achieve healthier goals. It has been proposed that tax on hamburgers, chips, chocolates, sodas and other unhealthy foods should be introduced to help overcome South Africa's ever-growing obesity problem.²² Other recommendations included placing health warnings on fast food advertisements and only showing these advertisements at certain times of the day.²² It's also been shown that price play a big role in food choice and that lowering the price of fresh fruit and vegetables by 50% increased sales by 2-4 fold in school cafeterias in the US.⁶

Many fast-food outlets have expanded the range of options to include healthier options. It would be beneficial if the perception that healthier choices have a lack of taste could be changed and these choices could be promoted by fast food enterprises⁴

1.3. Motivation for the study

Obesity is on the increase in both the developed and developing world, in adults as well as children. In South Africa more than 50% of the population over 15 years of age and 7-12% of children are overweight. Obesity is one of the major risk factors for the development of chronic diseases of lifestyle but is also classified as a disease in itself. While there are various causes for overweight, lifestyle and environmental factors contribute significantly. An increased intake of soft drinks, together with the intake of nutrient dense foods all adds to increased occurrence of obesity.

In the light of the problem with overweight and obesity, changing dietary habits and urbanization of individuals in a fast paced, modern world, this study will shed light on the characteristics, the possible reasons for specific food choices and the possible effect on health in a select group of urbanized South Africans. This information could benefit key role players in implementing strategies for change.

Results from this study could also be of benefit to the fast food industry to guide them in providing meals that the consumer would not only enjoy and choose to purchase, but that provide them with healthier options.

2. OBJECTIVES

2.1. Research Aim and Objective

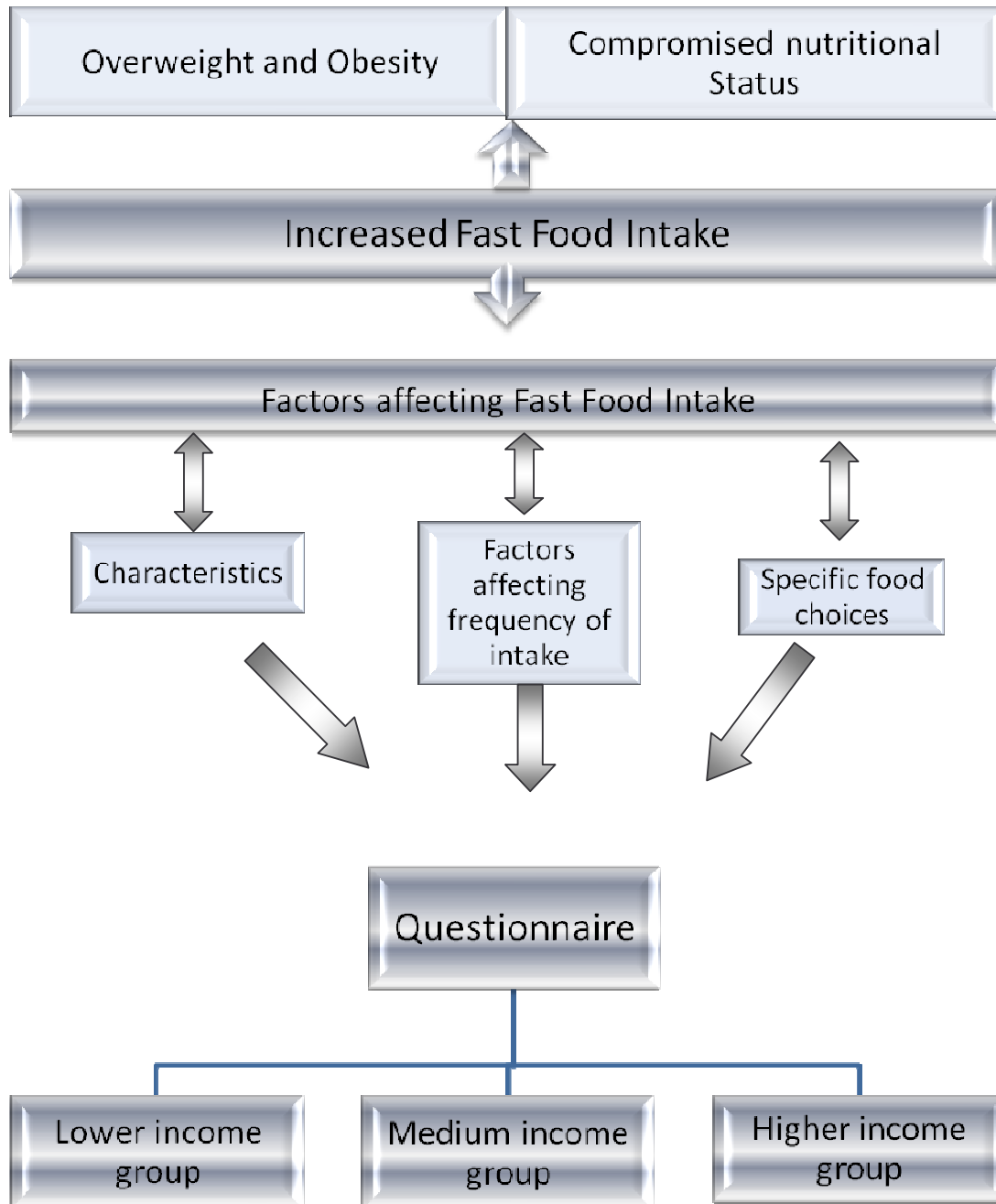
The aim of this study is to determine the factors which impact on the intake of fast foods by young adults in Gauteng.

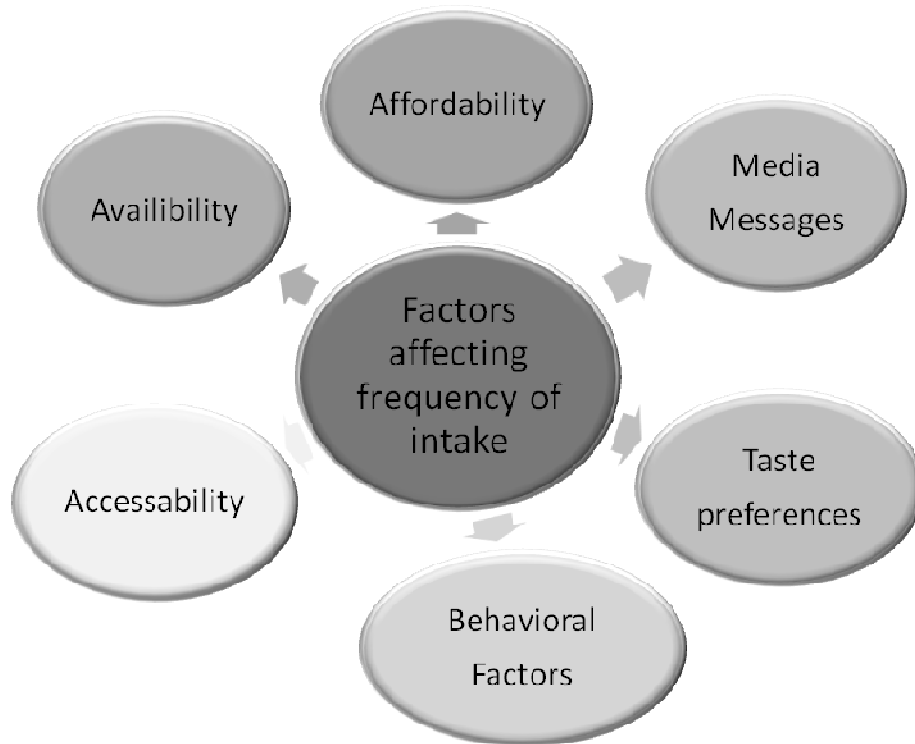
2.2. Specific Objectives

1. To explore selected factors influencing fast food intake:
 - a. Availability
 - b. Access
 - c. Affordability
 - d. Behavioral factors
 - e. Taste preferences
 - f. Influence of media messages
2. To determine frequency of fast food intake.
3. To determine specific food choices at certain categories of fast food outlets.
4. To describe the attitude of consumers towards healthier meal options.
5. To investigate characteristics of fast food users.

3. OPERATIONALISATION

Factors influencing fast food intake, frequency of fast food intake, specific food choices at certain categories of fast food outlets, attitude of consumers towards healthier meal options and characteristics of fast food users will be measured using an interviewed-administered questionnaire, developed by the researcher.





4. METHODS

4.1. Definition of terms used in the present study^{23,24}

Young Adult: Person between the age of 19 and 30 years, based on the Dietary Reference Intakes' age range for younger adults.

Healthy – The state of being well in body and mind. Having, showing or promoting good health.

Consumer – An individual who purchases and uses goods or services.

Fast food – Inexpensive food (hamburgers, chicken or milkshakes) prepared and served quickly. Operations that specialize in one or two main entrees, such as hamburgers, pizza, fish or chicken. These operations may also provide salad and/or ice cream service. Preparation of food products is generally simple and involves one or two steps. Synonyms include *junk food*, *snack food* and *take-away's*.

Fast food restaurant - A business involving the preparation and serving of meals for immediate consumption on the premises or off the premises, normally requiring short periods of time between the period of ordering

and serving of the food, which is served in edible or disposable containers. These include businesses that provide delivery of food.

Fast food consumer: Based on the inclusion criteria for this study an individual who purchases fast foods more than once per month.

Shopping mall: Synonym: shopping complex.

Gauteng – One of the 9 provinces in South Africa. It is the smallest province in South Africa but the most densely populated. It generates the most wealth. Mining, technology, finance and manufacturing are its main activities. It has the highest income per capita, highest literacy rate and over 90% of its population lives in metropolitan areas.

City of Johannesburg Metro – A municipal area within Gauteng. (Appendix A: Map)

LSM - Living Standard Measurement. This is an index that groups the population according to access to services and other wealth indicators into ten groups.³¹

High socio-economic group – Based on the LSM classification of 8 to 10+.

Medium socio-economic – Based on the LSM classification of 5 to 7.

Lower socio-economic – Based on the LSM classification of 1 to 4.

4.2. Study design

A descriptive cross – sectional, observational study design will be used.

4.3. Study population and sampling

4.3.1. Sample selection

Shopping malls: To obtain the most representative sample, purposive sampling of shopping malls or similar complexes will be done according to low, medium and higher socio economic grouping (based on the LSM classification). Suitable complexes will be chosen according to previous studies done in the City of Johannesburg area on consumer services and economical groupings, to be representative of different income groups (lower, medium and high).¹³ (Addendum D)

Consumers: Data will be collected from consumers in a low, medium and higher socio economic grouping (based on the LSM classification). The sampling of consumers will be done on the basis of voluntary participation and will be randomized where possible.

4.3.2. Sample size

The sample size of participants will be 360 in total, based on the total population of the City of Johannesburg Metro area (www.statssa.co.za Census 2001).²⁵ At least 180 males and 180 females in total will be asked to participate. Three shopping malls will be chosen and 120 participants per group sampled.

4.3.3. Justification of the sample size

The required sample size was determined with the help of a statistician and based on the population density of the City of Johannesburg Metro area. The sample size was chosen based on a 95 % confidence interval and error percentage of 5%.

4.3.4. Inclusion and Exclusion criteria

Inclusion criteria for participants:

- Male or female
- Young Adults between the age of 19 to 30 years
- All ethnic groups
- Able to understand English
- Willing to complete the interview administered questionnaire.
- Citizen of South Africa
- Reside in Johannesburg

Exclusion criteria:

- Consuming fast food less than once a month
- Tourists (living outside of Johannesburg).

4.4. Study Methods

4.4.1. Measurements

A questionnaire was developed to obtain information on the characteristics of the study population, factors affecting fast food intake, frequency of intake and attitude towards healthier options. The questionnaire will be interviewer-administered and takes approximately 5-6 minutes to complete

4.4.2. Questionnaire description (Appendix B)

Each participant will complete an interviewer-administered questionnaire. The questionnaire will be administered in English. English was chosen for the following reasons:

- It is the second most commonly spoken language in the City of Johannesburg area ²⁵.
- Time and cost implications of training field workers in different languages.
- Official language of communication in South Africa.

The questionnaire consists of mainly pre-coded categorical and numerical questions. The questionnaire has been constructed to elicit characteristics of the population (gender, education, and income), reasons for - and frequency of fast food intake, as well as their attitude towards healthier meal options. The questionnaire will be printed in black ink in an eligible font type and size.

4.4.3. Data collection

The management of shopping malls in three different socio-economical (SE) areas will be contacted to obtain permission for data collection from their premises and written consent will be obtained (Addendum C). Once consent has been obtained, the management of a large grocery store within each complex will be contacted and written consent will again be obtained to collect data at the entrance of the store. Data will be collected on three weekend days from 09:00 to 17:00. Field

workers will be located at the entrance of each large grocery store within the shopping mall and free samples of a sponsored food product (not related or associated with fast food outlets mentioned or fast food per se) will be available for tasting after completion of the questionnaire. There will also be a small treat for children who accompany consenting participants.

Potential participants will be approached and asked to participate in the study. Screening questions will be asked in a polite and sensitive manner. If an adult complies with the criteria, the field workers will briefly explain the purpose of the study, indicate that the questionnaire results are anonymous and that all information obtained will be used purely for academic purposes. The questionnaire will then be completed according to the instructions. The number of adults refusing to participate or who do not comply with inclusion criteria will also be documented. This process will be repeated until 120 participants per shopping mall (with at least 60 males and 60 females) have been interviewed. All questionnaires will be safely kept in a separate container from uncompleted questionnaires. The data will be collected in July 2007. Third or fourth year Dietetic students will be used as field workers.

4.5. Pilot study

A pilot study will be undertaken by the researcher to determine the face and content validity of the questionnaire. The questionnaire will first be sent to 4 experts in questionnaire design who have a BsC Dietetics qualification. The pilot sample will be consumers visiting a similar shopping complex within the City of Johannesburg area. A convenient sample of 36 consumers in total and 12 from each socio economic grouping will be used, and data will be collected according to the same methods mentioned in the method section (data collection, section 4.4.3). The socio economic status grouping will be determined by the demographic information elicited by the questionnaire. The pilot study will be conducted on a weekend day in February 2008. Results from the pilot study will not be included, however the questionnaire will be refined and adapted accordingly.

4.6. Quality of data collected

The quality of data will be determined by the following:

- Experts evaluating the questionnaire.
- Pilot study to test the questionnaire.
- Standardization of the fieldworkers. A standardized method of conducting the interview will be followed based on the prompts and questions on the questionnaire. This standardization will take place following the pilot study after compiling a list of the most common queries and questions likely to be asked. Third or fourth year dietetic students will be used as field workers since they are familiar with standardized collection of information and research principles.

5. DATA ANALYSIS AND PRESENTATION

Data will be captured by the researcher using Excel and analysed with assistance from a statistician.

Descriptive methods like frequency tables and or histograms will be used to illustrate the data. For continuous variables means and standard deviations will be computed and for ordinal variables the median and quartiles.

When ordinal variables are compared versus a nominal input variable, non-parametric ANOVA methods will be used. For completely randomized designs the Mann-Whitney test or the Kruskal-Wallis test will be used.

When a nominal variable will be compared to other nominal input variable(s), appropriate contingency table analyses will be used with the maximum likelihood chi-square test as the test statistic. Appropriate categorical histograms will be used to illustrate the contingency tables.

A significance level of 5% will be used for all hypothesis tests and 95% confidence intervals will be used where necessary.

6. BUDGET

Description of expenses	Approximate cost
Transport	
Petrol	R 1 000
Fieldworkers	R 6 000
Stationary	R 400
Copying and binding	R 500
Telephone and internet costs	R 600
Statistician	R -
Total	R 8500

Sponsors will be approached to aid in full or partial funding of the project, as well as sponsoring free samples and displays at the data collection site/s. The latter could be used as a marketing tool for the company and possible incentive for sponsoring the study.

7. ETHICAL AND LEGAL CONSIDERATIONS

- Before undertaking the study, the research proposal will be submitted for approval to the Committee for Human Research, Faculty of Health Sciences, Stellenbosch University.
- Written consent from the management of the shopping malls and large grocery stores will be obtained to grant permission to do field work on their premises.
- Participants of the study will give their verbal consent before completing the interview based questionnaire. Field workers will ensure participants that the questionnaire is anonymous and that all information obtained will be used purely for academic purposes.

8. REVIEW DATES

Aspect of Research	Approximate duration of activity	Date of completion
Protocol – provisional (study leaders)	1 week	2 February 2007
Presentation of Protocol (study leaders and fellow students)		2 February 2007
Protocol – final (study leaders)	3 weeks	Mid May 2007
Protocol – final + documents for approval (ethics committee)		End of Nov 2007
Questionnaire to experts		End of November 2007
Pilot study	1 day	Beginning of December 2007
Changes and finalization of questionnaire and methods	1 weeks	Mid December 2007
Data collection	2 weeks	End December 2007 – January 2008
Data analysis	1 Month	February 2008
Writing up of thesis	1-2 Months	March 2008
Thesis - provisional (study leaders)		May 2008
Adjustments and corrections	3 Weeks	June 2008
Thesis – final (study leaders)		July 2008
Thesis – final and documents (external examiners)	1 month	Sept 2008

9. REPORTING OF RESULTS

Results will be submitted for publication in a peer-reviewed journal and presented to an audience of experts.

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