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# Food choices and Body Mass Index (BMI) in adults and children: Evidence from the National Income Dynamics Study (NIDS) and empirical research from Khayelitsha and Mitchells Plain in South Africa

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**ACRONYMS**

| | |
|---|---|
| BMI | Body Mass Index |
| COCT | City of Cape Town |
| CSG | Child Support Grant |
| DDS | Dietary Diversity Score |
| DG | Disability Grant |
| DHS | Demographic and Health Survey |
| DOH | Department of Health |
| EAs | Enumeration Areas |
| FAO | Food and Agriculture Organization |
| FCG | Foster Care Grant |
| FET | Further Education and Training |
| HBP | High Blood Pressure |
| GDP | Gross Domestic Product |
| GHS | General Household Survey |
| GPAQ | Global Physical Activity Questionnaire |
| HIV/AIDS | Human immunodeficiency syndrome/Acquired immune deficiency Syndrome |
| HSRC | Human Sciences Research Council |
| IDF | International Diabetes Foundation |
| ISD | Institute for Social Development |
| LMIC | Low and Middle-Income Countries |
| MRC | Medical Research Council |
| NAMC | National Agricultural Marketing Council |
| NIDS | National Income Dynamics Study |
| NSNP | National School Nutrition Programme |
| OG | Old Age Grant |
| PNAE | National School Meal Programme |
| PSNP | Primary School Nutrition Programme |
| RDP | Reconstruction and Development Programme |
| RIA | Research ICT Africa |
| SALDRU | The Southern Africa Labour and Development Research Unit |
| SANHANES | South African National Health and Nutrition Examination Survey |
| SFPs | School Feeding Programmes |

| | |
|---|---|
| SEM | Social Ecological Model |
| StatsSA | Statistics South Africa |
| UWC | University of the Western Cape |
| WHO | World Health Organization |
| YRBS | Youth Risk Behaviour Survey |

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## EXECUTIVE SUMMARY

*The worldwide increase of obesity has been described as a global health epidemic that poses a considerable threat to the health and well-being of populations. Low and middle-income countries (LMIC) are not spared from the obesity pandemic and are continuing to reflect a rapid increase in body fat levels. Moreover, it is becoming increasingly apparent that many of the LMICs face the double burden of malnourished and obese inhabitants occurring simultaneously amongst certain sectors of the population. Whilst the reasons for the global increase in overweight and obese populations are not fully understood, obesity results from the overconsumption of energy and the excessive accumulation of body fat to the extent that health may be adversely affected.*

*Research shows that obesity is a major risk factor for non-communicable diseases and substantially increases the risk of hypertension, dyslipidemia, type 2 diabetes, heart disease, stroke, sleep apnea as well as cancers of the endometrium, breast, prostate, and colon. The growing epidemic diverts scarce resources for the management of diseases such as diabetes and heart disease and impacts on the workplace as a result of increased absenteeism and decreased turnover. It is against this background that this research has focused on the link between food choices and Body Mass Index (BMI) in adults and children in South Africa. Both secondary data analysis and empirical fieldwork were used to gather the data required to answer the research question.*

*Within the limited scope of this study, the research identified the kinds of food that was consumed in Khayelitsha and Mitchells Plain in South Africa; assessed the circumstances and factors determining food consumption; identified the relationship between food choices and self-perceived health status and actual BMI measurements. The study found that in Khayelitsha and Mitchells Plain about 54.6% of adults were overweight and obese. On the other hand, 18% of children in the survey were overweight and obese. The study alos measured the relationship between food choices and obesity in adults and children; empowered six historically disadvantaged South African postgraduate students in quantitative research methodologies; disseminated research outputs via, a national level symposium and facilitated evidence-based policy making for effective multi-level intervention approaches in health promotion practice across South Africa. In Khayelitsha and Mitchells Plain, the research found that the average household income was R2401-R3600/month. The findings also showed that about 43.7% of households are recipients of child support grants, 27.27% benefit from old-aged grants, 13.11% receive disability grants and a small proportion of the households are beneficiaries of foster care grants. This indicates that there is a high dependence on the South African Social grants.*

*The study also clearly identified that there are a number of determinants of food choice in Khayelitsha and Mitchells Plain. These include the households' income and the cost of food, accessibility and availability, cultural influences, palatability/taste, familiarity (especially for vegetables), education/knowledge, social setting, time constraints, religion and food choices, distance travelled to purchase food and food choices etc. Based on these findings, the following recommendations are proffered.*

***Affordability (the cost of food):** Price is often reported as a barrier to the purchase and consumption of healthy foods. Hence, it is recommended that strategies that increase incentives for purchasing healthier food options be pursued.*

***Physical activity:** Consumer awareness of physical activity can be achieved through sustained media and educational campaigns aimed at increasing the consumption of healthy foods, or reducing the consumption of less healthy ones. These campaigns have greater*

*impact and are more cost-effective when used within multi-component strategies. To maintain a healthy weight, there must be a balance between energy consumed (through diet) and energy expended (through physical activity). In addition, a settings-based approach reaches families and communities where they live, work and play. Hence, it is recommended that physical activity initiatives should be launched at different levels (national, provincial, municipal, district, etc). These should also include settings such as schools, universities, workplaces, communities, and health-care and religious centres, which should be used in preventing and controlling overweight and obesity.*

***Consumption of fruits and vegetables**: Findings from this study have validated the general assertion that South Africans have diets that are low in fruits and vegetables but high in fat and sugar. Reversing this phenomenon would require a mix of policy actions at different levels and for different groups. First, there will be the need to promote the consumption of fruits and vegetables nation-wide through various media outlets especially the television, radio as well as the print media. To make this national drive accessible to all South Africans, active involvement of various civil society organizations particularly community-based organisations like schools, religious institutions, and NGOs would be crucial. Second, there is the need for government to increase support for the production of fruits and vegetables especially for home gardens in urban areas. This effort will help increase peoples access, especially low income families, to fresh fruits and vegetables. Third, it is recommended that government, with support from the private sector and NGOs, roll-out food voucher interventions that may directly promote the consumption of fruits and vegetables. This may be implemented in a way that targets specific low income groupings as well as marginalised persons. In addition, the school system could be an important entry point for improving fruits and vegetable consumption amongst children and young adults. The promotion of school gardens, for example, could make a significant difference. Aside from contributing to the provision of better and diverse school meals, school gardens can also inculcate in children positive attitudes towards the consumption of more fresh foods as well as alter their outlook for farming.*

***The increase of taxes to reduce unhealthy food consumption:** Taxation schemes that produce large changes in price can change purchasing habits and are likely to improve health. It is recommended that the rationale behind South African Government's sin taxes (e.g cigarettes) and the recent sugar tax be extended to reduce the consumption of foods high in sugars.*

***Promoting schools' initiative:** The school is an important setting for promoting healthy diets and physical activity. A "whole of school" approach focused on improving both diet and physical activity (including the provision of a healthy food option in school cafeterias, a supportive environment for physical activity, and specialised educational curricula) can be very effective in improving dietary patterns both inside and outside the school. Hence, it is recommended that the provision of fresh fruit and vegetables to students at school be supported. At the school level, all of these efforts cannot be achieved independently of the National School Nutrition Programme and the Integrated School Heath Policy. A well-coordinated approach that leverages on existing interventions and strategies is crucial.*

***Nutrition education and social marketing campaigns:** Measures can be even more effective in changing consumer behaviour and consumption patterns. Hence, it is recommended that education and social marketing campaigns should focus on impacting dietary and physical activity behaviour in both children and adults.*

***Further research:** Research to generate evidence on the effectiveness of individual and population-wide interventions to prevent and control overweight and obesity is important*

*going forward. Hence, it is recommended that further research should be undertaken in exploring and quantifying food choices and Body Mass Index (BMI) in the context of other provinces in South Africa.*

**Policy options**

*While a wide range of policy options that influence the prevalence of overweight and obesity exist, this research proposes practical interventions within the context of South Africa:*

***Policy implementation on the regulation and marketing of foods and beverages**: An important step towards addressing the problem of obesity and overweight within the Western Cape Province and at the national level is the adoption of regulative measures especially in the area of advertisement. As this study and others have pointed out, strong evidence exists on the links between television advertising to children's food knowledge, preferences, purchase requests and consumption patterns. There is the need for the initiation and enforcement of policy actions that will regulate excesses from these food advertisements.*

***Policy on fruit and vegetable initiatives in schools:** As pointed out, an important conduit for engendering fruits and vegetables consumption among children is the schools. Already, the National School Nutrition Programme menus adopted across the across encourage the use of vegetables. This should be promoted further including the use of leafy vegetables which tend to be abundant in some provinces.*

***Policy on physical activities in the school and community:** For children, physical activity includes play, games, sports, transportation, recreation, physical education, or planned exercise, in the context of family, school and community activities. More policy efforts are needed in this regard.*

***Policy on social marketing and campaigns:** Social marketing campaigns use paid and non-paid forms of media, across multiple channels, to increase knowledge and change attitudes towards diet and physical activity. These campaigns often run parallel with community-based activities and can serve to complement them.*

**Study limitations and challenges**

*Some factors proved challenging and to some extent limited the project, chief among these the student protests at UWC during 2016, as the #FeesMustFall movement gained traction. Also, because of time and resource constraints, the team employed a once-off 24-hour recall dietary assessment method, instead of a multiple 24-hour dietary recall. The availability of target children for interviews in selected households (five to 11 years old) was a further challenge, as was interviewers' fears of crime.*

**Conclusion**

*Using the 2014 National Income Dynamics Study (NIDS) survey and empirical research drawn from communities in Khayelitsha and Mitchells Plain in South Africa, the research explored and quantified food choices and BMI in relation to people's self-perceived health status and actual measurements. For the management of obesity, low-energy diets are effective in the short term, but increasing levels of activity and walking, and developing an activity programme can increase the effectiveness of obesity therapy. Treating associated health risks and established complications is important. In addition, there needs to be a strengthening of health systems to address obesity and diabetes as clinical entities through primary health-care services for early detection and management. This shows that government should be adequately prepared in terms of responding to the future situation.*

*Furthermore, the context of this study should be seen as the emerging discourse around exploring and quantifying food choices and BMI. Overall, it is envisaged that government and other stakeholders, both at the national and Western Cape Provincial level, will prioritise the policy recommendations outlined in this study by implementing the right mix of policies and programmes aimed at addressing the growing challenge of overweight and obesity and its attendant health risks in South Africa.*

# CHAPTER 1: INTRODUCTION

## 1.1. Introduction and context

The worldwide increase of obesity has been described as a global health epidemic that poses a considerable threat to the health and well-being of populations (Kengne, et al., 2013; Wang and Beydoun, 2007). Low and middle income countries (LMICs) are not spared from the obesity pandemic and are continuing to reflect a rapid increase in body fat levels. Moreover, it is becoming increasingly apparent that many LMICs face the double burden of malnourished and obese inhabitants occurring simultaneously amongst certain sectors of the population (Popkin and Slining, 2013; WHO, 2016).

Whilst the reasons for the global increase in overweight and obese populations are not fully understood, obesity is widely known to result from the overconsumption of energy and the excessive accumulation of body fat to the extent that health may be adversely affected (WHO, 2015). The most commonly used index to classify overweight and obesity in adults is the Body Mass Index (BMI). The BMI is a scale of weight-for-height and is a calculation of a person's weight in kilograms divided by the square of his height in meters (Kopelman, 2000). The traditional BMI categories for overweight adults proposed by WHO (1997) include a BMI of >25-29.9 $kg/m^2$ for overweight persons and a BMI of >30 $kg/m^2$ for obese persons. Other methods that complement the BMI scale include the waist–hip ratio which measures abdominal obesity and is seen to be a more accurate measurement than BMI in predicting the risk of myocardial infarction, stroke and premature death (WHO, 2011).

Research shows that obesity is a major risk factor for non-communicable diseases and substantially increases the risk of hypertension, dyslipidemia, type 2 diabetes, heart disease, stroke, sleep apnea as well as cancers of the endometrium, breast, prostate, and colon (Checchini et al., 2010). The McKinsey Global Institute report estimates the direct medical cost of overweight and obesity at around $2.0 trillion, translating into a global GDP of 2.8% (DOH, 2015). The growing epidemic diverts scarce resources for the management of diseases such as diabetes and heart disease (WHO, 2015) and impacts on the workplace as a result of increased absenteeism and decreased turnover (Tugendhaft and Hoffman, 2014).

It is against this background that this research focused on the link between food choices and BMI in adults and children in South Africa. Both secondary data analysis and empirical fieldwork were used to gather the data required to answer the research question.

## 1.2. Rationale and significance of the study

The increasing incidence of overweight and obesity and its accompanying health risks place a major burden on individuals, communities and health care systems throughout the world (Goedecke et al., 2005). During the last nine years, the South African government has spent more than R23 billion treating illnesses directly linked to obesity. It is predicted that the incidence of non-communicable lifestyle diseases will exceed that of infectious diseases in the near future and the cost to healthcare systems will amount to approximately R8 billion per year (Mapumulo, 2015).

As such, South Africa is not immune to the global challenge of obesity. A study conducted between 2008 and 2013 revealed that 42% of women in South Africa are obese, which is the highest recorded level of obesity in sub-Saharan Africa (Ng, et al., 2014). The National Income Dynamics Study (NIDS) indicates that more than one-third of women over the age of 15 are obese, according to the BMI index, whilst only 11% of men were found to be obese. The 2012 SANHANES-1 report confirms the NIDS findings with 39.2% of women classified as obese compared to only 10% of men who were obese (DOH, 2015). These statistics indicate that levels of obesity amongst adult women in South Africa exceed even that of the United States. Moreover, these increases are not limited to the adult population; within South Africa, increases in body weight and obesity amongst adolescents and children are well documented. The SANHANES-1 report revealed that in the age category 2 to 5 years, about 18.1% of children were overweight and in the age group 6 to 14 years, a combined overweight and obesity prevalence of 13.5% was observed, exceeding the global average of 10% (Shisana, 2013). A study conducted by Goedecke et al. (2005) revealed that the body weight of South African girls aged 10 to 15 years of all races was far higher than that of boys.

Despite these statistics, there is a dearth of information relating to the contextual challenges of different socio-economic groups relating to food consumption patterns and behaviours. As such, this study employed a mix of quantitative and qualitative research methods with the view of providing a range of in-depth information relating to the underlying causes of the obesity prevalence rate and the different contextual, cultural, socio-economic and environmental factors that play a role in South Africa's healthcare challenge. This research thus addresses the above stated gap and provides evidence-based information on the reasons for this obesity pandemic, thereby informing current government policy efforts aimed at improving the health status of the population.

## 1.3. Problem statement and aims of the research

### *1.3.1. Problem statement*

Food choices and the BMI in adults and children are important channels that enable people to live a healthy life and ultimately lead to societal transformation and higher economic growth at the national level. However, according to a number of scholars, obesity is a growing global epidemic and is becoming an enormous societal problem (Kengne et al., 2013; Kruger et al., 2005; Prentice, 2006; Puoane et al., 2002; WHO, 2011; Ziraba et al., 2009). It is associated with deadly and debilitating diseases and as such, poses a serious health challenge -- it decreases both the length and quality of life worldwide (Asfaw, 2006 de Onis et al., 2010; DOH et al., 2007; Hill, 1999). An additional major concern is a dramatic and continuing increase in the prevalence of overweight and obesity in children (WHO, 2011).

Obesity is on the rise in South Africa, which has amongst one of the highest overweight levels on the African continent and which affects all age groups. The challenge is that the majority of citizens do not seem to perceive obesity as a health risk or problem (HSRC and MRC, 2013). For example, Skaal and Pengpid (2011:565) in their survey of healthcare and non-healthcare workers in South Africa, found that about 37.5% were obese and 9.5% were severely obese but more than 55% perceived their weight as being normal whilst 56% (healthcare workers) and 61% (non-healthcare workers) were satisfied with their current body weight. Furthermore, little is known about the outcomes of BMI measurement programmes, including their effects on weight-related knowledge, attitudes, and behaviour of youth and their families in South Africa. As a result, no consensus exists on the utility of BMI screening programmes for children, the youth and adults. Several researchers in the field have concluded that insufficient evidence exists in relation to people's self-perceived health status and actual measurements (e.g. Kengne et al., 2013; de Onis et al., 2010; Ziraba et al., 2009).

This study, therefore, seeks to assess and quantify food choices and measured BMI in relation to *people's self-perceived health status* and actual BMI measurements scores using the 20140-2015 National Income Dynamics Study (NIDS) data in South Africa. In addition, the study draws on empirical field data in two urban areas in the City of Cape Town, namely, Khayelitsha and Mitchells Plain.

### *1.3.2. Aim of the research*

The aim of this research was to empirically explore and quantify food choices and BMI in relation to people's self-perceived health status and actual measurements using the 2014-2015 National Income Dynamics Study (NIDS) data in South Africa and empirical research drawn from communities in Khayelitsha and Mitchells Plain in South Africa.

### *1.3.3 Specific objectives*

The **specific objectives** to achieve the overall research aim are to:

- identify the kinds of food that are consumed in South Africa;
- assess the circumstances and factors determining food consumption;
- identify the relationship between food choices, self-perceived health status and actual BMI measurements;
- measure the relationship between food choices and obesity in adults and children;
- empower historically disadvantaged South African students in quantitative research methodologies;
- publish and disseminate research outputs via journal articles, op-ed pieces published in newspapers, and policy briefs, and via community radio stations, community workshops, thus facilitating national and international dialogue; and
- facilitate evidence-based policy making for effective multi-level intervention approaches in health promotion practice across South Africa.

### *1.3.4 Research questions*

- What kinds of food are consumed in South Africa?
- What are the circumstances and determinants in selecting the types of foods consumed by households?
- What is the relationship between food choices, self-perceived health status and actual measurement BMI scores?
- Is there a relationship between food choices and obesity in adults and children?

### 1.5. Outlines of chapters

This study is divided into eight main chapters. Snap-shots of these chapters are as follows:

**Chapter I** introduces the study and makes clear the gap between food choices and Body Mass Index (BMI) in adults and children. Thus, it highlights the contextualisation and rationale of the study. It also provides the problem statement, research questions, hypothesis, aims and objectives of the study.

**Chapter II** gives the various perspectives of the literature consulted on the current knowledge on food choices and BMI and presents a discussion of these perspectives. Its aim is to give a background to the study and build a logical framework for the research.

**Chapter III** provides the theoretical and conceptual framework of the study. This chapter provides various perspectives of the Social Ecological Model (SEM) and Social Comparison Theory. This launches the study by analysing applicable food choices and BMI in adults and children.

**Chapter IV** presents an overview of background information about the case study areas, i.e. Mitchells Plain and Khayelitsha. This chapter introduces the case study area and sets a background for the next sections.

**Chapter V** discusses the research design and the analytical tools employed throughout the study. In general, Chapter V presents the method and the analytical tools used in determining the analysis of data, interpretation of results of data analysis, answering the various research questions and testing the research hypothesis in the study.

**Chapter VI** provides a quantitative analysis of data obtained from the two case study areas, i.e. Khayelitsha and Mitchells Plain. Chapter six presents information on household characteristics and' access to basic social services, examines the determinants of food choices, provides an analysis of weight management practices and assesses the overall health status of respondents.

**Chapter VII** presents the findings of the study based on information gleaned from the qualitative data gathered in the case study areas of Mitchells Plain and Khayelitsha. The section begins by highlighting participants' eating habits or patterns, evaluates the factors that influence food choices and consumption patterns and examine the weight management practices that respondents engage in to address the obesity and overweight epidemic.

Chapter VII also highlights the role of school feeding programmes have on the eating habits of children.

**Chapter VIII** concludes the report by proffering recommendations concerning key policy implications emanating from the study. Specifically, this section outlines a mixed bag of policy measures that policy makers and other relevant stakeholders ought to prioritise concerning food choices and BMI in adults and children in South Africa. Additionally, the study offers lessons for future research.

# CHAPTER 2: LITERATURE REVIEW

## 2.1. Introduction

There is vast body of literature (Asfaw, 2006; de Onis et al., 2010; DOH et al., 2007; Hill, 1999; Kim, 2008; Kengne et al., 2013; Kruger et al., 2005; Martorell et al., 2000; Prentice, 2006; Puoane et al., 2002; WHO, 2000a,b,c,; WHO, 1997, 2008; Ziraba et al., 2009) on obesity and Body Mass Index (BMI) and the health risks associated with the disease. The topic of overweight and obesity has further garnered interest from a variety of disciplines and perspectives. These include sociologists, anthropologists, agriculturists, health practitioners, nutritionists, economists, physiologists and geographers amongst others, who examine the topic of obesity and consumption behaviour through their different disciplinary lenses (Contento et al., 2006; Devine et al., 2003; Morton et al., 2006). The purpose of this literature review is to provide a context and background to the study, to reveal current knowledge that exists on the topic and to document the different assumptions and debates surrounding the topic. The review further provides insights into and understanding of the range of factors that impact on obesity, the different determinants and drivers of the pandemic and the constraints faced by policy makers and the public in curtailing the problem.

## 2.2. The extent of the global obesity pandemic

In 2014, more than 1.9 billion adults were overweight, about 39% of adults worldwide. Of these, 600 million were obese, translating into some 13% of the world's adult population. Between 1980 and 2014, worldwide prevalence of obesity more than doubled (WHO, 2015). From 2000 to 2010, the prevalence of early childhood overweight and obesity increased by about 31%. By 2020, global obesity prevalence will increase by 36% (de Onis et al., 2010:1262). The number of overweight or obese infants and young children (aged 0 to 5 years) increased from 32 million globally in 1990 to 41 million in 2014, with the majority living in low- and middle-income countries. As of 2014, 48% of overweight children and infants under 5 years of age were resident in Asia whilst 25% lived in Africa (WHO, 2016). Key findings of a study conducted by Ng et al. (2014) revealed that more than 50% of the world's obese people live in ten countries. These countries, ranging from the country with the highest number of obese persons, are the United States, China, India, Russia, Brazil, Mexico, Egypt, Germany, Pakistan, and Indonesia.

Overweight and obesity is not a problem only in the developed world. Data provided by the

World Health Organisaiton (WHO, 2015) indicates that the incidence of obesity is also increasing in developing countries, particularly in urban settings. The rate of the increase of African children who are overweight or obese increased from 5.4 million in 1990 to 10.6 million in 2014, whilst almost 50% of children under 5 who were overweight or obese in 2014, lived in Asia.

### 2.3. Global trends and macro-environmental influences

Obesity is not a 21st century health problem. It dates back to the 19th century, as is evident from the work of William Banting who suffered from obesity and has been accredited with advancing the first low carbohydrate 'Banting' diet (see Bray, 2003). The World Health Organisation only began to view obesity as a serious disease in the 20th century and recognised its severity and burden for global health systems all over the world. The WHO Report in the late 1990s on preventing and managing obesity highlighted its alarming increase in both the developed and developing world and its heightened prevalence in urban areas (WHO, 1997:17). Data released a decade later, revealed that the weight problem was severe in the Americas for both sexes, recording 62% and 26% prevalence rates for overweight and obesity respectively, while in South East Asia, only 14% were deemed overweight and 3% obese (WHO, 2011).

Changes in the global food system and increased energy supply are among the major drivers of the obesity pandemic in the form of affordable and available obesogenic, ultra-processed foods (Vandevijvere et al., 2015). For Swinburn et al. (2011:1), the "overconsumption of energy leading to obesity is a predictable outcome of market economies predicated on consumption-based growth". Stronger economic forces, together with cheaper high-density foodstuff made possible by new technological changes are resulting in overconsumption and increasing obesity.

Another key global driver of increased population weight is the rapid rise of multinational corporations and their heightened influence on decisions that shape global trade and food production. Changes in global food systems take the form of fast food consumption, persuasive marketing, expansion of processed foods and the increase in the intake of energy-dense foods (Swinburn, et al., 2011). Freer food trade between countries and reduced import barriers have resulted in the increased distribution systems of products such as cheap vegetable oils and refined fats in developing countries and their consumption by low-income families. The growth of convenience stores and multinational food chains has replaced fresh

food markets as the dominant food source in parts of Africa, Asia and South America (Popkin et al., 2012).

A study conducted in Mexico on the impact of the increased export of highly processed low nutrient foods from the United States indicated that the incidence of overweight and obesity almost tripled between 1988 and 2006 (Freudenberg, 2014). This has resulted in a 'nutritional transition' defined by Popkin (1998:6) as shifts that occur in human nutrition as a direct result of changing agricultural patterns and socio-economic status which result in dire consequences for availability, access, supply and cost of healthy food particularly in developing countries.

### 2.4. Urbanisation

An additional critical aspect of the rapid increase of obesity worldwide is that it is saturated in urban areas and that rural/urban migration plays a pivotal role in the rising global obesity pandemic. Many studies suggest that the availability of and easy access to food in urban centres is a significant determining factor in the incidence of increasing body weight (Ziraba et al., 2009). One of the reasons put forward for this increase is that energy expenditure typically decreases due to more sedentary lifestyles in urban settings (Cabellero, 2007). Urbanisation produces new household consumption patterns and dietary habits which go hand in hand with increased body weight and constitutes a major risk factor for non-communicable diseases (Mokhtar et al., 2001:888). A comparison of rural/urban consumption patterns of African populations reveals that traditional diets of urban households are abandoned and exchanged for western diets typified by a decrease in the consumption of fibre and an increased consumption of fat and carbohydrates (Bourne et al., 2002).

Increased urbanisation is linked to the increased consumption of low nutrient, high fat and energy-dense foodstuff. Higher incomes in urban areas and the increased availability of and accessibility to convenience meals at fast food outlets result in overconsumption, while the urban environment is less conducive to physical activity (Swinburn et al., 2004). This is due to pollution, unsafe neighbourhoods, the design and form of urban suburbs and the lack of sidewalks (Lopez and Hynes, 2006). Revolutionary changes in the media have resulted in excessive television viewing in urban households and the advertising of food in a variety of formats (Contento et al., 2006).

## 2.5 Determinants of overweight and obesity

Besides global trends and macro-environmental influences of increasing body size described above, other multiple interactive causes and behaviours play a role in the global increase of overweight and obese populations. Considering the detrimental impact of the obesity pandemic, it is important to identify the drivers and multiple determinants that contribute to the growing problem in the developed and developing world. A number of possible explanations have been put forward some of which are discussed in the fields below.

### *2.5.1. Dietary consumption and body weight*

One of the main factors responsible for increased body weight relates to the mismatch between dietary consumption and energy expenditure. Poor eating habits, which include both under- and overeating, the intake of foods low in fibre, the consumption of sugary drinks and the availability of affordable high fat energy-dense foods are some of the attributing factors (DOH, 2006). The increase in body fat throughout the world has major implications for the overall health of populations. It has been directly linked to increases in mortality rates worldwide because of the increased risk of high blood pressure, coronary heart disease, stroke and diabetes mellitus (National Institute of Health, 2000; National Strategy, 2015). A number of sources draw attention to the importance of the distribution of body fat in predicting mortality, particularly the danger of accumulation of fat around the waist, which is positively linked to myocardial infarction (Segula, 2014; Yusuf et al., 2005). Additionally, persons with high levels of abdominal fat tend to be at a higher risk of diabetes, dyslipidemia, hypertension, and cardiovascular disease than those who experience increases around the hips and limbs (Swinburn et al., 2004).

While obesity is the result of over-consumption and leads to the accumulation of excess body fat, decreased physical activity, attributed to decreases in labour intensive occupations, easier access to transportation systems and sedentary lifestyles, is one of the key factors contributing to increased body weight worldwide (Popkin et al., 2001). However, more emphasis is placed on the increased energy consumption as the culprit for the runaway explosion of obesity throughout the world. Whilst agreeing that increased physical activity is important for managing weight and overall health, Loring and Robinson (2014) provide their view on the role of physical activity in the rise of obesity:

> The available evidence suggests that increased energy intake – rather than decreased physical activity – is the main driving force behind the obesity

epidemic in lower socio-economic groups. The relative culpability of energy intake (food consumption) versus energy expenditure (physical activity) in gaining weight is sometimes debated, but most studies point to overconsumption of energy-dense foods being the main culprit. The data on physical activity suggest that, although levels have declined, the magnitude of the change is unlikely to explain the dramatic rise in obesity at the lower end of the social spectrum.

### *2.5.2. Socio-cultural dynamics*

Socio-cultural dynamics are cited as factors that play a significant role in obesity levels. Some sources highlight the role of culture in influencing consumption behaviour among different groups in society. DeAnglis (2008:30) provides a definition of culture as 'the learned and shared beliefs, values, and life ways of a designated or particular group which are generally transmitted inter-generationally and influence one's thinking and action mode'. This suggests that culture plays an important role in determining food behaviour within the household, has a symbolic meaning, is used to establish and maintain relationships with others and that food customs are perpetuated within families.

Whilst overweight and obese persons suffer social stigmatisation, discrimination and victimisation in the western world (Puhl and Heuer, 2009), in many countries cultural values do not perceive obesity as a health problem but view larger body size as a social norm and a sign of good health. The cycle is perpetuated as children inherit the eating habits of their parents and the pattern of overeating is perpetuated (WHO, 2016). In most parts of Africa, larger body size is viewed as a symbol of beauty and fertility and is a general traditional stereotype throughout the continent. Socio-cultural beliefs and practices also appear to influence body size in countries such as Jamaica, where obesity in women is acceptable and associated with maternity and nurturing whilst in East Asia and the Pacific increased body weight is associated positively with increased socio-economic status (Kanter and Cabellero, 2012).

### *2.5.3. Gender and age*

Numerous data sources reveal that women are more likely to be obese than men (Martorell et al., 2000; Prentice, 2006). This is attributable to physical activity variances, sociocultural factors and biological differences (Kanter and Cabellero, 2012). A recent study conducted between 1975 and 2014 in two hundred countries analysed global gender disparities in adult

BMI, targeting 19.1 million people (NCD Risk Factor Collaboration, 2016). Findings revealed that the age-standardised prevalence of obesity for men increased from 3.2% in 1975 to 10.8% in 2014, whilst obesity in women increased from 6.4% in 1975 to 14.9% in 2014. A further 2.3% of the world's men and 5% of women were found to be severely obese with a BMI of ≥35 kg/m$^2$ (NCD Risk Factor Collaboration, 2016). Loring and Robinson (2014) note that one of the reasons that women tend to be more obese is that they are less likely to participate in physical activity due to traditional gender norms that discourage teenage girls and women participation in organised physical activity. Other barriers to participating in physical activities for women and children in urban areas include safe places to exercise, particularly in low income, disadvantaged areas.

Regarding excess body weight in children, de Onis et al. (2010), using the new World Health Organisation standards, analysed cross-sectional surveys from 144 countries to quantify the global trends of overweight and obesity among preschool children in developing countries. They concluded that the prevalence of childhood overweight and obesity increased from 4.2% in 1990 to 6.7% in 2010 (ibid).

While many studies confirm that BMI rises with increased age amongst both male and female adults, there is a significant correlation between increased body fat and the post-menarcheal period for girls (Kruger et al., 2009). According to the literature, breastfeeding and early nutrition plays a critical role in the later health status of children and their likelihood of being overweight as adults. Mothers in lower socio-economic groups are more likely to be overweight and less likely to breastfeed. Infants who are not breastfed and who are born to obese mothers with low socio-economic status are more likely be at risk of becoming overweight (Saris et al., 2003).

#### *2.5.4. Socio-economic status*

A review of literature reveals a rather multifaceted link between income and obesity. Although obesity is on the increase globally, Hule (2013), referring to a study conducted in 76 countries, found that obesity increased along with the GDP of a country. This study, together with many other research efforts, revealed that greater obesity rates in high income countries are generally found amongst lower socio-economic status groups, whereas in lower income developing countries overweight persons are more likely to enjoy higher socio-economic status (Hule, 2013; Guiliford et al., 2003, Popkin et al., 2012). Jones-Smith et al. (2012) who analysed national trends in overweight and obesity status using the DHS wealth index, education, and cross-sectional data on women from 37 developing countries

confirmed this finding. The data revealed that in 27 cases there was a positive link between higher socio-economic status and the prevalence of increased body weight (Jones-Smith et al., 2012).

Hule (2013), reflecting on the reasons for the above trends, suggests the following:

> Why the reversal? It may be that in lower-income countries, higher SES leads to consuming high-calorie food and avoiding physically tough tasks. But in higher-income countries, individuals with higher SES may respond with healthy eating and regular exercise. The implication is that while economic development improves health, "problems of malnutrition are replaced by problems of overconsumption that differentially affect SES groups" …

Saris et al. (2003) agree with this view, noting further that in low-income countries, amongst people enjoying higher socio-economic status, middle-aged women are most likely to be obese, whilst in affluent societies, adolescents and younger children tend to be overweight and obese. Kruger et al.'s (2005:357) research amongst school children concluded that "socio-economic levels are determined by the occupation and income of the parents, ultimately influencing the food intake and activity".

### 2.6. Trends and prevalence of obesity in Africa

Obesity has become a major public health problem on the African continent. Although the incidence varies considerably across regions, the proportion of adults with a BMI of $\geq 25$ increased substantially between 1980 and 2013 and the incidence of overweight and obese adults is far higher amongst women. This is, however, a worldwide trend and not limited to Africa.

The data by Ng et al. (2014) revealed that in North African countries Libyan men had the highest obesity incidence at 30.2%, whilst 57.2% of Libyan women were obese. In Central sub-Saharan Africa, the Central African Republic adult males were the most obese at 13.2%, whereas Angola had the highest percentage of obese women at 18.7%. Within sub-Saharan Africa, South Africa had the highest prevalence of obese men and women at 13.5% and 42% respectively. Other data sources indicate that more than half of women in Botswana are obese while one in eight Nigerian men is obese. One of the fastest rising incidences of overweight persons is found amongst Egyptian women where almost two-thirds are overweight. Unlike the developed world, the problem afflicts more women than men in the developing world, where females display unhealthy levels of body fat; with more than four

in 10 diagnosed as clinically obese (Ibid).

Research conducted in Africa by Asfaw (2006:251) revealed that obese patients were far more likely to face the risks of arthritis, asthma, diabetes, and heart diseases in South Africa and Senegal than their lean counterparts. A more recent study conducted by Adeboye et al. (2012) examined the pattern of obesity in Africa. Their investigation confirmed other study findings which indicated a higher prevalence of obesity in urban areas. Their research pointed to changing food consumption patterns, the increased availability of processed foods and less physical activity as contributing factors (Ibid). More recently, Kengne et al. (2013:979) examined the relationship between obesity and diabetes mellitus in Africa over a ten-year period from 2002 to 2012. Unsurprisingly, they found that increases in the frequency of diabetes paralleled increases in obesity. Their study demonstrated that physical inactivity and dietary change were significant factors that intensified insulin resistance (Kengne et al., 2013:980). Whilst MacIntyre et al. (2002) remind point to the positive effects of urbanisation such as lower infant mortality rates and longer life expectancy; they also highlight the double burden of over- and undernutrition in destitute households.

Ziraba et al. (2009:2) conducted an analysis of national health survey data from seven countries in sub-Saharan Africa to investigate whether obesity was a function of income and education in Africa during the period 1993 to 2005. The study found that the increase in obesity at 35% was higher amongst the poorer households over the ten-year period than the wealthy households. This latter finding contradicts global trends which indicate that more wealthy households in low- and middle income countries tend to be overweight. Furthermore, Ziraba et al.'s (2009) study found that increase in overweight and obesity was higher in urban areas and that the level of education played a significant role in increasing body weight. Research findings signified that in non-educated and primary-educated households, the prevalence of overweight and obese persons increased by 46%, whereas among secondary-educated women it dropped to 10%. This is confirmed by Adeboye et al. (2012) whose research showed a positive relationship between obesity and higher socio-economic status. This may suggest that while obesity was rising in general, richer households were able to curb its increase compared to poor households. Whereas all the studies reviewed focused on different aspects of health, they all confirm that obesity is rising rapidly in Africa. The above authors also agree that there is an established link between obesity, nutrition transition and some chronic diseases like hypertension and diabetes.

## 2.7. Obesity trends and prevalence in South Africa

Both the National Income Dynamics Study (NIDS) and the 2012 SANHANES report reveal that more than one-third of South African women over the age of 15 are obese in contrast to an average of 10.5% for men. As noted earlier in this report, obesity prevalence among women in urban South Africa is 42%. Excess body weight is not limited to South African adults. Amongst children aged 2 to14, 16.5% of girls and 11.5% of boys were found to be overweight. A total of 7.1% of girls and 4.7% of boys are classified as obese. Amongst 2 to 5 year-olds, 18.9% of girls were overweight and 4.9% were obese, whereas 17.5% and 4.4% of boys were overweight and obese, respectively (HSRC and MRC, 2013). A study conducted by Goedecke et al. (2005) revealed that the body weight of South African girls aged 10 to 15 of all races was higher than boys and the prevalence of overweight and obese individuals was far higher in urban areas.

Numerous scholars have conducted an analysis of the determinants of obesity amongst South Africans (see for example Puoane et al., 2002:1038). Their findings reveal that cultural beliefs and lifestyle behaviour play a significant role in body size. Amongst black South African women there is a positive association between body size and wealth. For this group, due to the fear of HIV/AIDS and accompanying weight loss, obesity is associated with 'good health' and being rich (Puoane et al., 2002; Mickelsfield et al., 2013). Kruger et al. (2005:492-493) arrived at a similar conclusion about the connection between cultural beliefs and perceptions about body weight amongst South Africans but cited other factors such as the nutrition transition based on globalisation, dietary practices and socio-economic factors as impacts.

Another factor highlighted in the literature is that South Africans generally seem to have a tranquil attitude towards personal health care. A recent national household survey indicates that with respect to less serious health conditions, the majority of South Africans choose to self-medicate rather than consult a health care provider (StatsSA, 2013:94). Some of the reasons given for these choices include that treatment is 'too expensive' or 'health services are too far' (inaccessible) or 'not necessary/problem not serious enough' (Ibid).

A similar attitude has been observed in dealing with weight management. In a survey of healthcare and non-healthcare workers, Skaal and Pengpid (2011:565) found that about 37.5% of workers were obese and 9.5% were severely obese. Surprisingly, more than 55% viewed their weight as normal, while 56% (healthcare workers) and 61% (non-healthcare workers) were satisfied with their current body weight. The most recent study conducted in

2013 amongst black women in Durban shows that 76% were obese and only about 27% perceived themselves as having a large body image while 99% associated thinness with HIV/AIDS (Devanathan et al., 2013:4). A similar study conducted in the Northern Province revealed that a total of 72% of respondents were obese, whilst only 14.6% acknowledged that they were clinically obese (Ramukumba et al., 2013). Most of the respondents in this study reported obesity-related illnesses like hypertension (24.3%), type 2 diabetes mellitus (8.4%), and arthritis (6.3%) whilst some perceived obesity as a symbol of wealth and comfort in life and beauty. The one interesting finding of this survey is that obesity was high amongst middle income earners.

The latest available national data in South Africa is found in the recent National Health and Nutrition Examination Survey (SANHANES-1) conducted in 2013. The findings of SANHANES-1 do not provide anthropometric data for current BMI amongst adults. However, there is an indication in the report that more than '63% of South African women and about 69% of men are happy with their current body weight' (HSRC and MRC, 2013:191). In addition, data amongst children show that 'the mean weight (kg) and height (cm) of participants aged 0 to 14 years by sex, age, locality, province and race, for South African girls were significantly heavier than boys (27.2kg vs 24.8kg) and they were also marginally taller than boys' (HSRC and MRC, 2013:201). Reflecting on the overall findings in the literature enables one to conclude that obesity is on the rise in South Africa and amongst one of the highest in the African region, affecting all age groups. The challenge in South Africa is that the majority of citizens do not seem to perceive obesity as a health risk or problem.

## CHAPTER 3: THEORETICAL/CONCEPTUAL FRAMEWORK

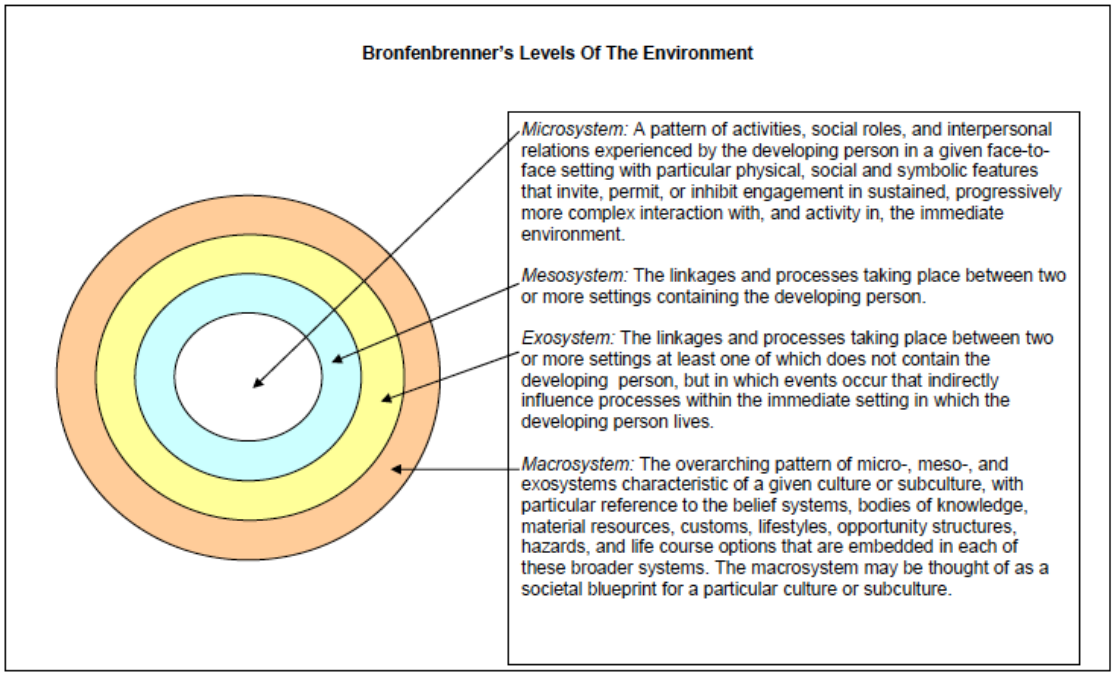
### 3.1. Introduction

There are several theories/schools of thought that are used to provide insight into food consumption processes and behaviours and the topic has been studied from a variety of disciplinary backgrounds including psychology, sociology, anthropology, agriculture and the medical sciences. Different theoretical models, approaches and assumptions present different viewpoints on the dimensions of factors that play a role in influencing eating behaviour. The two most applicable are presented in this section in an attempt to provide insight into the complexity of food behaviour and inform the empirical fieldwork phase.

### 3.2. Bronfenbrenner's Social Ecological Model

The Social Ecological Model (SEM) was developed by Urie Bronfenbrenner to explain the array of contexts and systems that shape human behaviour and development (Bronfenbrenner, 1989). It is a useful model to use to examine food choices and consumption behaviour as it takes into account not only individual attributes but considers the range of environmental elements and dimensions that interact with people over the course of their lives (Piscopo, 2004). The Ecological Systems Theory of Bronfenbrenner holds that different systems influence behaviour to varying degrees throughout one's life course and that there are multiple levels of influence that impact on human behaviour (Trew et al., 2006). Bronfenbrenner's ecological model is a useful framework for examining food behaviour as it acknowledges the role of not only the personal characteristics of an individual but also considers the range of other impacts and dimensions of influences at different levels. These levels are illustrated in the diagram below and include the microsystem, mesosystem, exosystem and macrosystem (Piscopo, 2004:44). Story et al. (2002) built on Bronfenbrenner's model and used it to identify the multiple factors operating at different levels that operate on multiple levels of influence. This model can be used as a framework for understanding the multiple factors that affect these behaviours and assist in the development of strategies aimed at improving the nutrition and diets of different groups of people.

**Figure 1: Bronfenbrenner's Social Ecological Model**




*Source: Piscopo, 2004:44.*

A doctoral study conducted by Piscopo (2004) used Bronfenbrenner's ecological model as a theoretical framework for studying the eating habits of children in Malta. Piscopo's (2004:45) motivation for the effectiveness of this model in studying dietary behaviour is as follows:

> In general, the primary aim of an ecological model is not to claim answers, but to provide a theoretical framework that, through its application, will lead to further progress in discovering the processes and conditions that shape human behaviour. Bronfenbrenner's model is suited to providing a framework for studying Maltese children's eating habits as it not only allows for individual attributes to be considered, but assumes that other environmental factors and influences will be considered as well as they interact with the individual. Thus, psychological concepts and sociological concepts can be integrated within a larger ecological discussion of the phenomenon.

Similarly, Smedley and Syme (2000) refer to the Institute of Medicine's recommendations for using the Social Ecological Model for planning public health interventions as the model incorporates approaches at the individual, interpersonal, institutional, community and policy levels. The usefulness of using the model as the framework for the construction of dietary change interventions is that it recognises the complexity of the causes of health problems

and disparities in the outcomes of health interventions.

### 3.3. Social comparison theory

The theory of social comparison originates from the intellectual work of renowned social psychologist Leon Festinger in 1954. The essence of Festinger's theory is that individuals evaluate their opinions and abilities through comparisons with those of others who share similar characteristics (Festinger, 1954). While social comparison within this context is an individual process, as it is concerned with self-evaluation, it has a number of implications for group processes (Goethals and Darley, 1987). Over the years social comparative theory has been used widely by scholars to understand human behaviour in a myriad of aspects including body image and perception. Most of the research relates more to the comparison of abilities such as personal characteristics with the purpose of satisfying particular needs such as self-enhancement and self-improvement or to gain self-knowledge through comparison with others (Corcoran et al., 2011:121).

Fisher et al. (2002:575) conducted research on body image and appearance using social comparison theory. They tested the theory on males and females from 7$^{th}$ grade to senior college students on two comparison dimensions namely weight and muscle tone. The findings indicated substantial differences between males and females in appearance comparisons. When indicating the body image perception, females expressed excessive or unacceptable weight levels along the weight/non-weight continuum and low muscle/non-muscle dimension whereas male respondents emphasised low weight and high muscularity respectively. Fischer et al. (2002:575) concluded that higher dimensional weight loadings for body sites associated with excessive weight have the potential to "indicate a basic cognitive organizational basis for the significant association between elevated comparison tendencies and body image disturbances". On the other hand, Krayer et al. (2008:899) suggest that "enhancement comparison might be protective" to people when given an opportunity to challenge socio-cultural norms in which social comparisons are based.

Whilst social comparison theory may have contributed to positive self-enhancement in some people, White et al. (2006:40) argue that "frequent social comparisons are associated with destructive emotions and behaviours like envy, guilt, defensiveness, regret and lying to protect the self". This is often due to a process defined by Festinger (1954:124) as a "unidirectional drive upwards" which pushes human beings to thrive to be better and better towards the attainment of abilities of their perceived superior comparison source. A study conducted in 2009 confirmed that patients who had bulimia nervosa demonstrated frequent

comparison with bodies that had lower BMI and this resulted in decreased body satisfaction amongst respondents (Blechert et al., 2009:910). The concept of self-evaluation is therefore far more complex than presented in social comparison theory. Vartanian (2012:711) asserts that there are three important dimensions of self. One of them, "the actual self", defined as the individual's perceptions of his/her attributes and characteristics, is critical and relevant in the context of body image. It is well documented that people often misperceive their body size and image based on secondary comparative and cognitive beliefs, characteristics and attributes.

Both the social ecological model of Bronfenbrenner and the social comparison theory proposed by Festinger are applicable as a theoretical framework to inform this study. These models provide important insights into the complexity of dietary behaviour and the multiple layers of influences that play a role in determining food choices and consumption processes.

# CHAPTER 4: OVERVIEW OF CASE STUDY AREAS

## 4.1. Mitchells Plain

### *4.1.1. Location and settlement history*

Mitchells Plain is situated 20 km from the city of Cape Town. Mitchells Plain, by design, is located in such a way as to separate its residents from both the northern and southern suburbs. The area is situated west from the Philippi horticultural area, and south from the False Bay coastline. East of Mitchells Plain is its neighbouring community of Khayelitsha and the Swartklip Road separates the two areas. To the north of Mitchells Plain are the R300 highway and the area of Philippi (City of Cape Town, 2011).

Mitchells Plain was established in 1970 as a group area for those classified as 'Coloured' by the apartheid state. It lies in what is known as the wider belt of the Cape Flats and was developed to accommodate the Coloured population, who were forced to relocate from other group areas designated for whites in Cape Town. In common with other group areas, this area isolates its inhabitants from the city centre, but it is also separated from the neighbouring community of Khayelitsha, designated for blacks (City of Cape Town, 2011).

The Group Areas Act of 1950, created a mechanism for relocating individuals to a fixed area according to their race, financial status and geographic location (Platzky and Walker, 1985). In maintaining this division, group areas 'townships' were developed, to maintain order and security desired by the government. Those areas consisted of individuals of the same racial group. Some of those new residential areas developed with little negative effects, while others were faced with factors such as poverty and high unemployment rates, which resulted in little growth within the community. Each area had been designed to purposely isolate its residents from other racial groups. Mitchells Plain is a legacy of the apartheid era Group Areas Act of 1950 and is viewed as a stereotypical showpiece for the goals and restrictive measures put in place by the National Party. It resulted in a class bound, dormitory community for Coloureds (NA, 2015).

### *4.1.2. Physical and infrastructural environment*

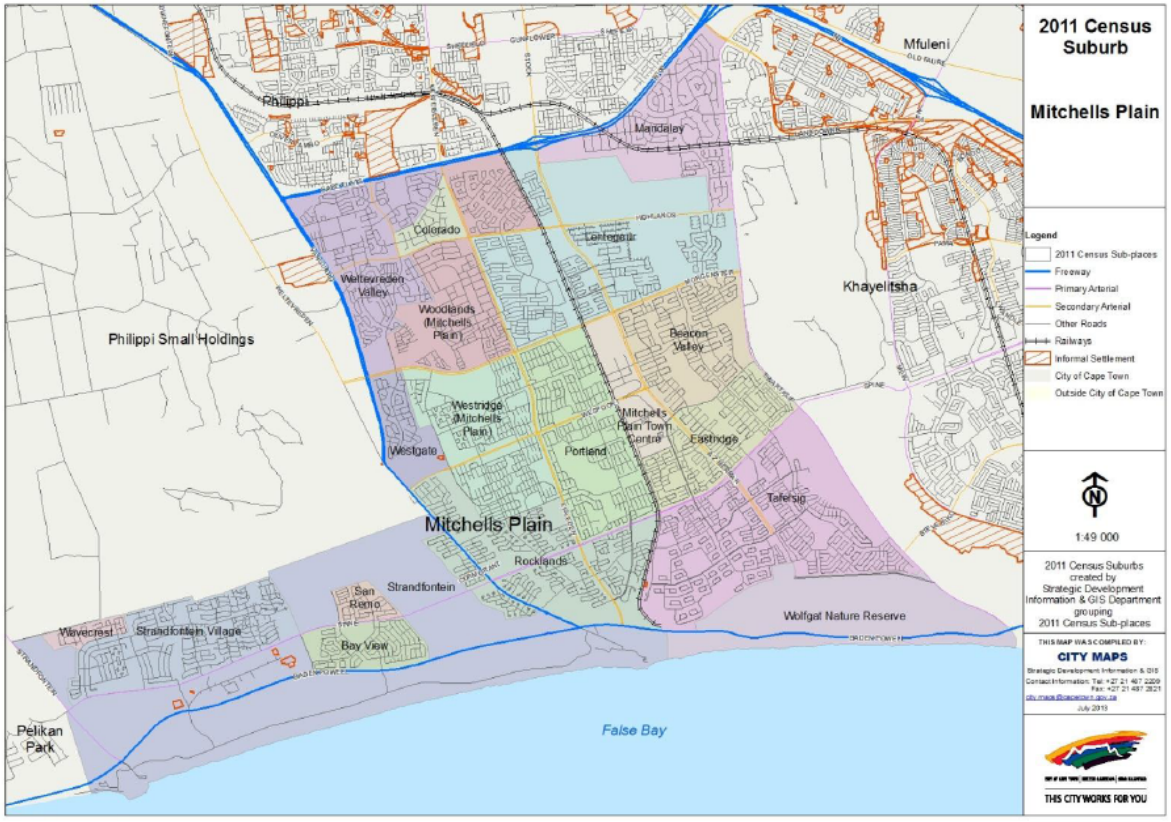
As seen in Figure 2 below the areas within Mitchells Plain comprise 19 areas, according to the 2011 census (Statistics South Africa, 2012). Since Mitchells Plain is a large area, it falls

into three sub-councils namely 12, 23 and 19. Each sub-council consists of several wards. Sub-council 12, as can be seen in Figure 2 below, holds the majority of the wards, which make up Mitchells Plain. The remaining 3 wards fall under sub-councils 23 and 19.

- Sub-council 12 is characterised by 9 sub-areas, namely, Mitchells Plain Town Centre, Westgate, Rocklands, Tafelsig, Eastridge, Westridge, Portlands, Beacon Valley and Wolfgat Nature Reserve.
- Sub-council 23 is characterised by 5 sub-areas which include Woodlands, Weltevreden Valley, Colorado, Mandalay and Lentegeur.
- Sub-council 19 is characterised by 5 sub-areas which include Strandfontein, Strandfontein Village, San Remo, Bay View and Wavecrest.

The Mitchells Plain sub-district is accessible via the following main roads: Vanguard Drive, the R300 highway, Baden Powell Drive and Swartklip Road. This sub-district includes the suburbs/neighbourhoods of Colorado, Weltevreden Valley, Woodlands, Beacon Valley, Lentegeur, Eastridge, Westridge, Portlands, Rocklands and Tafelsig (City of Cape Town, 2012)**.**

**Figure 2: Map of Mitchells Plain**

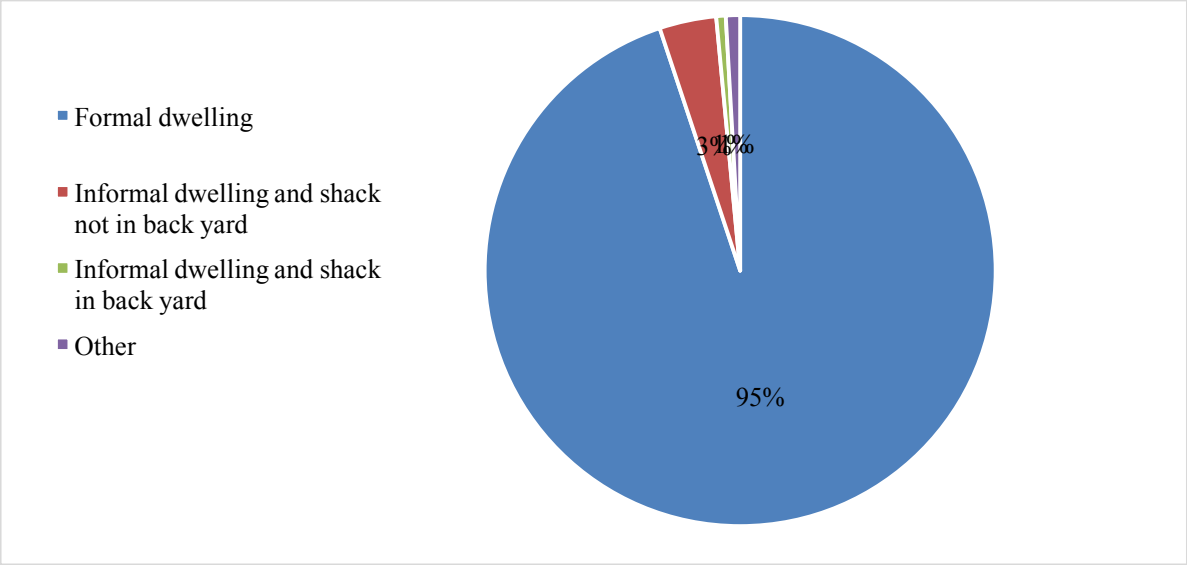



*Source: Census, 2011*

### *4.1.3. Housing characteristics*

The South African Constitution states that citizens are entitled to acceptable housing. Furthermore, it stipulates that it is the State's responsibility to provide resources to realise this right (Western Cape Provincial Treasury, 2013).

**Figure 3: Types of dwellings in Mitchells Plain**




*Source:* Western Cape Provincial Treasury, 2013

The pie chart above displays the types of dwellings in Mitchells Plain. Approximately 95% of residents live in formal dwellings while 3.6% occupy informal dwellings with a shack in a back yard.

### *4.1.4. Demographic profile*

The population size of Mitchells Plain is 310 485 with land size of 43.76 $km^2$ encompassing 19 sub-places (Census, 2011). Between 2001 and 2011, the population size decreased by some 88 000 individuals (Western Cape Government, 2013). Statistics South Africa states that for every square kilometre in Mitchells Plain there would be 7096 people, making it a densely populated area.

The age distribution of Mitchells Plain is made up of a predominantly older population. Half of the population, i.e. 50.2% (155 853), consists of individuals between the ages of 25-64 years (Census, 2011). The youngest group within this population make up 10.4% (32 148). The target age group of the children in the study is 5-11years old which falls within the census category of 5-14 years old. They make up 17.1% (53 248) of the Mitchells Plain

population. The adults in the study will be those who are 18 years and older, which would be the majority of the population.

**Table 1: Population by age**

| Mitchells Plain population by age | | |
|---|---|---|
| **Age** | **Total Population** | **Percentage (%)** |
| 0-4 years | 32 148 | 10.4 |
| 5 to 14 years | 53 248 | 17.1 |
| 15 to 24 years | 56 398 | 18.2 |
| 25 to 64 years | 155 853 | 50.2 |
| 65 years and older | 12 842 | 4.1 |
| **Total** | **310 488** | **100** |

*Source: Census, 2011*

In terms of the gender dynamics, Mitchells Plain consists of more females than males. Females make up 51.4% (159 452) whilst males constitute 48.6% (151 032), as shown in the Table 1 above. According to the 2001 Census, females constituted 51.7% and males made up 48.3%. This shows that the gender distribution in Mitchells Plain has, over time, been relatively stable. There are 67 995 households in Mitchells Plain of which the average household consists of 4.57 persons. A household, according to Statistics South Africa, is understood as any number of person(s) living together, sharing food and other amenities (Census, 2011). According to Statistics South Africa (2011), 37.8% of the households in Mitchells Plain are headed by females.

The Mitchells Plain population is made up of predominantly Coloured people. As shown in the Table2, Coloured people make up 91% (281 828) of the residents, while Black Africans, the second largest group, account for 7.3% (22 732) (Census, 2011). The other groups, namely Asian, white and other are relatively small in comparison to the Coloured community, consisting of 0.6% (1926), 0.2% (580) and 1.1% (3427) respectively (Census, 2011).

**Table 2: Population by race**

| Mitchells Plain population by race | | | | | | |
|---|---|---|---|---|---|---|
| | **Black African** | **Coloured** | **Asian** | **White** | **Other** | **Total** |
| Number | 22 723 | 281 828 | 1926 | 580 | 3427 | **310 484** |
| Percentage (%) | 7.3 | 90.8 | 0.6 | 0.2 | 1.1 | **100** |

*Source: Census, 2011*

In South Africa, there are 11 official languages. The majority of the residents of Mitchells Plain speak English (47.4%), followed closely by Afrikaans 46.9% (Statistics SA, 2011). Other languages spoken include isiXhosa (3.3%), Sesotho (0.4 %), Setswana (0.4%), IsiNdebele (0.3%), isiZulu (0.2%), Sepedi (0.1%) and other languages (0.8%). Sign Language accounts for 0.3% of the Mitchells Plain population (StatsSA, 2011).

### *4.1.5 Public services provision and facilities*

Accessibility to clean water is an essential factor in maintaining a healthy lifestyle. According to the Western Cape Provincial Treasury (2013), water supplied or made available to residents of the communities should be safe, this in order to reduce the spread of illnesses within the communities.

Most of the residents in Mitchells Plain have access to water inside their homes (95.9 %), while 0.7% of residents do not have access to water. Residents who have access to piped water inside their yards make up 2.7% whereas those with water outside their yards account for 0.7% (Census, 2011).

With regards to energy sources, the majority of the residents use electricity for lighting, cooking and heating. Also, in terms of sanitation, about 96% of residents in Mitchells Plain have their toilets connected to sewerage pipe and are able to dispose of their waste using a flush mechanism whereas about 1.5% do not have access to human waste disposal (see Table 3).

**Table 3: Sanitation**

| Mitchells Plain Sanitation | | |
|---|---|---|
| **Type of Sanitation** | **Number** | **Percentage (%)** |
| Flush with connection to sewerage pipe | 64929 | 95.5 |
| Flush with connection to septic tank | 462 | 0.7 |
| Bucket toilet | 966 | 1.4 |
| None | 999 | 1.5 |

*Source: Census, 2011*

Concerning refuse removal, nearly all residents in Mitchells Plain have their garbage collected by the City of Cape Town Council

Mitchells Plain is home to a few health institutions; it hosts eight clinics spread across its different sub-areas. Aside from its clinics, it has two general hospitals and one psychiatric

hospital. In addition to its hospitals, the area is home to 25 dental practices, 5 physiotherapist practices, 10 psychologist practices and has an established rehabilitation facilitation centre (Mitchells Plain Local Directory, 2016).

There are numerous educational institutions in Mitchells Plain for school-goers. There are 74 schools within the 9 areas of Mitchells Plain. Primary schools make up the majority of the educational institutions which account for 43 schools, followed by 17 secondary schools, 6 pre-primary schools and 4 LSEN (Learners from special education needs school) institutions. There is a single TVET institution in Mitchells Plain called False Bay College (Mitchells Plain Local Directory, 2016).

The City of Cape Town set up a recreation centre in District 3, called the Mitchells Plain Family and Youth Centre (CoCT, 2014). This district includes Mitchells Plain, Colorado, Tafelsig, Khayelitsha, among others. The centre boasts facilities like a main hall, smaller hall, courtyards, basketball court as well as a computer room (CoCT, 2014). A study, which ultimately resulted in the creation of this centre, indicated that inhabitants of this district are active. It showed that the residents, during their free time, are involved in physical activities. Specifically, it indicated that 37.8% of the residents engage in physical exercise often, whilst 32.8% are involved in sports and other recreational activities (CoCT, 2014). Most of the children engage in physical activities when they feel bored and 70.7% are involved in sport and recreational activities, while another 63% often engage in physical activities (CoCT, 2014). Additionally, there are many other sporting activities and clubs in Mitchells Plain which are available for the residents: boxing, chess, cricket, cycling, darts, gymnastics, karate, rugby, running, soccer and tennis (Mitchells Plain Local Directory, 2016). Moreover, there are 11 sports complexes or fields within Mitchells Plain. This shows that the community of Mitchells Plain has many physical and recreational centres and clubs within which to participate.

There are 17 community organisations in Mitchells Plain, according to a local directory. Most of the activities of the organisations aim at the development of the community itself, focusing on issues such as family counselling as well as drug counselling, shelters and educational development. They include: Autism Connect, Beaconvale Community Frail Care Centre, Cape Town Drug Counselling Centre-Mitchells Plain, Colleen's Place of Hope, FAMSA-Mitchells Plain, Heaven's Shelter House, International Foundation for Education and Development SA, Jireh Community Projects, Khulisa Social Solutions MP, Mitchells Plain Islamic Society, Mitchells Plain Network Opposing Abuse, Mitchells Plain Skills

Centre, Nicro-Mitchells Plain, Read to Rise, Rocklands Youth Café, Thembani Haven of Care Organisation Network and Youth Unemployment Prevention Project (Mitchells Plain Local Directory, 2016).

### *4.1.6. Socio-economic structure of population*

The income distribution of the residents of Mitchells Plain ranges from receiving no income to earning more than R102 401 monthly. These statistics are based on those who are eligible to enter the labour force (those between the ages of 15 to 64 years of age) (Census, 2011). A total of 70% of the Mitchells Plain population earn between R1 601-R2 560, with equal proportions of 20% each allocated to the earning brackets of R3 201- R6 400 and R6 400-R12 800 respectively; 10.4% of the population are recorded as households with no income. These would most probably account for households that do not have fixed or regular incomes. This figure i relates to informal market activity as well as those households who are possibly surviving on grants (Census, 2011).

Regarding the educational attainment of the adults in Mitchells Plain, 48.7% of adults achieved some secondary education, 28.6% completed their matric, while 1.1% had no schooling. Those who have achieved tertiary education account for 5.9% of the population. Based on the statistics, it shows that more than half of the population obtained a secondary education.

The labour force in Mitchells Plain who are able to work make up 212 250 of the residents. From this group, only 46% (129 363) are employed, leaving the remaining proportionately unemployed figure at 24% (31 218) (Census, 2011). The distribution according to economic sectors shows that there are three main segments which describe the division of labour in Mitchells Plain. They include the manufacturing sector, which accounts for 26% of the employed population, the retail and wholesale trade, which make up 21.8% and community social and personal services, which account for 20.5% (Census 2001).

The highest group is composed of sales, services and clerical workers who account for 29.7%. The second largest occupational sector comprises unskilled labour which makes up 19.8%. Trade workers make up 17.8% while professional and semi-skilled workers account for 28.6%. Managerial positions account for the smallest number of workers, at 4.1% (Census, 2001).

The commercial activity in Mitchells Plain is closely connected to Khayelitsha to the extent that their economies are linked (Wolfgang, 2005). Mitchells Plain has the most developed commercial site in the central business district. The informal business sector incorporates a retail plaza (a small shopping centre) at the train station which includes major transport interchanges. Some of the challenges faced within the commercial activity in Mitchells Plain which contribute to the decline of formal business are the high gang activity as well as the lack of control over the informal trade sector in Mitchells Plain (Wolfgang, 2005; Murcott, 2012). Another challenge is that the residents shop outside of Mitchells Plain in the competing areas like Bellville, Cape Town and Claremont. The informal sector is experiencing restrictions in this area, and one way to combat this is to formalise their enterprises (Wolfgang, 2005).

## 4.2. Khayelitsha

### *4.2.1. Location and settlement history*

Khayelitsha is situated 36 kilometres from Cape Town and is bounded by the townships of Mitchells Plain to the west, Macassar to the east and Mfuleni to the north. It falls within a cluster of townships known as the Cape Flats. Like Mitchells Plain, Khayelitsha is located within the Cape Town Municipality between Table Bay and False Bay in the Western Cape Province of South Africa. The township covers an area of 38.71 square kilometres (Western Cape Government 2013; City of Cape Town, 2013).

Khayelitsha, which means “New Home” in the local Xhosa language, was established in 1983 as a segregated location for Black African people and low-skilled migrant labourers. The settlement of black people in Khayelitsha was in line with the apartheid racial segregation policy infamously known as the Group Areas Act (Standing, 2003). Under the Group Areas Act, city planners demarcated specific areas for Black and Coloured occupation and removed these racial groups from residences close to the city centre which were preserved for white settlement only (South African History online, 2016). Khayelitsha is currently home to a large number of marginalised residents of the city who are mostly migrant labourers from other provinces and/or countries. The vast majority of residents are from the Eastern Cape, who have moved to the Western Cape in search of employment and better services and facilities. Khayelitsha has grown to be the second largest township in South Africa.

### *4.2.2. Physical and infrastructural environment*

Khayelitsha comprises 28 sub-places with each of them covering a large number of distinct enumeration areas. Twelve local wards are contained within the three local government sub-councils in Khayelitsha. Figure 4 presents a map of Khayelitsha Township.

**Figure 4: Map of Khayelitsha**


*Source: Census, 2011*

### *4.2.3. Housing characteristics*

According to the City of Cape Town (2013), Khayelitsha has a total number of 118 809 households with an average household size of 3.30 members. About 54.5% of the population live in shack dwellings both in backyards and on open plains. Only 44.6% of residents live in formal dwelling structures (City of Cape Town, 2013).

### *4.2.4. Demographic profile*

Khayelitsha is the most populated township in the Cape Flats with a population estimated to be between 300 000 and 1000000 (City of Cape Town, 2013; Seekings, 2013). The population of Khayelitsha is predominantly Black Africans who make up over 90% of the total population, while the rest are Coloured and Asian. Khayelitsha has a youthful

population with over 49% of its population under the age of 25 years. About 48% of the population are between 25-65 years. Gender distribution patterns indicate that 51.1% are females while males make up 48.90% of the population. In 2011 almost half (42%) of households in Khayelitsha were reportedly headed by women. Across South Africa, the proportion of households headed by women has risen because of the increased economic independence of women (due to the steady feminisation of employment and the expanded access to social grants) as well as changing marital and familial norms. Table 4 below depicts the Khayelitsha population by race and age. The most widely spoken language in Khayelitsha is Xhosa, spoken by 95% of the population, followed by Sesotho at 1.73% and Afrikaans at 1.64%.

**Table 4: Population by race and age**

| POPULATION BY RACE AND AGE | | | | | | |
|---|---|---|---|---|---|---|
| **Age** | **African** | **Coloured** | **Asian** | **White** | **Other** | **Total** |
| 0-4 years | 12% | 12% | 9.60% | 7.60% | 8.00% | 11.90% |
| 5-14 years | 16.30% | 16.60% | 14.70% | 14.40% | 4.20% | 16.20% |
| 15-24 years | 21.40% | 18.10% | 22.40% | 17.70% | 28.80% | 21.40% |
| 25-64 years | 48.70% | 50.70% | 52.20% | 55.70% | 58.60% | 48.80% |
| 65 years and older | 1.60% | 2.70% | 1.10% | 4.60% | 40.00% | 1.60% |
| **Total** | **98.6%** | **0.6%** | **0.1%** | **0.1%** | **0.6%** | **100%** |

*Source: Census, 2011*

### *4.2.5. Public service provision and facilities*

As indicated above, most of the residents live in informal dwellings such as backyard shacks and in informal settlement areas where the delivery of water, sanitation, electricity and other services is virtually non-existent (Nattrass and Walker, 2005). For example, those who reside in formal houses are more likely to access water in their houses or within their yards. Table 5 shows that 61% of residents have direct access to piped water in their houses or yards. The remainder of the population shares communal water pipes located within 200 metres. In terms of sanitation, 71% of the population have access to flush toilets connected to a sewage pipe, 4.1% of the population uses septic toilets, 3.4% use chemical toilets, while 6.6% use bucket toilets and 10% of the population have no access to toilets.

**Table 5: Sanitation in Khayelitsha**

| SANITATION IN KHAYELITSHA | | |
|---|---|---|
| **Type of toilet facility** | **Number** | **Percentage** |
| Flush toilet (connected to sewerage system) | 85 149 | 71.70% |
| Flush toilet (with septic tank) | 4 878 | 4.10% |
| Chemical toilet | 4 056 | 3.40% |
| Pit toilet with ventilation (VIP) | 666 | 0.60% |
| Pit toilet without ventilation | 693 | 0.60% |
| Bucket toilet | 7 875 | 6.60% |
| Other | 3 585 | 3% |
| None | 11 901 | 10% |
| **Total** | **118 803** | **100%** |

*Source: Census, 2011*

As far as waste removal is concerned, over 80% of the population have access to waste removal services at least once a week. Household energy usage is an important indicator of both household socio-economic status and energy infrastructure development in a given society (Minujin and Nandy, 2012). The population of Khayelitsha uses a variety of energy sources for cooking, lighting and heat. The main source of energy for lighting and cooking in Khayelitsha is electricity while paraffin is used mostly for heating.

Since the advent of democracy in 1994, there has been a rapid advancement of the healthcare infrastructure in Khayelitsha. This includes the upgrading of facilities erected prior to 1994 such as Site B and Nolungile (Site C) clinics. Additional day clinics were constructed in the sub-places of Kuyasa, Harare and Town Two along with a network of primary care facilities designed to assist residents who could not access the main day care clinics (i.e. informal settlements). The majority of Khayelitsha's population rely on government healthcare facilities. These are mainly day clinics in the sub-places of Site C, Site B, Town Two, Makhaza, Kuyasa and Harare. These six clinics service the needs of all the residents in the 18 districts in Khayelitsha.

Concerning educational facilities, there are several pre-schools, primary schools, high schools, computer training centres and a Further Education and Training (FET) college. Recreation facilities in Khayelitsha include sports fields, a cycling centre, community halls, gymnasiums and libraries. Khayelitsha has a colourful social life with a diverse set of entertainment facilities that include local restaurants and bars. The area also has a vibrant

music scene as evidenced by numerous venues dedicated to music and poetry. In addition, there are various recreational societies and clubs which include drama clubs, cycling clubs and choirs. Other public infrastructure includes three police stations, a magistrate's court, an outdoor gym facility park and a shopping mall which opened in 2005, with 40 shops anchored by Shoprite and Spar supermarkets.

### *4.2.6. Socio-economic structure of population*

In terms of income and poverty levels, Khayelitsha is an impoverished area with a high unemployment rate (38.02%) and a large number of households (73.7%) having an income between R1 and R3 200 per month, while 18.8% of the population have no source of income (Census, 2011). As such, the average household income in Khayelitsha is less than R1600 a month (Seekings, 2013; Western Cape Government, 2013). Due to persistent poverty and unemployment in Khayelitsha, the majority of the population depend on government support in the form of social grants. These consist mainly of the Child Support Grant valued at R350 per month; an old-age grant valued at R1 500; a foster child care grant valued at R890 and in some cases a disability grant valued at R1 500 (Hall, 2013; Kelly, 2016; Seekings, 2013).

Unemployment, which stands at 38%, is one of the key social problems in Khayelitsha and as such, 70.2% of the labour force is economically inactive. The township highest youth unemployment rate amongst Cape Town's Black townships (Seekings, 2013). Education is the key structural barrier to employment as only 30% of the population have acquired a matric qualification. Matric is the basic requirement for low-skilled, entry level in the labour market.

Khayelitsha hosts various businesses, both formal and informal. In terms of the formal sector, there are three shopping centres: Site C Plaza, Site B Shopping Centre and the Khayelitsha Shopping Centre are the largest shopping malls in the area. The informal sector in Khayelitsha is made up of various businesses such as barbershops, restaurants, fruit and vegetable hawkers and street vendors. Due to the diversity of its business sector, Khayelitsha is the fifth largest contributor to the Cape Town Metropolitan Area GDP with construction, retail/wholesale, catering, logistics/transport and finance as its largest sectors (Treasury, 2012).

# CHAPTER 5: RESEARCH DESIGN AND METHODOLGY

## 5.1. Introduction

The study employed a mixed-methods research methodology. Using such an approach over an 'all quantitative or all-qualitative' research approach allowed for triangulation of results from multiple data collection sources and analytical techniques (Stern et al., 2012). Quantitatively, the study drew on the fourth wave of the National Income Dynamics Study (NIDS) as well as the collection of data in two localities in the Western Cape Province (Khayelitsha and Mitchells Plain) using self-administered questionnaires. This was done to compare results in the two survey localities (Khayelitsha and Mitchells Plain) to NIDS results using some selected indicators. To complement the surveys undertaken in Khayelitsha and Mitchells Plain, qualitative interviews, mainly focus group discussions and semi-structured interviews, were conducted targeting adults and children. Thus, data was drawn from both primary and secondary sources.

## 5.2. Quantitative data collection methods

Quantitative data for the study was drawn from both primary and secondary sources. Primary data collection sources comprised mainly of household surveys in Khayelitsha and Mitchells Plain as well as anthropometric measurements. In addition, the fourth wave of the National Income Dynamics Study was used as a secondary data source.

### *5.2.1. Self-administered household questionnaires*

In all, 532 and 519 structured questionnaires were administered to randomly selected households in Khayelitsha and Mitchells Plain respectively. Given the objectives of the study, the household questionnaire targeted adults (persons eighteen years and above) and children between the ages of five and eleven years. Specific information captured using the household questionnaire included household profiles, household characteristics, employment and income sources and food consumption and sources using 24-hour dietary recall. Also, information on respondents' eating habits, weight management practices, the perception of health status, and perceptions of obesity was captured.

In order to compute the BMI of respondents, anthropometric measurements were taken for a maximum of four household members (adults and children as defined by the study). These included weight and height measured in kilograms and centimetres respectively. The weight measures were captured using scales used for collecting anthropometric data for NIDS by

SALDRU. The height measurements were taken using instruments obtained from UWC's Department of Public Health.

As indicated earlier, the study used a single 24-hour recall dietary assessment method. The 24-hour dietary recall is one of the widely used individual dietary assessment methods (Steyn and Labadarios, 2000). It is easy to administer compared to other dietary assessment methods (Nelson and Bingham, 1997 cited in Steyn and Labadarios, 2000). For this study, the 24-hour dietary recall was incorporated in the household questionnaire where food consumption records were taken from a maximum of four household members where applicable. This comprised adults, as well as children between the ages of 5 and 11 years.

In designing the household questionnaire, the study took into consideration other existing research instruments used for similar assignments, particularly within the South African context. These questionnaire guides included the National Income Dynamics Study (NIDS) Wave 3 Household Questionnaire; Medical Research Council/Departments of Health and Education 'Youth Risk Behaviour Survey' (YRBS) Questionnaire; Demographic and Health Survey (DHS) Questionnaire; World Health Organization's Global Physical Activity Questionnaire (GPAQ) - Analysis Guide; DANA-FARBER Cancer Institute's Eating Habits Questionnaire and the World Food Programme's Comprehensive Food Security and Vulnerability Analysis Household questionnaire. Additionally, expert views outside of the core research team were sought from UWC's Department of Public Health, Southern Africa Labour - Development Research Unit (SALDRU) and Research ICT Africa (RIA).

Prior to the actual field data collection, the household questionnaire was piloted in two stages. The first stage was a desktop pilot which involved core research team members especially research assistants administering the questionnaire to each other and identifying any gaps. The second stage involved field piloting of the fine-tuned household questionnaire from the desktop piloting. Field piloting took place in Westridge, Mitchells Plain where 29 households (50 individuals) were interviewed, making up about 2.5% of the entire proposed sample size across the board (1200). Feedback from both pilots informed the fine-tuning of the household questionnaire along five main themes: respondent comprehension, sampling, coding and analysis, interviewer tasks performance and questionnaire formatting.

An important activity prior to the actual data collection was enumerator recruitment and training. Both surveys were conducted using student recruits from the University of the Western Cape (UWC) as well as recruits from the local communities where the research

took place. Such a mix made entry into Enumeration Areas a lot easier especially in areas that were as not-too-safe. In all, 19 data collectors besides the core research assistants assisted with data collection in Khayelitsha and Mitchells Plain. Approximately 75% of the recruits were local residents in Khayelitsha and Mitchells Plain while the remaining 25% were student recruits from the Institute for Social Development (ISD), at UWC. Training workshops were organised to brief these recruits on the project and the household questionnaire as well as to capacitate them with the necessary data collection skills. Methods and techniques used included a presentation, group discussion, mock interviews (role-play) and feedback session. Other aids included presentation slides, enumerator manual, and flip chart.

### *5.2.2. Sampling procedure*

The study employed a two-stage cluster sampling technique. This involved selecting clusters of households using probability proportion to size (PPS) at the first stage and the actual selection of households in the second stage. The choice of cluster sampling technique over simple and systematic random sampling was informed by the fact that the two case study areas were too large geographically and due to the unavailability of lists of households in Khayelitsha and Mitchells Plain. Owing to this, previous surveys such as the Khayelitsha/Mitchells Plain 2000 Survey utilised a similar sampling method (see Crankshaw et al., 2001).

### *5.2.3. Stage 1: Selection of clusters*

To use the cluster sampling technique, "a sample frame in which the sampling units are organised into clusters" is required (Crankshaw et al., 2001:157). As a result, the study used the 2011 Stats SA sampling frame in selecting clusters or enumeration areas (EAs). For each case study area, 25 EAs were selected randomly using probability proportion to size (see Table 6). The use of the PPS methodology was to ensure that each household in the population of interest, whether from a large or small EA, has an approximately equal probability of selection.

**Table 6: Enumerator Areas selected for Khayelitsha & Mitchells Plain**

| Khayelitsha | | | Mitchells Plain | | |
|---|---|---|---|---|---|
| **EA** | **Sub-place name** | **No. of households** | **EA** | **Sub-place name** | **No. of households** |
| 1990239 | Village V3 North | 134 | 1994753 | Bay View | 284 |
| 1990609 | Khayelitsha SP | 157 | 1993835 | Beacon Valley | 152 |
| 1990833 | Khayelitsha T3-V2 | 194 | 1994448 | Beacon Valley | 177 |
| 1991004 | Khayelitsha T2-V2b | 200 | 1993540 | Eastridge | 167 |
| 1991258 | Mandela Park | 112 | 1994525 | Eastridge | 190 |
| 1991469 | Silver Town | 239 | 1995329 | Eastridge | 575 |
| 1991945 | Ikwezi Park | 117 | 1993357 | Lentegeur | 146 |
| 1991985 | Village V1 South | 168 | 1994008 | Lentegeur | 196 |
| 1992091 | Village V3 North | 157 | 1994521 | Lentegeur | 200 |
| 1992566 | Monwabisi | 270 | 1992282 | Mandalay | 175 |
| 1992621 | Bongani TR Section | 228 | 1992691 | Portland | 160 |
| 1992808 | Town 3 | 254 | 1993451 | Portland | 170 |
| 1992827 | Victoria Mxenge | 178 | 1992861 | Rocklands | 168 |
| 1993062 | Khayelitsha T3-V3 | 195 | 1993970 | Rocklands | 181 |
| 1993216 | Village V2 North | 186 | 1994577 | Rocklands | 209 |
| 1993381 | Village V4 North | 229 | 1993287 | Strandfontein Village | 193 |
| 1993429 | Khayelitsha T3-V2 | 395 | 1994302 | Tafelsig | 184 |
| 1993545 | Khayelitsha T2-V2b | 301 | 1994627 | Tafelsig | 196 |
| 1993693 | Khayelitsha T3-V5 | 206 | 1994909 | Tafelsig | 234 |
| 1993717 | Khayelitsha T3-V3 | 345 | 1995088 | Tafelsig | 211 |
| 1993806 | Village V1 North | 184 | 1992410 | Weltevreden Valley | 159 |
| 1993808 | Village V3 North | 181 | 1991999 | Westridge (Mitchells Plain) | 155 |
| 1993897 | Harare/Holimisa | 214 | 1993388 | Westridge (Mitchells Plain) | 169 |
| 1994125 | Ikwezi Park | 245 | 1993378 | Woodlands (Mitchells Plain) | 197 |
| 1995222 | Ikwezi Park | 368 | 1994830 | Woodlands (Mitchells Plain) | 227 |

*Source: Census, 2011 - Stats SA*

### *5.2.4. Stage 2: Selection of households*

Following the selection of 25 EAs for each case study area, 24 households were systematically selected from each EA or cluster selected in stage 1 above, putting sample sizes for Khayelitsha and Mitchells Plain at 600 each. In selecting households, geographic coordinates obtained from Stats SA were used to demarcate EAs. From these, dwelling units were identified using Google maps where every $k^{th}$ house was selected. To ascertain the $k^{th}$ house/household for say 1994830 (situated in Woodlands) with 150 households, researchers divided the total number of households (150) by the expected number of households, which

is 24 for each selected EA. This gives a K value of 6. Thus, for this particular EA, every 6th household identified was selected for an interview.

**Table 7: Sample realization**

| Survey site | Expected sample size | Sample realized | | Refusals |
|---|---|---|---|---|
| | | No. | % | |
| Khayelitsha | 600 | 532 | 89 | 68 |
| Mitchells Plain | 600 | 519 | 87 | 81 |
| **Total** | **1200** | **1051** | **88** | **149** |

*Source: Field Survey, 2016*

As shown in Table 7 above, of the 600 households sampled for interviews in Khayelitsha, about 89% (532) were reached. This translates into a sample population of 2120. In the case of Mitchells Plain, the sample realized was 87%, translating into a sample population of 2100. Put together, the sample realized across the board was high, at about 88%. This is relatively the same for other previous surveys conducted in the same case study areas (see for example Crankshaw et al., 2001).

### *5.2.5. Variables*

Health perceptions of respondents and observed BMI classification were used to assess the relationship between perception and the reality of health and overweight. Health perception was measured by the question, "how do you perceive your health status to be at present"? This question has five response choices, "excellent; very good, good, fair or poor." On the other hand, observed BMI which was derived from the NIDS dataset was used to measure weight and height variables. This information was classified into three categories based on the WHO classification index. The WHO classifications were used in accordance with the following thresholds: persons with BMI values between 0-18.49 were coded as "underweight," persons with BMI values between 18.5 and 24.9 were coded as "normal," persons with BMI values between 25.0 and 29.9 were coded as "overweight". In addition, in order to analyse problems of obesity in South Africa, a BMI of above 30 was categorised as obese. Other variables were also used to define the sample, including: gender (male or female), population group (Black, Coloured, Indian/Asian, White), age (years), annual household income, marital status, amount of money spent on medicine annually, health conditions (blood pressure, heart attack), smoking and satisfaction in life.

### 5.3. Qualitative data collection methods

Following the household surveys, qualitative interviews were conducted using three main methods: semi-structured individual interviews, focus group discussions (FGDs) and observations.

#### *5.3.1. Semi-structured individual interviews*

Semi-structured interviews were conducted as part of the surveys in Khayelitsha and Mitchells Plain. According to Kelly (2006:297), such interviews afford the researcher an opportunity to "get to know the people quite intimately, so that we can really understand how they think and feel." In all, 50 purposively identified households were each interviewed in Khayelitsha and Mitchells Plain using a semi-structured question guide. Information gathered included people's perceptions about causes of obesity, factors that influence people's food choices, and what respondents perceive as government's role in tackling obesity in their communities.

#### *5.3.2. Focus Group Discussions (FGDs)*

In addition to the semi-structured individual interviews, focus group discussions were held for both adults and target children. In Khayelitsha, 3 FGDs were held: 2 for adults (1 FGD for males and females and 1 FDG for females only) and 1 for children. In Mitchells Plain 3 FGDs were held: 2 for adults (1 FGD for males and females and 1 FDG for females only) and 1 for children. The FGDs comprised of between 7 and 12 participants and were structured in a way that they were reflective of voices from low-income areas and those from high-income areas.

#### *5.3.3. Observation*

Participant observation was used in this study to gather non-verbalised data, such as information about the physical infrastructure and socio-economic dynamics within the areas under study and the non-verbal ways of communication of the participants. This method of qualitative research, according to Mouton and Marais (1990:162, original emphasis) is "a process by which researchers establish a link between *reality* and their theoretical assumptions." More importantly, the study used the method of observation to capture foods types eaten by respondent households. Data for this method was gathered through transect walks, visiting individual households and observing participants throughout the research process.

### 5.4. National Income Dynamics Study (NIDS)

As indicated, the study also utilised the Wave 4 of the National Income Dynamics Study by SALDRU for secondary data analysis. Specifically, the study explored the relationship between perceptions of health and BMI. This aspect of the study was undertaken to compare results for similar inquiries for the two case study areas, albeit from a national perspective.

NIDS is a panel dataset starting from 2008 with a nationally representative sample of over 28000 individuals in 7300 households across the country. The survey is conducted every two years with the same household members. It examines the livelihoods of individuals and households over time. It also provides information about how households cope with positive or negative shocks, changes in poverty and well-being; household composition and structure; fertility and mortality; migration; labour market participation and economic activity; human capital formation, health and education; vulnerability and social capital.

Thus, NIDS was chosen not only because it represents the first national panel study done in South Africa, but also due to its comprehensive statistical record keeping of appropriate information. The first stage of this research focuses on exploring the NIDS dataset, questionnaires, metadata (SALDRU, 2013), technical papers and recent analysis of NIDS (Leibbrandt et al., 2010). The NIDS data comprise seven different files which first have to be combined: adult, child, proxy, derived individual, household, derived household, and household roster (SALDRU, 2013).

### 5.5. Data analysis

Data analysis is important as it provides the platform for the movement of data to information (Kultar, 2007), reducing the size of the data to controllable proportions and helping to identify diverse themes and patterns in the data (Majesky, 2008). In this study, data obtained from the NIDS/questionnaire surveys were analysed statistically, with the aim of describing phenomena as well as identifying and examining relationships. As Kreuter and Valliant (2007) suggest, there are more analytic procedures for survey data in STATA than most other packages, while sampling weights and design information is straightforward in STATA.

For this study, data obtained from NIDS/questionnaire surveys was analysed using STATA version 14. Findings from the statistical analysis were presented using graphical representations, charts, graphs, tables, cross tabulations and frequency distributions. In the case of qualitative, inductive approach was used to analyse data obtained from semi-

structured interviews and FGDs. Thomas (2006) asserts that the inductive approach allows for the emergence of research findings from recurrent, significant and dominant themes inherent in raw data. This was done by transcribing and categorising, through inductive coding techniques in a bid to draw out important patterns and common themes, while also deepening the understanding of identified relationships.

### 5.6. Ethical considerations

The study followed strict ethical guidelines. First, ethical clearance was sought from the Faculty of Economic and Management Sciences (EMS) of the University of the Western Cape as well as the University of the Western Cape Senate. Aside from this, all necessary precautions were taken in order not to injure participants through the invasion of their privacy, or disclosure of any personal details to third parties. In this regard, the following measures were taken:

- Data collectors briefed adult participants on the purpose of the study and how the collected data would be used.
- Adult participants were required to sign a binding consent document to protect them and the researcher. All personal information provided will be kept confidential.
- For child participants, the consent of their parents/guardian was sought. Parental/guardian consent forms were provided in English. In situations where participants could not speak English, data collectors translated the details of the consent form in the respective languages of the respondents.
- Participants were also informed that their participation in the research was entirely voluntary and that they may choose not to participate at all or decide to withdraw during the course of the interview.
- Ward Councillors in some of the surveyed EAs were informed ahead of time about the survey.

### 5.7. Study limitations

First, the availability of target children for interviews in selected households proved difficult. Given the fact that the surveys in the respective case study areas commenced during school hours, interviewing children (between 5 and 11 years) proved difficult. To overcome this problem, we continued the research during the June school holidays when the children were available at home.

Secondly, due to time and resource constraints, researchers employed a one-off 24-hour

recall dietary assessment method. That is, instead of using a multiple 24-hour dietary recalls, researchers collected 24-hour dietary recall data for just a single period. In this instance, dietary outcomes can only be interpreted as a single period and not to be interpreted as usual food intake by respondents (see for example Steyn and Labadarios, 2000). In an attempt to control this limitation, a question on whether the diet recall is very typical of respondents' daily food consumption was incorporated in the household questionnaire. This was then used to disaggregate respondents' daily food consumption and observe differences in dietary outcomes if any.

Another limitation worth noting is the fact that the survey extended into the period of Ramadan[1]. This situation had the tendency to affect responses on 24-hour dietary recall from the Muslim population especially in Mitchells Plain, which has a considerable Muslim population. Responses obtained from this population group may not necessarily be a true reflection of their food intake. Here, the question on whether 24-hour recalls were typical of what they ate every day and a follow-up question on reasons for those who responded 'no', helped to track these differences.

### 5.8. Reliability and validity

To ensure the reliability of the survey data, the research assistants included on the project were each assigned data collectors recruited from both the local communities as well as the University of the Western Cape. This helped in ensuring that data collectors recorded the right responses to the questions contained in the questionnaire. More importantly, these 5 researchers supervised data collectors who were tasked with taking anthropometric measures (weight and the height).

In addition to this, researchers made sure that standardised weight and height measures were rec. For example, even though the height instrument used had metres and centimetre measures, all height measurements taken were in centimetres. A similar approach was used for weight measurements, which were taken in kilograms. This helped in avoiding the situation where different metrics were used in collecting data for one particular indicator, which usually tends to affect the validity of results for that particular indicator or set of indicators.

[1] This is the ninth month of the Muslim year during which strict fasting is observed from dawn to sunset.

Additionally, as part of quality control measures, field supervisors reviewed completed questionnaires while the survey was progressed. This helped in providing feedback on any errors or incorrect responses made by data collectors.

# CHAPTER 6: QUANTITATIVE DATA ANALYSIS AND FINDINGS

## 6.1. Introduction

The analysis of food choices and BMI of adults and children in Khayelitsha and Mitchells Plain was undertaken following recommended guidelines provided by the Food and Agriculture Organization (FAO), the World Health Organization (WHO, 2016) as well the South African Guideline on Food Choices provided by the 2016 General Household Survey (GHS). Based on these guidelines various measures were undertaken to ensure the standardization of measurements. This includes BMI measures, and 24 hours recall on food choices.

The first part of this chapter provides a quantitative data analysis, with data obtained from the two case study areas, i.e. Khayelitsha and Mitchells Plain. In this regard, it presents information on household characteristics including their access to basic social services. Subsequently, information on food choices and its determinants are presented. The section further provides an analysis of weight management practices and assesses the overall health status of respondents, as well as the prevalence of overweight and obesity in adult and children.

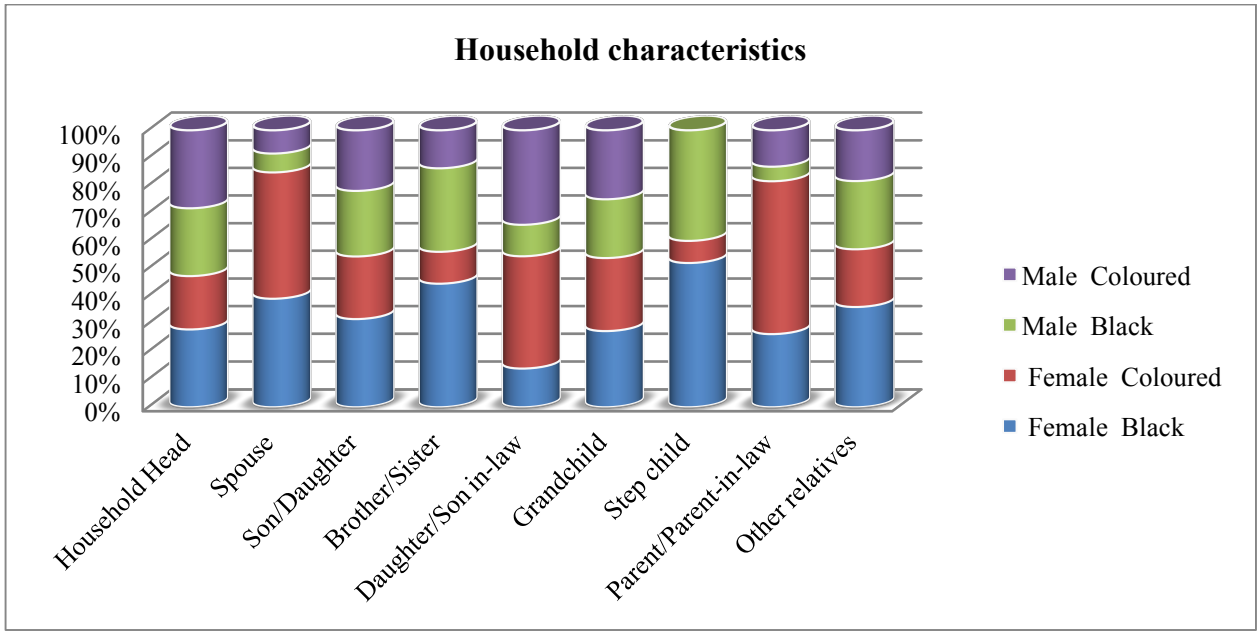
In the second part, the analysis focuses on assessing food choices and BMI from a national perspective using empirical data from the National Income Dynamics Study (NIDS). This section presents information on perceived health status, health perception by population group, health status by gender, perceived health status by income group, population group by age, BMI by population group, BMI by gender, BMI by income group, BMI by age, and health perception and BMI.

## 6.2. Household characteristics

'Household' as a concept provides a premise on which arrangements for the provisions of food and other essentials for a living are made by a person or group of persons (UNDESA, 2004). Household characteristics generally comprise information on household size, type and composition, income, and dwelling characteristics. Sharing of meals, as well as living and spending nights together, are typical characteristics of a household, and as Udjo (2015) rightly points out, this stresses the social rather than the physical attributes of households, although it is incumbent that a household will occupy a physical structure or dwelling unit.

The household characteristics of the population provide a synoptic overview of the current socioeconomic dynamics of the study area. In all, 1051 households were interviewed, comprising a population of 4300 respondents. In the sample, 42.92% respondents were males and 57.08% were females. While there were more male respondents in Mitchells Plain than in Khayelitsha, i.e. 45.94% and 39.85% respectively, there were more female respondents in Khayelitsha than in Mitchells Plain, i.e. 60.15% and 54.06% respectively. Figure 5 below shows the representation of household members by race and gender.

**Figure 5: Household characteristics**




*Source: Field Survey 2016*

### *6.2.1. Relationship to household head*

The study captured information on how other household members were related to the household head. As shown in Table 8, household heads accounted for 22% and 23% of the total household membership, respectively, in Khayelitsha and Mitchells Plain. Sons and daughters of household heads constituted the largest group: 42% for Khayelitsha and 38% for Mitchells Plain.

**Table 8: Relationship between other household members & household heads**

| Relationship | Survey Site | | Total (n=4212) |
|---|---|---|---|
| | Khayelitsha (n=2174) | Mitchells Plain (n=2038) | |
| Household head | 21.82% | 23.37% | 22.61% |
| Spouse | 10.69% | 15.01% | 12.89% |
| Son/Daughter | 42.82% | 38.10% | 40.41% |
| Brother/Sister | 6.38% | 2.74% | 4.52% |
| Daughter-in-law/Son-in-law | 0.78% | 2.93% | 1.88% |
| Grandchild | 11.72% | 12.84% | 12.29% |
| Step-child | 1.03% | 0.19% | 0.60% |
| Parent/Parent-in- law | 0.49% | 1.37% | 0.94% |
| Other relative | 4.27% | 3.40% | 3.82% |
| Don't know | 0.00% | 0.05% | 0.02% |
| **Total** | **100.00%** | **100.00%** | **100.00%** |

*Source: Field Survey, 2016*

Table 8 above also shows that the proportion of spouses to household heads was 15% in Mitchells Plain and 11% in Khayelitsha. Interestingly, the proportions of grandchildren living with household heads were relatively the same, with 12% for Khayelitsha and 13% for Mitchells Plain. Other household members who were either step-children or parents/parents-in-law constituted the smallest group.

### *6.2.2 Household size and income*

For both areas, the average household size was 4 persons. In Mitchells Plain, 24% of households had 4 persons in the household compared to 19% in Khayelitsha. The maximum household size was 13 for Mitchells Plain and 11 for Khayelitsha. The average household size observed for both study areas, is greater than the national average household size (3.4) in 2011 and projected to decline to 2.9 persons per household by 2021, while projections for Western Cape province by 2021 is estimated at 3 (Udjo, 2015).

Though the average household size was 4 persons, it was found that about 75% of the sampled population live in a household of 1 to 5 persons. This is indicative of the standard household size in the survey area and is relevant for policy development. With respect to the income of households, respondents were asked to report on the overall household income from all persons working or earning an income in the household. About 77.8% of households reported on their household income. The results show that the average household income was R2401-R3600. About 29.46% of households earned income above R4800, while about 5% of households earned income below R1200.

**Table 9: Household income**

| Household income in Khayelitsha and Mitchells Plain | | | |
|---|---|---|---|
| **Income Levels** | **Khayelitsha N=437** | **Mitchells Plain N=381** | **Total N=818** |
| No income | 8.01% | 1.31% | 4.89% |
| R1-1200 | 18.08% | 6.04% | 12.47% |
| R1201 - 2400 | 24.94% | 17.32% | 21.39% |
| R2401-3600 | 15.79% | 20.73% | 18.09% |
| R3601-4800 | 12.59% | 14.96% | 13.69% |
| More than R 4800 | 20.59% | 39.63% | 29.46% |

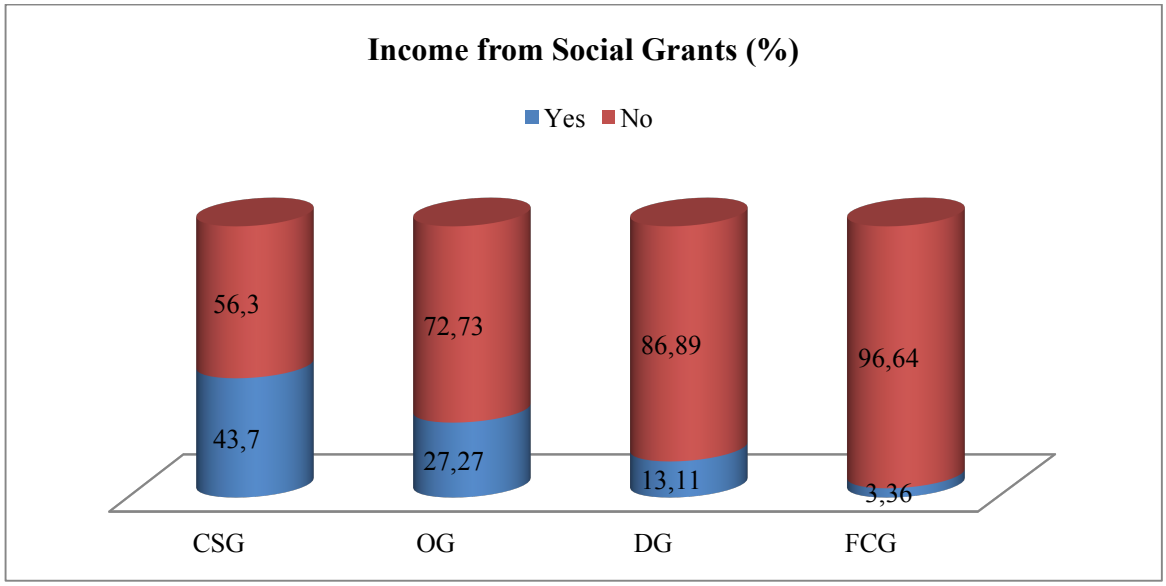
*Source: Field Survey, 2016*

### *6.2.3. Other sources of income for households*

There are four main income categories for households in South Africa. The income sources are self-employment, wage income, private transfers and public transfers (Carter and May, 1999). Public transfers are payments made without any exchange of goods and services and include social pensions such as disability grants, child support grants and the unemployment insurance scheme.

The survey also examined other sources of income for the households. This includes income from the Child Support Grant (CSG), Old-age Grant (OG), Disability Grant (DG) and Foster Care Grant (FCG). Figure 6 shows that 43.7% of households are recipients of child support grants, 27.27% benefit from old-aged grants, 13.11% receive disability grants and a small proportion of the households are beneficiaries of foster care grants. Of the 43.7% recipients of the CSG, 66.13% are from Khayelitsha and 33.87% from Mitchells Plain. From the survey, it was also found that 68.45% of all who receive CSGs earn an income of R3600 and less. This evidence shows that there is a high dependence on the CSG particularly in Khayelitsha, which is composed predominantly of the African population.

**Figure 6: Income from Social Grants**




*Source: Field Survey, 2016*

### *6.2.4. Age-sex distribution*

Table 10 below shows the age-sex distribution of survey respondents in Khayelitsha and Mitchells Plain. Of the 2068 persons surveyed in Khayelitsha, about 60% were females, while the remaining 40% were males. In Mitchells Plain, females accounted for 54% and males for 46%. That is, in both areas, females dominated. This is consistent with the national and provincial sex distribution, which indicates that in 2014, 48.4% of South Africa's total population were males and 51.2% were females. For the Western Cape Province, 49.2% were male and 50.8% were females (Stats SA, 2014).

**Table 10: Age-sex distribution in Khayelitsha and Mitchells Plain**

| Age cohort | Khayelitsha (n=2068) | | | Mitchells Plain (n=2073) | | |
|---|---|---|---|---|---|---|
| | Male | Female | Total | Male | Female | Total |
| 0-4 years | 3.92% | 4.50% | 8.41% | 2.41% | 2.89% | 5.31% |
| 5-14 years | 8.12% | 10.78% | 18.91% | 8.10% | 9.26% | 17.37% |
| 15-24 years | 7.50% | 12.28% | 19.78% | 9.07% | 10.23% | 19.30% |
| 25-64 years | 19.34% | 30.66% | 50.00% | 22.91% | 27.98% | 50.89% |
| 65+ years | 0.68% | 2.22% | 2.90% | 3.23% | 3.91% | 7.14% |
| **Total** | **39.56%** | **60.44%** | **100.00%** | **45.73%** | **54.27%** | **100.00%** |

*Source: Field Survey, 2016*

When disaggregated by age groups, persons between the ages of 25-64 years make-up approximately half of the sample population in both areas. This is consistent with the

national estimate which indicates that 61.6% of South Africans are within the age range of 15 to 59 years (Stats SA, 2014), relative to the national estimate of 30% aged between 0-14 years (Stats SA, 2014). The proportion of persons under 15 years in Khayelitsha and Mitchells Plain is about 47% and 42% respectively.

### *6.2.5. Marital status*

A close look at Table 11 reveals that a low proportion of respondents from Mitchells Plain were married (27%) as compared to Khayelitsha, with about 45%. However, the proportion of persons who indicated that they had never married was high in Khayelitsha, about 23 percentage points more than was the case of Mitchells Plain. This is consistent with the findings of Posel and Casale (2009) who observed that marriage rates in South Africa are significantly lower among African women. The low rates, according to Posel and Casale (2009), may not be disconnected from the status of African men. Specifically, it may not really be a case of available African men being in short supply, but a shortage of marriageable men, a term directly related to economic status. In addition, the Stats SA 2011 report shows that about 47% of people 20 years and above have never married (Stats SA, 2011).

**Table 11: Marital status (all persons aged $16^{+}$)**

| Marital status | Khayelitsha (n=1457) | Mitchells Plain (n=1525) | Total (n=2982) |
|---|---|---|---|
| Never Married | 64.45% | 40.79% | 52.35% |
| Married | 27.87% | 45.64% | 36.96% |
| Cohabitation | 3.09% | 0.98% | 2.01% |
| Divorced /separated | 1.92% | 5.64% | 3.82% |
| Widowed | 2.68% | 6.82% | 4.80% |
| Don't know | 0.00% | 0.13% | 0.07% |
| **Total** | **100.00** | **100.00** | **100.00** |

*Source: Field Survey, 2016*

It could also be observed that the proportion of persons aged 16 years and older who indicated that they had been divorced or separated was about 6%, about 4 percentage points more than what pertains in Khayelitsha. In addition, respondents who indicated being widows were 7% and 3% for Mitchells Plain and Khayelitsha, respectively.

### *6.2.6. Educational characteristics*

Education is an important socio-economic characteristic and a critical determinant of the income status of people. In alluding to the link between education and inequality in South Africa, Branson et al. (2012) emphasise the role of education in the determination of who gets employed and what kind of employment is secured. Education could substantially increase one's employability, thus leading to an increase in household income and food security.

Table 12 provides information on the highest educational attainment for adults aged 20 years and older. The vast majority of persons surveyed in both areas have attained secondary education, 69% for Khayelitsha and 66% for Mitchells Plain. In Khayelitsha, the proportion of adults who had attained primary education was 12% as compared to 22% for Mitchells Plain. The proportion of persons 20 years and older who attained a technical college or tertiary education in Khayelitsha was 6% and 8%, respectively. In the case of Mitchells Plain, 5% and 6%, respectively, of adults indicated that they have attained technical college and tertiary level education. Furthermore, the percentage of individuals without any schooling in Khayelitsha and Mitchells Plain was 3.2% and 2.3%, respectively. This is considerably lower than the national estimate, which was at 5.1% in 2015 (Stats SA, 2015). The percentage of individuals with post-secondary education was 14.1% and 8.3% for Khayelitsha and Mitchells Plain respectively. With the percentage of individuals with post-secondary qualifications put at 14.1% at the national level (Stats SA, 2015), Khayelitsha has a similar rate of people with post-secondary qualifications as the national level while Mitchells Plain's percentage was lower by 5.8 percentage points compared to the national estimate.

**Table 12: Educational attainment of adults (for all aged 20+)**

| Educational attainment level | Khayelitsha (n=1356) | Mitchells Plain (n=1393) | Total (n=2749) |
|---|---|---|---|
| No schooling | 3.24% | 2.30% | 2.76% |
| Primary School | 11.65% | 21.82% | 16.81% |
| Secondary School | 69.17% | 66.04% | 67.59% |
| Technical college | 6.34% | 4.67% | 5.49% |
| Tertiary (e.g. University) | 7.67% | 3.66% | 5.64% |
| Don't know | 1.92% | 1.51% | 1.71% |
| **Total** | **100.00%** | **100.00%** | **100.00%** |

*Source: Field Survey, 2016*

Table 12 also shows that the proportion of persons who have not had any form of schooling in Khayelitsha is about 1 percentage point more than that for Mitchells Plain (2.3%). Findings for both survey areas are quite reflective of the 2011 census figures of about 3% for Khayelitsha and 1% for Mitchells Plain (City of Cape Town, 2013). Overall, it is observable that enrolment into higher levels of education declines in the case of Mitchells Plain when compared to Khayelitsha.

Besides capturing information on respondents' educational attainment levels, the survey also captured information on persons currently schooling using the school-going age cohort 5-11 years (see Stats SA, 2012). This was aimed at tracking the school enrolment for children who are of school-going age but are not in school and then using that as an entry point for determining differences in BMI (this analysis is presented in the later part of this report).

**Table 13: Children currently schooling (aged 7-17 years)**

| Level of education | Khayelitsha (n=393) | Mitchells Plain (n=331) | Total (n=724) |
|---|---|---|---|
| Grade R | 5.09% | 3.32% | 4.28% |
| Primary School | 61.07% | 58.31% | 59.81% |
| Secondary School | 30.28% | 32.63% | 31.35% |
| Technical College | 0.51% | 0.00% | 0.28% |
| Tertiary (e.g. University) | 0.25% | 0.60% | 0.41% |
| Not schooling | 2.80% | 5.14% | 3.87% |
| **Total** | **100%** | **100%** | **100%** |

*Source: Field Survey, 2016*

As shown in Table 13 above, the proportion of children aged 7-17 years and are not schooling are about 3% and 5% for Khayelitsha and Mitchells Plain respectively. This puts school enrolments for Khayelitsha and Mitchells Plain at 97% and 95% respectively. Comparatively, both figures reflect the general situation at the national level, with the national school enrolment put at 97% as at 2012 (Stats SA, 2012).

### *6.2.7. Religious affiliation*

Religion serves as a means through which individuals interpret their experience and existence, thus giving them a sense of the meaning of both their lives and that around them, while also shaping their behaviour, emotions, beliefs and goals (Steger et al., 2010). Religious affiliation is, therefore, an important demographic characteristic as it goes a long way in determining people's choices and decisions concerning their lives.

Of the 4240 sample population, Christianity was the dominant religion, making up about 77%. The proportion of individuals who indicated being Christian in Khayelitsha was high, 86% as compared to 68% in Mitchells Plain (see Table 14). Traditionalists makeup the second most dominant religion in Khayelitsha (13.4%); in Mitchells Plain, it is Islam.

**Table 14: Religious affiliation**

| Religion | Khayelitsha (n=2111) | Mitchells Plain (n=2129) | Total (n=4240) |
|---|---|---|---|
| Christianity | 86.26 | 68.06 | 77.12 |
| Islam | 0.38 | 31.19 | 15.85 |
| Traditionalists | 13.36 | 0.75 | 7.03 |
| **Total** | **100.00** | **100.00** | **100.00** |

*Source: Field Survey, 2016*

### *6.2.8. Race of respondents*

South Africa is a racially diverse nation with a historically unequal distribution of resources and opportunities along racial lines and consequent implications for developmental efforts (Gradin, 2013). As a result, the importance of taking into consideration the racial dynamics of South Africa in any socio-economic assessment cannot be overemphasised. Table 15 shows that while Black Africans account for about 99% of respondents in Khayelitsha, about 91% of respondents in Mitchells Plain were Coloureds. Both figures corroborate findings from the 2011 census where the proportion of the Coloured population in Mitchells Plain was 90.8% as compared to 98.6% for the Black African population in Khayelitsha (City of Cape Town, 2013).

**Table 15: Race of respondents**

| Race | Khayelitsha (n=2149) | Mitchells Plain (n=2107) | Total (n=4256) |
|---|---|---|---|
| Black African | 98.70% | 7.97% | 53.78% |
| Coloured | 1.12% | 91.41% | 45.82% |
| Indian | 0.19% | 0.57% | 0.38% |
| White | 0.00% | 0.05% | 0.02% |
| **Total** | **100.00** | **100.00** | **100.00** |

*Source: Field Survey, 2016*

Table 15 above shows that the proportion of Indians and Whites in both survey areas was small, with 0.2% in Khayelitsha and 0.6% in Mitchells Plain.

### *6.2.9. Migration*

Migration is an increasing practice of our times and millions of people move across international and national geographical boundaries. The decision to emigrate depends on a number of different factors, such as political, social, economic, spiritual and others (Dinbabo and Carciotto, 2015; Dinbabo and Nyasulu, 2015).

Surveys in Khayelitsha and Mitchells Plain also captured information on a number of migration issues including country of birth, province of birth, the timing of migration and the main reason for leaving a place. For the purposes of this report, however, the province of birth of respondents is discussed.

As shown in Table 16, the vast majority of persons surveyed across both areas were born in South Africa. About 95% of persons surveyed in Mitchells Plain indicated that they were born in the Western Cape Province. This may be attributable to the fact that Mitchells Plain is a predominantly Coloured area, with only a minority of Black Africans mostly from the Eastern Cape (about 3%). The result also shows that despite the proximity of the two areas, which could have promoted integration, the current 'black only' community and 'Coloured only' community is indicative of a chasm of the racial divide prevalent in South Africa.

**Table 16: Province of birth**

| Province | Khayelitsha (n=2097) | Mitchells Plain (n=2059) | Total (n=4156) |
|---|---|---|---|
| Western Cape | 55.46% | 95.39% | 75.24% |
| Eastern Cape | 41.82% | 3.11% | 22.64% |
| Northern Cape | 0.38% | 0.58% | 0.48% |
| Gauteng | 1.43% | 0.58% | 1.01% |
| North West | 0.24% | 0.00% | 0.12% |
| Limpopo | 0.00% | 0.05% | 0.02% |
| Free State | 0.19% | 0.00% | 0.10% |
| KwaZulu-Natal | 0.24% | 0.15% | 0.19% |
| Born outside SA | 0.00% | 0.10% | 0.05% |
| Don't know | 0.24% | 0.05% | 0.14% |
| **Total** | **100.00** | **100.00** | **100.00** |

*Source: Field Survey, 2016*

In Khayelitsha, about 55% of survey respondents indicated that they were born in the Western Cape. This is about 18% more when compared to the 2005 Khayelitsha Population Register Update figure of 37%. The sharp increase observed from this study may mean that

over the last decade, the proportion of persons who were born either in Khayelitsha or in some other places but have migrated to Khayelitsha has swelled.

As expected, the majority of persons surveyed in Khayelitsha were born in the Eastern Cape, at about 42%. This is followed by Gauteng and the Northern Cape, making up 1.4% and 0.4% respectively. Put together, the proportions of in-migration into the Western Cape from other provinces for respondents surveyed in Khayelitsha is approximately 44% as compared to a low 5% in the case of Mitchells Plain. This clearly depicts a high in-migration activity in Khayelitsha.

### 6.3. Access to basic social services

Access to basic social services forms an integral part of the household as a unit. Households' access to these services is a key determinant factor of their socio-economic well-being (Casale and Desmond, 2007). This section of the report thus presents households' access to basic social amenities and services such as potable water, toilet facilities, and energy for lighting and cooking. The section also presents information on key physical assets owned by households.

#### *6.3.1. Access to water and sanitation*

Access to safe drinking water and sanitation contributes to the facilitation and enhancement of other rights such as rights to health, education and an environment that is not damaging or injurious to human health and well-being (SAHRC, 2014).

Survey results in Khayelitsha and Mitchells Plain revealed that the vast majority of households had access to piped (tap) water either within their dwellings, on site or in their yards. As shown in Table 17, nearly all households (99%) surveyed in Mitchells Plain indicated that they had access to piped water. In the case of Khayelitsha, approximately 91% of households indicated having access to piped water, about 8 percentage points less than the case for Mitchells Plain. The result obtained for Mitchells Plain, in particular, is reflective of the 2011 census figure of 99% (City of Cape Town, 2013). These figures are, however, significantly higher than the national estimate of 46.3% of South African households having access to piped water (SAHRC, 2014).

**Table 17: Main source of water for household**

| Household's main source of water | Survey Site | | Total (n=1051) |
|---|---|---|---|
| | Khayelitsha (n=532) | Mitchells Plain (n=519) | |
| Piped (tap) water in dwelling | 88.90% | 99.42% | 94.11% |
| Piped (tap) water on site or in yard | 1.88% | 0.00% | 1.02 % |
| Borehole on site | 3.95% | 0.39% | 2.2% |
| Don't know | 5.27% | 0.19% | 2.67% |
| **Total** | **100.00%** | **100.00%** | **100.00%** |

*Source: Field Survey, 2016*

Table 17 also shows that the proportion of households using sources of water other than piped water (borehole on site) is higher for Khayelitsha (about 4%) than that of Mitchells Plain (about 0.4%). In addition, respondents who were unaware of their main source of water was higher in Khayelitsha (5.27%) than in Mitchells Plain (0.19%).

Concerning households' access to toilet facilities, all households surveyed in Mitchells Plain indicated that they used either a flush toilet with onsite disposal or flush toilet with offsite disposal (see Table 18). That means that none of the respondent households in Mitchells Plain patronised other toilet facilities such as the chemical toilet, pit latrine with ventilation or the pit latrine without ventilation. In the case of Khayelitsha however, approximately 94% of respondent households used either flush toilets with onsite disposal, flush toilets with offsite disposal or chemical toilets. The remaining 6% used pit latrines with ventilation pipes, pit latrines without ventilation pipes or some other form of toilet facility. Thus, while 6% of households surveyed in Khayelitsha used a less improved toilet facility, all respondent households in Mitchells Plain used some type of improved toilet facility. Again, sanitation is relatively better than what obtains at the national level, where about 60% of South African households have access to sanitation via flush toilet; while just over 70% of households have access to sanitation that is of the minimum RDP-acceptable level of a Ventilated Improved Pit (VIP) (SAHRC, 2014).

**Table 18: Households' access to toilet facility**

| Toilet facility | Survey Site | | Total (n=1,033) |
|---|---|---|---|
| | Khayelitsha (n=530) | Mitchells Plain (n=503) | |
| Flush toilet with onsite disposal (septic tank / soak-away) | 60.75% | 73.16% | 66.80% |
| Flush toilet with offsite disposal | 23.02% | 26.84% | 24.88% |
| Chemical toilet | 10.38% | 0.00% | 5.32% |
| Pit latrine with ventilation pipe (VIP) | 3.025% | 0.00% | 1.55% |
| Pit latrine without ventilation pipe | 2.26% | 0.00% | 1.16% |
| Others | 0.57% | 0.00% | 0.29% |
| **Total** | **100.00** | **100.00** | **100.00** |

*Source: Field Survey, 2016*

All households in Mitchells Plain indicated that they do not share their toilet facilities with other households that live with them as shown in Table 19, less than 1% of households in Khayelitsha indicated that they shared their toilet facilities with other households.

**Table 19: Sharing of toilet facility with other households**

| Response | Survey Site | | Total (n=1,024) |
|---|---|---|---|
| | Khayelitsha (n=505) | Mitchells Plain (n=519) | |
| Yes | 0.59% | 0.00% | 0.29% |
| No | 99.41% | 100.00% | 99.71% |
| **Total** | **100.00** | **100.00** | **100.00** |

*Source: Field Survey, 2016*

### *6.3.2. Energy sources for lighting and cooking*

Access to energy has long played a catalytic role in economic development and improving living standards of people (Stats SA, 2013a). Energy supports the provision of basic needs such as food, shelter and clothing, all of which are persisting challenges in South Africa (CURES, 2009). Nationally, the main source of energy for cooking is electricity from the national grid used by 79.8% of South African households, while other sources include firewood (9.8%) and paraffin (5.1%). Similarly, the main source of energy for lighting is electricity from the grid as about 86% of South African households were connected to the main electricity supply in 2014 (Stats SA, 2014).

While electricity from the mains, generator and gas were found to be the common sources of energy for lighting in Mitchells Plain, that of Khayelitsha comprised of electricity from the mains, generator and paraffin. Across the board, electricity from the mains or national grid was the dominant energy source for lighting. Nearly all respondent households in Khayelitsha and Mitchells Plain used electricity as the main source of energy for lighting (see Table 20). This finding is the same for the 2011 census figure of 99% obtained for Mitchells Plain and about 11 percentage points higher when compared to the 2011 census figure for Khayelitsha, at 88% (City of Cape Town, 2013).

**Table 20: Main source of energy/fuel for lighting for household**

| Energy source | Survey Site | | Total (n=1,039) |
|---|---|---|---|
| | Khayelitsha (n=528) | Mitchells Plain (n=511) | |
| Electricity from mains | 99.43% | 98.83% | 99.13% |
| Electricity from generator | 0.38% | 0.59% | 0.48% |
| Gas | 0.00 % | 0.59% | 0.29% |
| Paraffin | 0.19% | 0.00% | 0.10% |
| **Total** | **100.00** | **100.00** | **100.00** |

*Source: Field Survey, 2016*

Table 21 presents the main source of energy for cooking for households in the respective study areas. The total number of 96% and 92% of households surveyed in Khayelitsha and Mitchells Plain respectively depended on electricity from mains as their main energy source for cooking. This is followed by the use of gas as the main source of fuel representing 1% and 2% for Khayelitsha and Mitchells Plain respectively. Interestingly, usage of gas for cooking was found to be high in Mitchells Plain (5.7%) as compared to 1.9% for Khayelitsha.

**Table 21: Main source of energy/fuel for cooking for household**

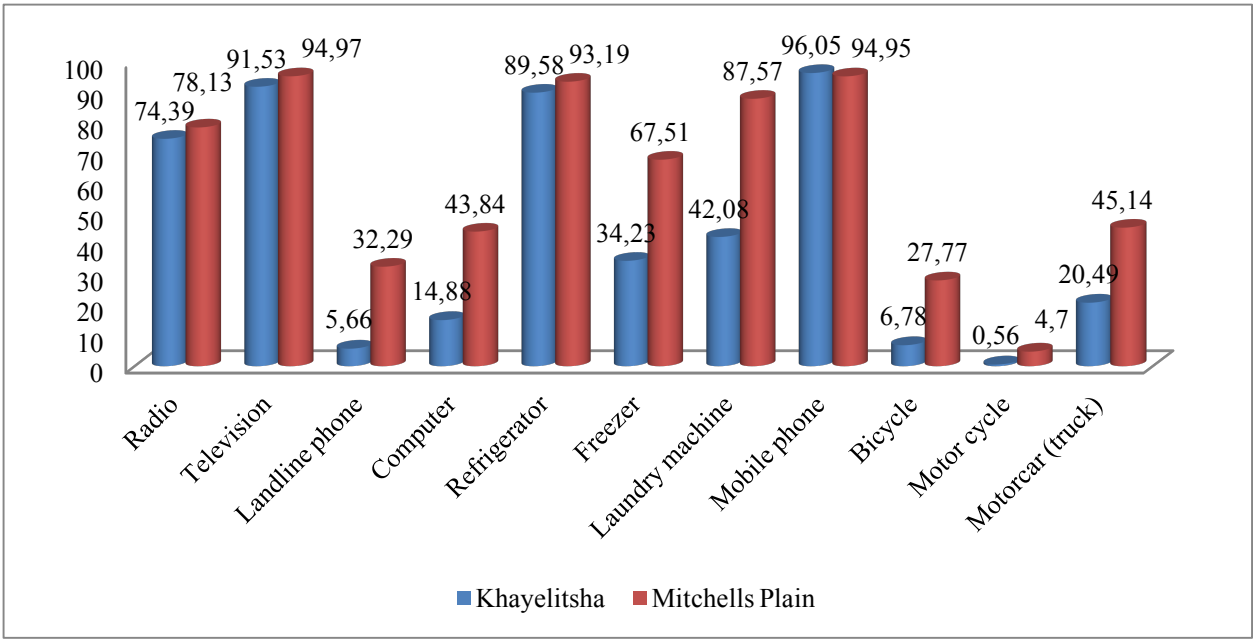
| Energy source | Survey Site | | Total (n=1,034) |
|---|---|---|---|
| | Khayelitsha (n=526) | Mitchells Plain (n=508) | |
| Electricity from mains | 96.01% | 92.32% | 94.20% |
| Electricity from generator | 1.33% | 1.97% | 1.64% |
| Gas | 1.90% | 5.71% | 3.77% |
| Paraffin | 0.57% | 0.00% | 0.29% |
| Others | 0.19% | 0.00% | 0.10% |
| **Total** | **100.00** | **100.00** | **100.00** |

*Source: Field Survey, 2016*

### *6.3.3. Household ownership of physical assets*

The survey also captured information on ownership of some selected physical assets by households. For four of these assets, respondents were asked whether any household member owned them. The study found mobile phones to be the most common asset that at least one household member owned. This is 96% and 94% respectively for Khayelitsha and Mitchells Plain. Ownership of a car or a truck amongst households is uneven across the two areas, with the proportion of respondent households who indicated that at least one member of their household owned a car or a truck in Mitchells Plain was 25 percentage points more than in Khayelitsha.

**Figure 7: Ownership of assets by household members (%)**




*Source: Field Survey, 2016*

It is observable from Figure 7 above that ownership of a bicycle as well as a motorcycle or scooter was high in Mitchells Plain, 28% and 5% respectively. Figure 7 also provides information on households' ownership of physical assets such as washing machine, computer, non-mobile telephone, and television. The three most common assets owned by households across the board were televisions, radios and refrigerators. The three least owned assets included freezers, non-mobile telephones and computers (laptop or desktop).

Of all assets under consideration, Mitchells Plain had the highest ownership compared to Khayelitsha. For example, while about 32% of households surveyed in Mitchells Plain indicated that they owned non-mobile telephones, less than 6% of respondent households in Khayelitsha owned non-mobile telephones. In addition, ownership of a computer by households, be it laptop or desktop, in Mitchells Plain was found to be 43% and 14.88% in Mitchells Plain and Khayelitsha, respectively. As indicated earlier, the observed differences in asset ownership between the two areas may be attributable to the prevailing socio-economic conditions.

### 6.4. Determinants of food choices

The choice of food has been closely linked with the state of health of an individual (Lichtenstein et al., 1998; Sanchez-Villegas et al., 2003; Brehm et al., 2013). There are several determinants of food choices ranging from biological to physical, social,

psychological, among others. This section focuses on the social and physical determinants of food choices among respondents in the area under study. Specifically, the section considers the educational qualification, religious affiliation and distance covered to purchase foods *vis-à-vis* their relationship with their food choices. For instance, increased consumption of fat has been strongly associated with increased plasma concentrations of lipids, glucose intolerance, insulin resistance and obesity (Brehm et al., 2013). From the methodology, four persons per household were to report on their food choices using the 24-hour Dietary Recall.

### *6.4.1. Education attainment and food choices*

The food types that a household consumed were categorised into food groups and these were correlated with each of the aforementioned variables influencing food choices. Evidence abounds of the influence of people's socio-economic characteristics in determining their food choices. It is widely reported that people with a high socio-economic position have better diets than those in a lower socio-economic position as the latter groups are more likely to consume diets high in fat and have lower intakes of fruits and vegetables, thus increasing their susceptibility to diet-related diseases (Kamphuis et al., 2015).

For each household member, data was obtained based on 24-hour Dietary Recall, which captures specific food items eaten the previous day. This was correlated with the social status of respondents and analysis focused on the specific food item as a percentage of the total (food groups), rather than on frequencies. It is evident from Table 22 that cereals were by far the dominant food taken by the majority of respondents, accounting for 30.8% of the food types consumed within the last 24 hours. Beverages (10.5%), flesh meat (8.6%), milk (6%), vegetables (5.3%), other meat products (4.9%), and sugar (3.5%) were some other food items respondents consume highly. On the other hand, the consumption of fruits, fish and oil fat (butter) were low as they constituted 2.9%, 1.5% and 2% respectively, of food types respondents consumed in the 24-hour recall.

In terms of educational attainment, people with tertiary education consumed more cereals (51%) compared to people with technical education (40.6%), secondary education (46.6%) and primary education (45.8%). Interestingly, respondents with little or no education consumed less cereal (32.7%) than others that have a form of education. This set of respondents also consumed more vegetables (7.3%), flesh meat (12.8%), and beverages (14.1%) than the educated respondents. However, respondents with tertiary qualifications

took more fruits (4%) than other educational groups. Respondents within the technical, tertiary and secondary groups took more products than other educational groups as this accounted for 9%, 6.7% and 6.4% respectively, of the food types consumed in each of the educational groups.

Evidently, the analysis produced mixed results. While people with better or higher education consumed more cereals and milk compared with the lesser educated, respondents with lower educational attainment remarkably consumed more vegetables and flesh meats than those with higher education. The higher consumption of vegetables found among individuals with lower education is contrary to allusions in literature that individuals with higher education, income and social status consume more vegetables than those with lower socio-economic status (see for example, Pollard et al., 2002; Kamphuis et al., 2015; Darmon and Drewnoski, 2008). The high consumption of meat is, however, consistent with the literature as lower socio-economic groups, according to Kamphuis et al. (2015), consume diets high in fat, more so than individuals from a higher socio-economic status.

**Table 22: Educational attainment and food choices**

| | Educational Attainment | | | | | |
|---|---|---|---|---|---|---|
| **Food Groups** | **None** | **Primary** | **Secondary** | **Technical** | **Tertiary** | **Total** |
| Cereals (mealies, maize) | 30.63 | 30.16 | 30.56 | 29.17 | 27.71 | 30.29 |
| White Roots (potato) | 16.04 | 15.52 | 16.44 | 17.86 | 13.86 | 16.11 |
| Vegetables (spinach) | 9.17 | 10.18 | 7.03 | 8.33 | 7.83 | 8.17 |
| Fruits (mango, orange) | 2.5 | 4.17 | 3.72 | 3.57 | 1.2 | 3.58 |
| Fish (including canned) | 1.25 | 1.45 | 1.34 | 1.19 | 1.2 | 1.35 |
| Meat (beef, pork, chicken) | 1.46 | 1.55 | 1.12 | 0.00 | 0.6 | 1.2 |
| Legumes (peas, beans) | 1.04 | 2.23 | 2.46 | 1.19 | 6.63 | 2.35 |
| Milk (yoghurt, cheese) | 19.17 | 16.97 | 17.38 | 17.86 | 21.69 | 17.68 |
| Fat and oil (butter) | 5.21 | 4.75 | 5.51 | 5.36 | 4.82 | 5.25 |
| Sweets (sugar) | 3.75 | 3.49 | 4.30 | 3.57 | 4.22 | 4 |
| Condiments (spices) | 7.71 | 4.95 | 6.14 | 8.33 | 5.42 | 6.08 |
| Beverages (tea, coffee) | 2.08 | 4.56 | 3.99 | 3.57 | 4.82 | 3.92 |
| **Total (n)** | 480 | 1,031 | 2,232 | 168 | 166 | 4,077 |

*Source: Field Survey, 2016*

### *6.4.2. Religion and food choices*

Dietary patterns have over the years been strongly influenced by religious beliefs. Many individuals choose to eat or avoid certain foods in order to preserve certain religious tenets,

beliefs or laws. In most religions, the observation of dietary tenets or rules such as food taboos and fasting periods is an expression of religious identity and intensity (Alonso, 2015). The relationship between religious affiliation and food choices is summarised in Table 23. From the analysis, Muslims consume more cereals (48.2%) than Christians (44.5%) and Traditionalists (40.9%). They also consume more vegetables (5.8%) and fruits (3.5%) than other religious observers do. Christians' consumption of vegetables and fruits respectively constitutes 5.5% and 2.7% of the food types consumed in the 24-hour recall while the proportion of Traditionalists who mentioned vegetables and fruits as part of food taken during the period was 3.7% and 3.0% respectively.

The consumption of beverages was higher among Traditionalists (11.9%) than Christians (10.3%) and Muslims (10.1%). A similar result was obtained in the consumption of milk, flesh meat and white roots, as consumption was higher among Traditionalists (7.8% for milk, 10% for flesh meat and 5.2% for white roots). The foregoing analysis has highlighted differences in the food consumption patterns among the different religious groups. Based on dietary recall, Muslims consume more cereal, vegetables and fruits than Christians and Traditionalists, whereas Traditionalists' consumption of beverages, milk, flesh meat and white roots (potatoes) was higher than other religious observers.

**Table 23: Religion and food choices**

| Food Groups | Religion | | | Total |
|---|---|---|---|---|
| | Christianity | Islam | Traditionalism | |
| Cereals | 1327 (44.5%) | 292 (48.3%) | 110 (40.9%) | 1729 (44.8%) |
| White roots (potatoes) | 93 (3.1%) | 25 (4.1%) | 14 (5.2%) | 132 (3.4%) |
| Vegetables | 165 (5.5%) | 35 (5.8%) | 10 (3.7%) | 210 (5.4%) |
| Fruits | 80 (2.7%) | 21 (3.5%) | 8 (3.0%) | 109 (2.8%) |
| Fish and fish products | 48 (1.6%) | 8 (1.3%) | 1 (0.4%) | 57 (1.5%) |
| Flesh meat | 258 (8.6%) | 43 (7.1%) | 27 (10.0%) | 328 (8.5%) |
| Other meat products | 150 (5.0%) | 30 (5.0%) | 11 (4.1%) | 191 (5.0%) |
| Beans, peanut butter | 60 (2.0%) | 3 (0.5%) | 6 (2.2%) | 69 (1.8%) |
| Milk and milk products | 181 (6.1%) | 28 (4.6%) | 21 (7.8%) | 230 (6.0%) |
| Oil fat (butter) | 54 (1.8%) | 17 (2.8%) | 7 (2.6%) | 78 (2.0%) |
| Candies (sweets) | 18 (0.6%) | 7 (1.2%) | 0 (0.0%) | 25 (0.6%) |
| Spices | 76 (2.5%) | 16 (2.6%) | 6 (2.2%) | 98 (2.5%) |
| Beverages (coffee, tea) | 308 (10.3%) | 61 (10.1%) | 32 (11.9%) | 401 (10.4%) |
| Sugar and sugar products | 107 (3.6%) | 14 (2.3%) | 13 (4.8%) | 134 (3.5%) |
| Soups | 58 (1.9%) | 4 (0.7%) | 3 (1.1%) | 65 (1.7%)0 |
| **Total** | **2983 (100%)** | **604 (100%)** | **269 (100%)** | **3856 (100%)** |

*Source: Field Survey, 2016*

### *6.4.3. Distance travelled to purchase food and food choices*

Access to food at the household level is greatly influenced by the distance travelled to stores and supermarkets to purchase foods. This may not be delinked from the fact that there is variation in prices across stores, which may influence household food budgets and food choices. Furthermore, the distance may affect food choices, as some households may be unable to get to supermarkets easily, and instead settle for nearer stores with limited choices and lower quality foods, thus constraining overall diet quality (Rahkovsky and Snyder, 2015).

From the analysis, 39% of respondents travel less than 700m to purchase cereal, 51% travel between 701m and 2100m, and 11% travel above 2100m. In addition, 47.8%, 42.1% and 40.7% respectively travel less than 700m for the purchase of white roots, milk and milk products, as well as sugar. On the other hand, more than two-thirds of respondents travel less than 700m to purchase beans and peanut butter (66.7%) and candies or sweets (75%). The high percentage obtained in the latter item is understandable as people may tend to purchase sweets or candies in smaller shops closer to home and due to the fact that the items are readily available and accessible in those shops.

**Table 24: Distance travelled to purchase food and food choices**

| Food Groups | Distance travelled to purchase food | | | | | Total |
|---|---|---|---|---|---|---|
| | Under 200m | 201m-700m | 701m-1400m | 1401m-2100m | Above 2100m | |
| Cereals | 21.1% | 17.9% | 22.4% | 27.6% | 11.0% | 246 |
| White roots (potatoes) | 30.4% | 17.4% | 17.4% | 30.4% | 4.3% | 23 |
| Vegetables | 17.9% | 20.9% | 19.4% | 28.4% | 13.4% | 67 |
| Fruits | 29.2% | 20.8% | 8.3% | 29.2% | 12.5% | 24 |
| Fish and fish products | 33.3% | 16.7% | 50.0% | .0% | .0% | 6 |
| Flesh meat | 19.9% | 18.7% | 22.2% | 32.8% | 7.4% | 86 |
| Other meat products | 15.8% | 21.1% | 21.1% | 31.6% | 10.5% | 19 |
| Beans, peanut butter | 20.0% | 46.7% | 20.0% | .0% | 13.3% | 15 |
| Milk and milk products | 28.9% | 13.2% | 21.1% | 26.3% | 10.5% | 38 |
| Oil fat (butter) | 16.7% | 33.3% | .0% | 33.3% | 16.7% | 6 |
| Candies (sweets) | 50.0% | 25.0% | .0% | 25.0% | .0% | 4 |
| Spices | 19.2% | 30.8% | 11.5% | 30.8% | 7.7% | 26 |
| Beverages (coffee, tea) | 11.8% | 16.1% | 21.5% | 38.7% | 11.8% | 93 |
| Sugar and sugar products | 22.2% | 18.5% | 25.9% | 25.9% | 7.4% | 27 |
| **Total** | 20.3% | 19.3% | 20.6% | 29.6% | 10.3% | 700 |

*Source: Field Survey, 2016*

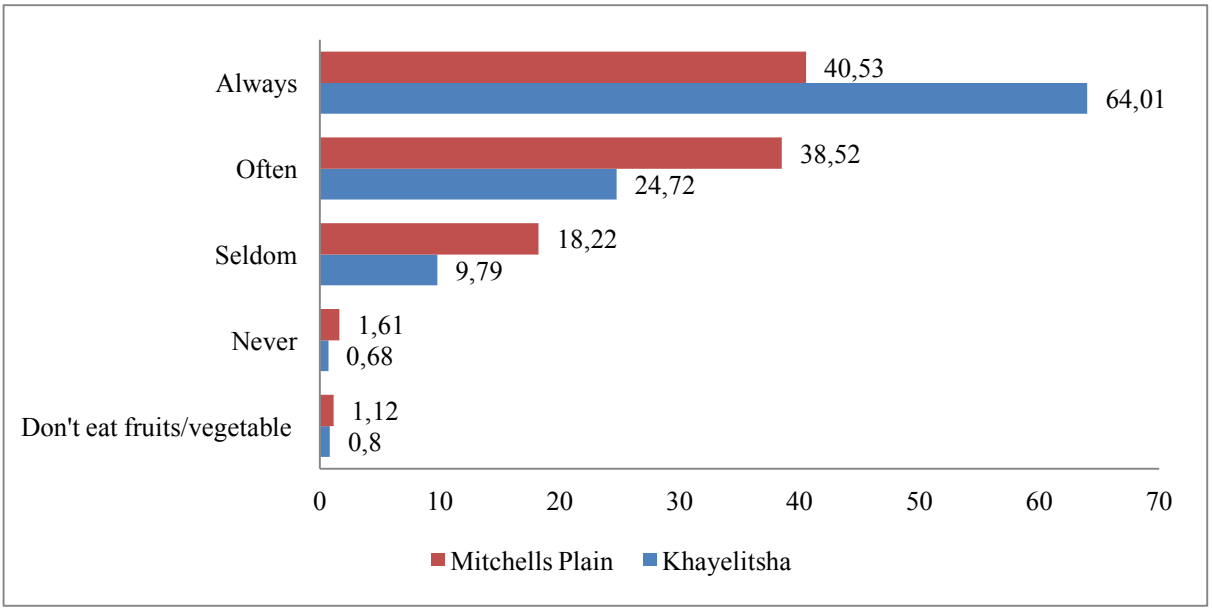
Furthermore, from the foods taken by respondents, 100%, 58.2%, 58.3% and 60.8% of respondents travel less than 1400m for the purchase of fish, vegetables, fruits and flesh meat respectively. Evidently, a notable pattern emanating from the survey analysis is that people travel farther from home to purchase non-perishable food items such as cereals, white roots and sugar. On the other hand, respondents tend not to purchase perishable items such as fish, vegetables, fruits and meats farther from home.

### *6.4.4. Eating habits*

Dietary behaviour is an important determinant of the nutritional status of any given population. Evidence abounds that poor dietary habits are among the foremost avoidable risk factors for the incidence of non-communicable diseases (Moreno et al., 2008). The intake of foods high in vital nutrients that the body needs is indeed critical for healthy living.

The consumption of fruits and vegetables is continually encouraged, as these are high in essential nutrients. Data on the frequency of fruit and vegetable consumption among respondents is summarised in Figures 8 and 9. Evidently, respondents consume more fruits than vegetables; with 41% and 64% consuming fruits in Mitchells Plain and Khayelitsha respectively (see Figure 8).

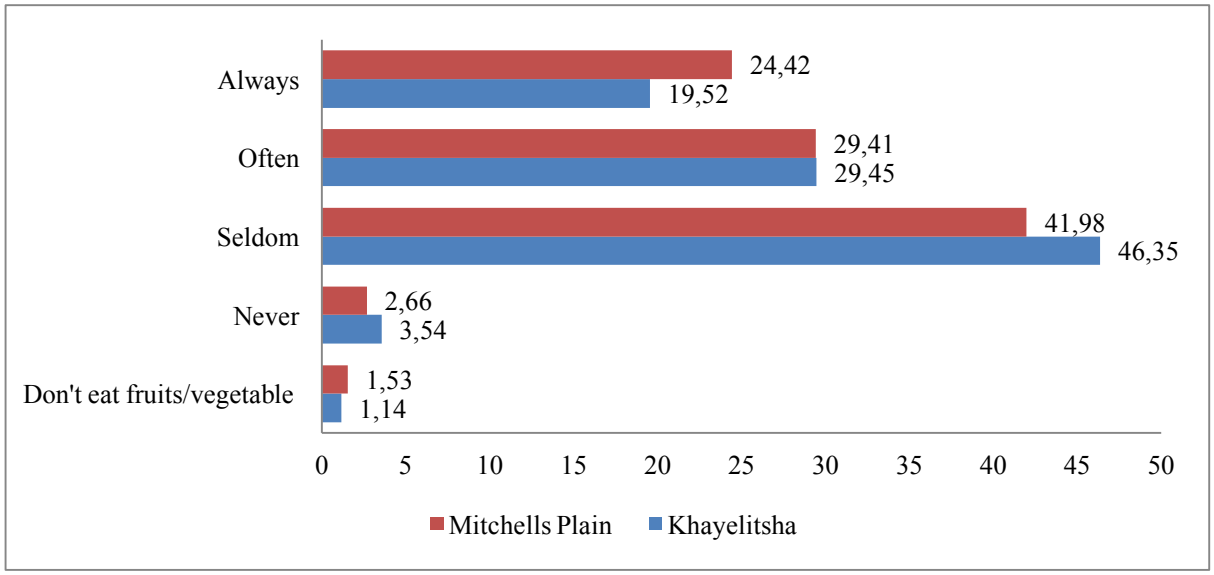
**Figure 8: Consumption of fruits**




*Source: Field Survey, 2016*

Unlike fruits, the proportion of persons who consumed vegetables on a regular basis was low, 24.42% in Mitchells Plain and approximately 20% in Khayelitsha. As shown in Figure 9, about between 45-50% of survey respondents in both areas indicated that they seldom or never consumed. The low or inconsistent consumption of fruits and vegetables in the study areas chimes in with what Peltzer and Phaswana-Mafuya (2012) and Faber et al. (2013) reported, namely that South Africa is characterised with low intake of fruits and vegetables. For instance, 12–18% of rural and 27–44% of urban South Africans consumed fruit in 2000 (Nel and Steyn 2002, cited in Faber et al., 2013). The overall prevalence rates of insufficient fruits and vegetable (FV) intake was 68.5% with the mean intake of 4 servings of FV among adults which is less than the WHO recommended daily intake of 5 servings of FV (Peltzer and Phaswana-Mafuya, 2012), while 12–18% rural and 27–44% urban South Africans consumed fruit (Nel and Steyn, 2002).

**Figure 9: Vegetable consumption**




*Source: Field Survey, 2016*

### *6.4.4.1. Fried food*

The implications associated with consuming fried foods are far reaching. Excessive consumption of fried foods causes more harm than good to the human body as they are sources of unneeded fats and calories. People who eat a lot of fried foods are at higher risk of non-communicable diseases such as diabetes and heart disease. In a longitudinal study, for instance, it was observed that people who consumed fried food at least once per week were at a greater risk of both type 2 diabetes and heart disease, and an increase in the frequency of fried food consumption was associated with increased risk of having the aforementioned diseases. The greatest risk, according to the study, was associated with

eating fried foods away from home where due consideration may not be given to the freshness of the frying oil being used (Cahill et al., 2014).

**Table 25: Consumption of fried food**

| Fried food at home | | | | Fried food eaten outside the home | | |
|---|---|---|---|---|---|---|
| **Fried food** | **Khayelitsha** | **Mitchells Plain** | **Total** | **Khayelitsha** | **Mitchells Plain** | **Total** |
| | N=878 | N=1224 | N= 2099 | N=870 | 1187 | N= 2057 |
| Never | 24.80 | 13.48 | 18.20 | 37.24 | 48.10 | 43.51 |
| Once a week | 17.49 | 12.42 | 14.53 | 18.85 | 9.35 | 13.37 |
| 2-3 times a week | 48.46 | 67.40 | 59.50 | 37.93 | 39.09 | 38.60 |
| 4-6 times a week | 5.26 | 3.92 | 4.48 | 2.87 | 2.27 | 2.53 |
| Daily | 4.00 | 2.78 | 3.29 | 3.10 | 1.18 | 1.99 |

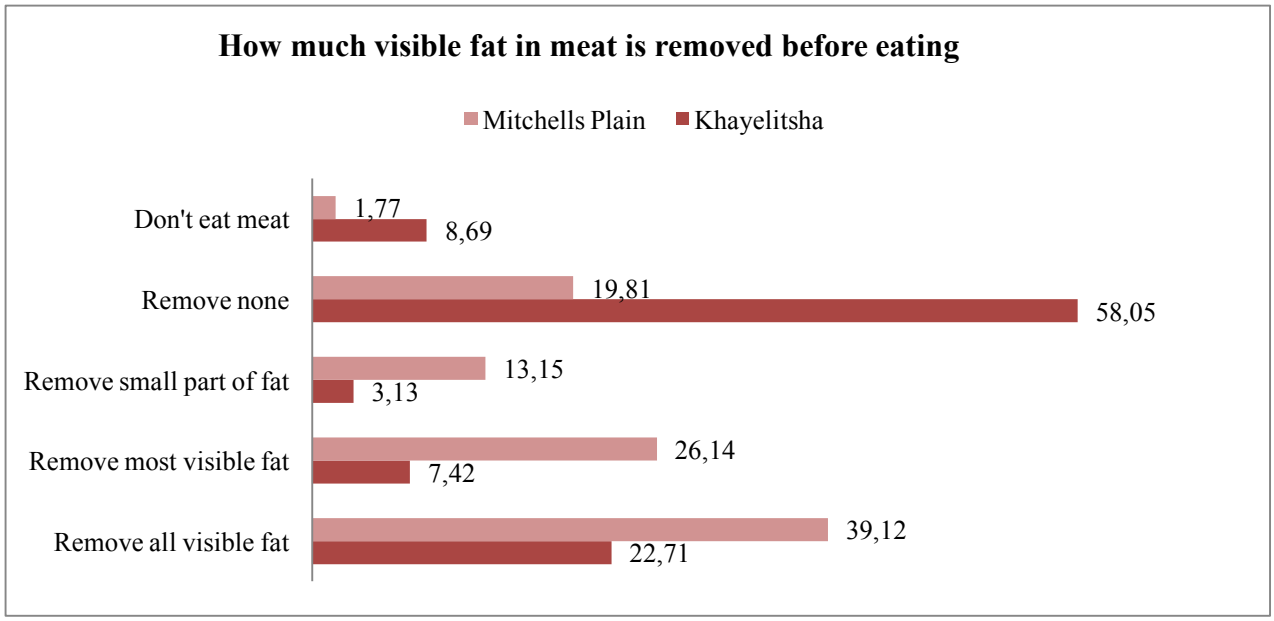
*Source: Field Survey, 2016*

Data from the survey indicates that 43.51% of respondents do not consume fried foods away from home, as compared with 18.5% who do not consume fried foods at home. Once in a week, however, 14.53% and 13.37% eat fried foods at home and away from home respectively. More noteworthy is the proportion of those who consume fried foods more than once a week. About 67.40% and 43% of respondents consumed fried foods more than once a week at home and outside the home respectively. It is apparent from the analysis that consumption of fried foods is pervasive among households, although a greater number of these households take this at home rather than away from home.

#### *6.4.4.2. Removal of visible fat before eating*

An effective way to reduce excessive fat and calorie consumption is to remove visible fat in meat and chicken skin before eating (Schonfeldt et al., 2013). These constitute part of a healthy eating plan geared towards avoiding excess saturated fats. About a third of households always remove all visible fats from meat (32.2%) and chicken skin (31.8%) before eating. Figure 10 shows that 18.3% remove most of the visible fat in meat and 8.9% remove a small portion of visible fat in meat. In addition, 11.8% often remove chicken skin and 8% seldom remove chicken skin before eating.

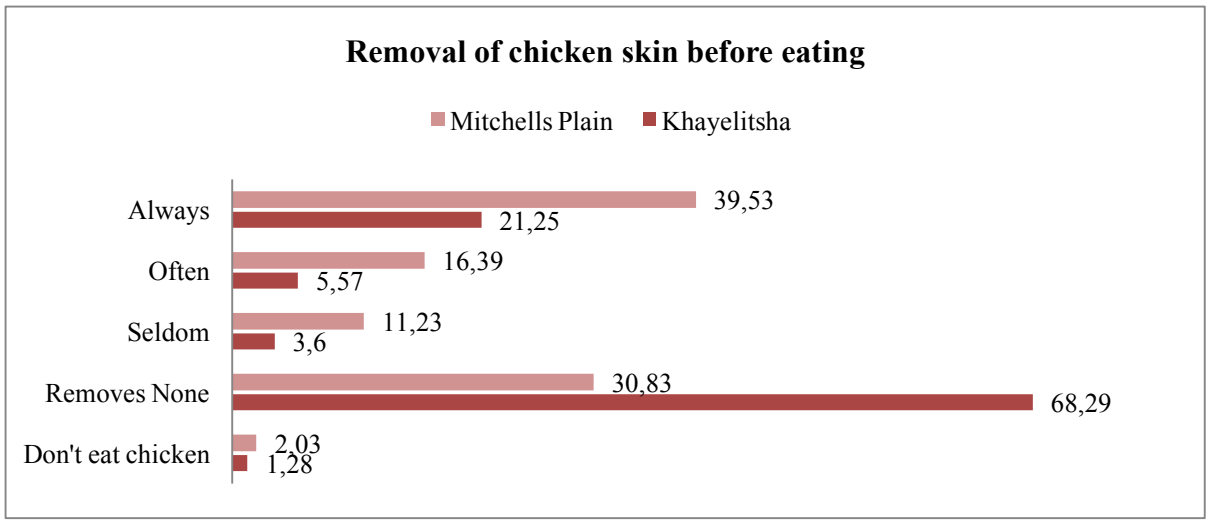
**Figure 10: Removal of visible fat before eating**




*Source: Field Survey, 2016*

The survey further indicates that 35.9% and 46.6% of the households do not remove visible fat from meat and chicken skin respectively. In terms of each study area, 19.8% of respondents in Mitchells Plain do not remove visible fat from the meat before eating it, while 58% in Khayelitsha also do not. Similarly, 30.8% of participants from Mitchells Plain remove the skin from their chicken before eating, and a high 68.3% of Khayelitsha respondents do not remove chicken skin before eating. Evidently, the majority of households do not see the removal of visible fat from meat and chicken skin as necessary. The proportion of those who never remove visible fat from meat and skin from chicken is higher compared to a study conducted in Spain by Leon-Munoz et al. (2016) who reported that 24.4% and 23.7% never or almost never removed visible fat from meat and skin from chicken, respectively.

**Figure 11: Removal of chicken skin**



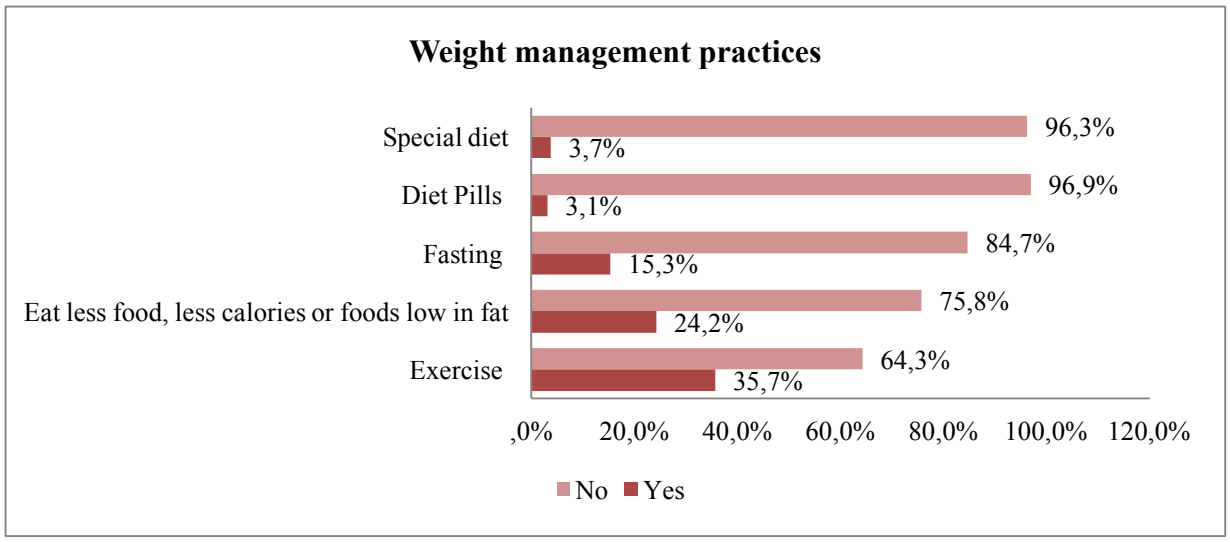

*Source: Field Survey, 2016*

### 6.5. Weight management practices

Effective weight management practices include adequate nutrition and engagement in physical activities. A fundamental principle associated with weight management is that weight can only be lost through an energy balance deficit, which arises when caloric intake is less than burnt calories. In essence, a caloric deficit is achievable by means of a multi-component intervention, comprising mostly the combination of diet with exercise (Wharton et al., 2008; Kirk et al., 2012).

The survey asked households about their weight management practices. It is observable from Figure 12 that the majority of households do not engage in conscious practices to manage their weight. More than 60% of households do not engage in all the aforementioned practices in a bid to control their weight. Only 35.7% exercise to manage their weight, 3.7% are on a special diet, 3.1% take diet pills, and less than a quarter of the households take measures relating to food consumption to control their weight. Specifically, 24.2% eat less food, less calories or foods low in fat and 15.3% go without food (fasting) for 24 hours in an effort to manage their weight. The implication of the foregoing is the increasing likelihood of surplus calories and excess fats in the body of household members as the level of involvement in diet and exercise is low.

**Figure 12: Weight management practices**




*Source: Field Survey, 2016*

### *6.5.1. Frequency of physical activities*

The importance of physical activity to health and wellness cannot be understated. Physical inactivity is now identified as the fourth leading risk factor for global mortality and the persistently rising levels of physical inactivity globally have dire implications for global health (WHO, 2010). Physical activity can reduce the risk of cardiovascular diseases, diabetes, breast cancer and is a major determinant of energy expenditure, thus exerting influence on energy balance and weight control (Miles, 2007; WHO, 2010).

An examination of the physical activities households regularly engaged in indicates that shopping is the major physical activity of households with 82.6% of households involved. This is anticipated as shopping is not an exclusive preserve of some particular set of households but is practiced by nearly all households due to the onus to meet basic needs. However, engagement in other beneficial physical activities is low as 54.2%, 68.1%, 69.9% and 79.9% of respondents have never engaged in dancing, swimming, running and working out in a gym, respectively. Following the categorisation of the intensity of physical activities in literature (see for example, Miles, 2007), it can be stated that the majority of respondents are involved in light to moderate levels of physical activities. The foregoing portends a dire situation as households do not actively and consciously engage in weight management practices which are beneficial to healthy living.

**Table 26: Frequency of physical activities**

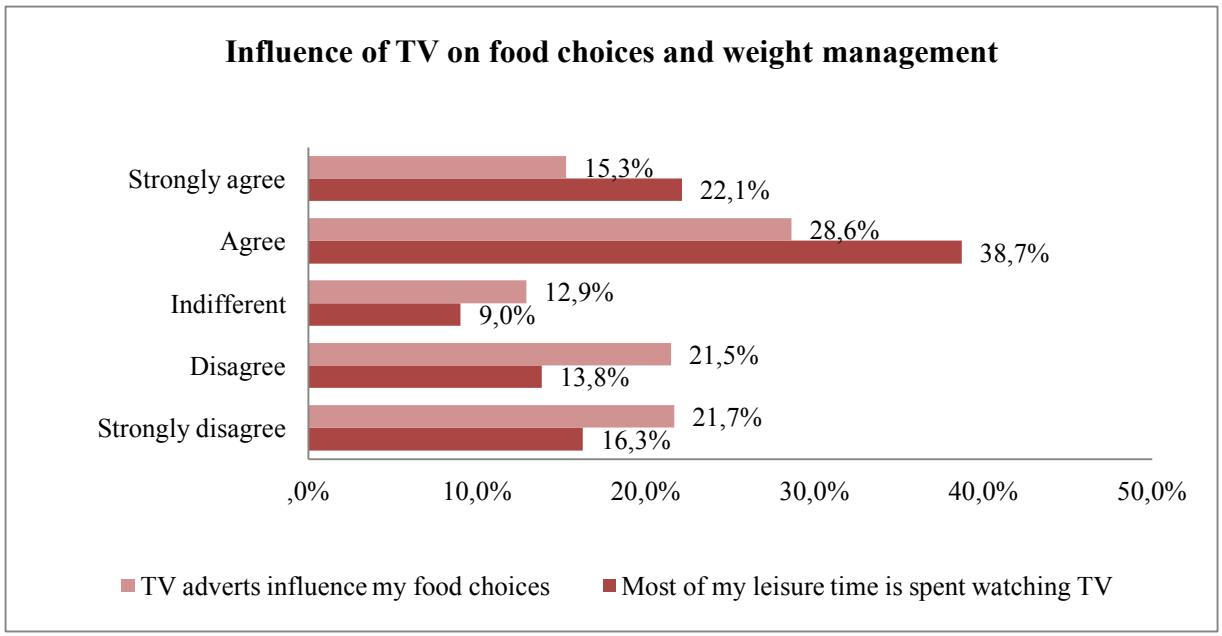
| Frequency | Physical activities | | | | | |
|---|---|---|---|---|---|---|
| | Work out in a Gym | Shopping | Swimming | Dancing | Running | Light cleaning |
| Always | 3.8% | 23.6% | 2.7% | 9.9% | 8.1% | 46.3% |
| Often | 4.5% | 19.1% | 4.1% | 10.7% | 6.0% | 17.7% |
| Sometimes | 5.2% | 23.6% | 9.5% | 15.9% | 9.1% | 13.0% |
| Seldom | 6.6% | 16.3% | 15.6% | 9.3% | 6.9% | 7.0% |
| Never | 79.9% | 17.4% | 68.1% | 54.2% | 69.9% | 16.0% |

*Source: Field Survey, 2016*

### *6.5.2. Influence of Television on the choices of food*

Food advertising contributes significantly to increasing obesity amongst adults and children. Food advertising communicates a strong food consumption cue, especially amongst children. Harris et al. (2009) found evidence that children consumed 45% more after being exposed to food advertised on television (TV). The influence of TV on the choices of food consumed by households and on the management of their weight was also examined. TV watching is a passive and sedentary activity, which is often accompanied with snacking and drinking. It has been associated with mindless eating and evidence abounds in the literature of the significant positive relationship between hours of TV viewed and obesity in children and adolescents (Boulos et al., 2012). Excessive TV watching can thus lead to weight gain, especially when it is combined with late-night eating. Respondents were asked if they spent most of their leisure time watching TV, and the majority (60.8%) answered in the affirmative. While 38.7% of respondents strongly agreed that they spent most of their leisure time watching TV, 22% agreed to the notion, and 30.1% either disagreed or strongly disagreed that most of their leisure time was spent watching TV. In relation to the issue of whether or not TV adverts influence household food choices, opinions were nearly evenly divided among respondents. About 43.9% of total respondents agreed that their food choices were influenced by TV adverts while 43.2% gave a divergent opinion. Nevertheless, it is arguable that TV plays an influential role not only on sampled households' weight management practices but also on their eating habits and food choices.

**Figure 13: Influence of TV on food choices and weight management**




*Source: Field Survey, 2016*

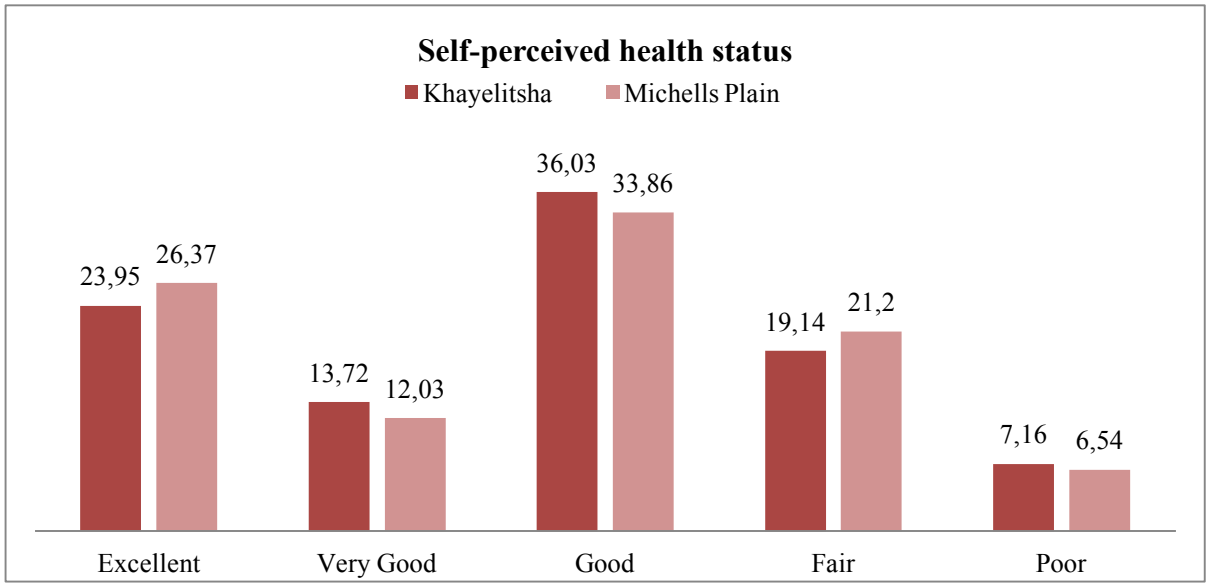
## 6.6. Health status

### *6.6.1. Self-perceived health status*

Perceived health is a measure of overall health status. It represents a subjective indicator of overall health status and may include features whose clinical data capturing seems problematic, such as aspects of psychological and physiological data as well as disease severity. Often considered as a predictive indicator of the prevalence of diverse diseases, self-perceived health status is an indication of the capability to operate in specific social and organisational situations (Kaleta et al., 2009). Furthermore, there is the likelihood that individuals with a low self-perceived health status may use medical services more frequently and have a greater absence from work ratio compared with those with contrary opinions regarding their health (Kaleta et al., 2009). Respondents were asked to rate their health status on a scale of 5 variables: poor, fair, good, very good or excellent. From the analysed data, 35.9% and 34.0% of respondents Khayelitsha and Mitchells Plain respectively, perceived their health condition as good while about 25.6% and 24.6% in Khayelitsha Mitchells Plain respectively perceived their health as excellent. For Mitchells Plain and Khayelitsha respectively, 20.9% and 19.3% perceived their health as fair while 5.2% and

8.7% perceived it as poor. From the analysis, there is generally no major difference in the perception of their health status between the two survey areas, and the majority of households have a good perception of their health status.

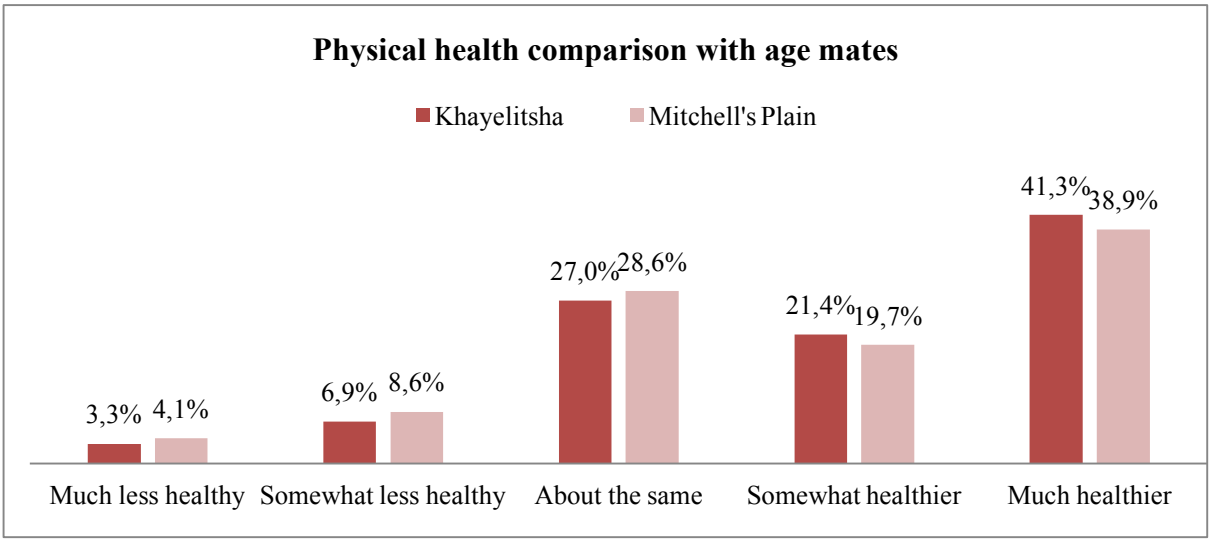
**Figure 14: Perception of health status**




*Source: Field Survey, 2016*

Furthermore, similar patterns emerged when respondents were asked how they perceived their health in comparison with people within their age range (Figure 15). The majority of the respondents in both Mitchells Plain (58.6%) and Khayelitsha (62.7%) were of the opinion that they were much healthier than their age mates. On the other hand, 12.7% and 10.2% in Mitchells Plain and Khayelitsha respectively perceived their health status to be less good than other people within their age range.

**Figure 15: Physical health comparison with age mates**

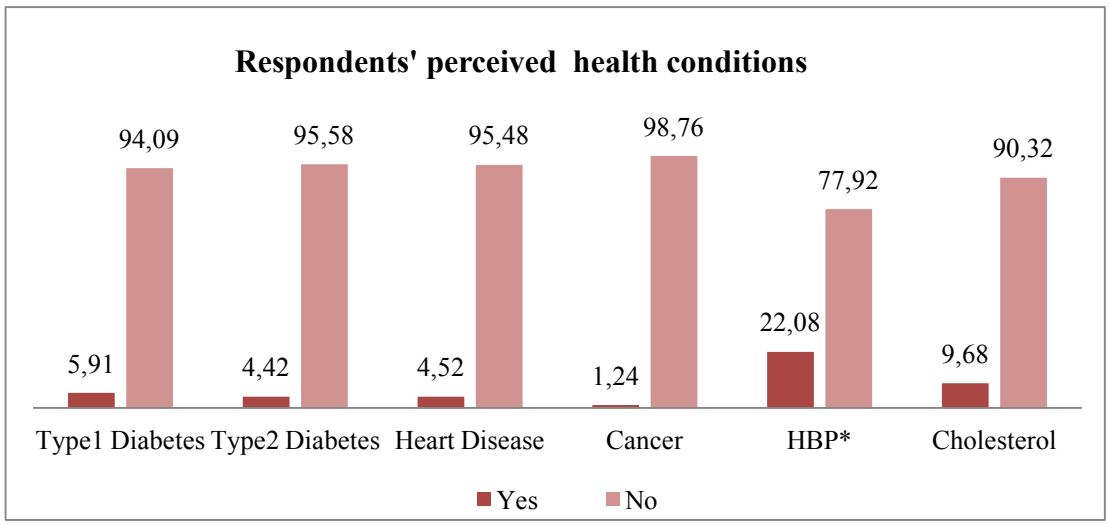



*Source: Field Survey, 2016*

### *6.6.2. Respondents' health conditions*

The absence of actual physical illness is reported to significantly influence people's self-perceived health status. Other studies have shown that better economic conditions were highly associated with positive self-perceived health status, more so than those with poorer economic conditions (Fernandez-Martinez et al., 2012). Hofman (2014) assessed the economic impact of obesity on employers. The study found that obese workers cost the employers about 49% more in sick leave than non-obese workers. Figure 15 above showed a generally positive outcome in relation to people's association to non-communicable diseases. However, as will be seen in Figure 16 below, which shows a high level of the prevalence of obesity, this comparison of self-perceived health status and actual BMI necessitates a further investigation into what people mean when they report that they are healthier. Evidently, the most common negative health condition that respondents suffered from is High Blood Pressure (HBP*) 22.8% followed by High Cholesterol level, affecting 9.68% of respondents. The proportion of respondents with type 1 diabetes, type 2 diabetes was 5.91% and 4.42% respectively and a meagre 1.24% suffered from cancer-related problems. The prevalence of diabetes, obtained from the survey is slightly lower than the national estimate put at 7% by the International Diabetes Foundation (IDF, 2015).

**Figure 16: Respondents' health conditions**




*Source: Field Survey, 2016*

### *6.6.3. Prevalence of overweight and obesity in adults in Khayelitsha and Mitchells Plain*

One of the objectives of this survey was to examine the health status of the people of Khayelitsha and Mitchells Plain by assessing their BMI. According to Ng et al. (2014) in the past 33 years, no success story has been reported in any country in terms of reducing the number of an obese population. This section assesses the BMI of individuals in relation to their perceived health status and their food choices. It begins with an overview of BMI in the survey area.

In the survey, about 42.2% of respondents responded to the BMI questions. Given the fact that the selected areas (Khayelitsha and Mitchells Plain) are the most populated urban peripheral townships in Cape Town as well as in their racial differences, this section of results focuses on a comparative analysis of BMI and food choices in both areas.

The WHO BMI standards were applied for both adult and children. Researchers on BMI have used different methodologies such as weight for age and height for age to estimate body sizes. However, the most commonly acceptable standards for measuring BMI, which has been adopted in this research, is the BMI=Weight/Height$^2$ measurement for an adult. These measures were classified as following WHO guidelines for BMI cut offs as follows: Underweight BMI<18.5, Normal Weight BMI>=18.5 and <=24.9, Overweight BMI, >=25.0 and <=29.9, Obese Class 1 BMI>=30.0 and <=34.9, Obese Class 2 BMI>=35.0 and <=39.9, Obese Class 3 BMI>=40.(WHO, 2006, Wang and Chen, 2012).

**Table 27: Prevalence of overweight and obesity in adults**

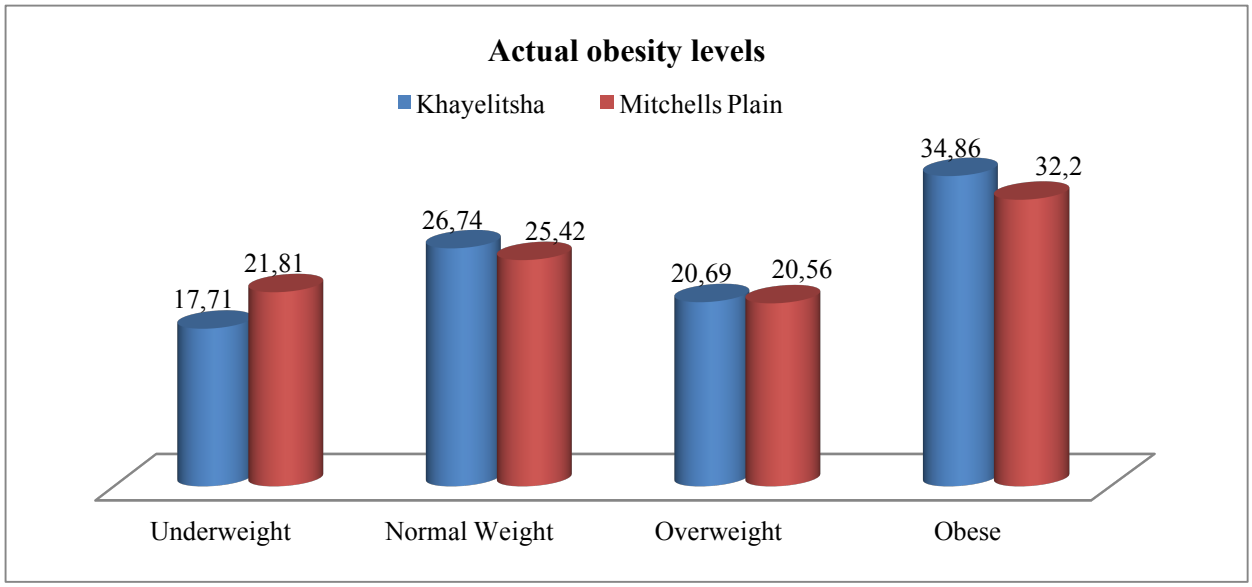
| Perceived BMI of Adults | | | |
|---|---|---|---|
| **Weight Measure** | **Khayelitsha** | **Mitchells Plain** | **Total** |
| | N=748 | N=754 | N=1502 |
| Underweight | 11.23% | 10.74% | 10.99% |
| Normal weight | 28.07% | 29.71% | 28.89% |
| Overweight | 22.59% | 23.08% | 22.84% |
| Obese class I | 16.84% | 16.31% | 16.58% |
| Obese class II | 11.36% | 10.61% | 10.99% |
| Obese Class III | 9.89% | 9.55% | 9.72% |

*Source: Field Survey, 2016*

From the result, average BMI stood at 27kg/$m^2$, which falls in the overweight threshold, indicative of a population that is highly overweight. Overall, about 60% of the population sampled was overweight and obese. About 39.88% on average of those were either underweight or of a normal weight. The results portray a strong indication of the risk of the increase in overweight and obesity in urban townships. On average, the study found that 28.89% were overweight, 16.58% were in their first stage of obesity, 11% were in stage two obesity and 9.72% were in stage-three obesity. The difference between the two areas was not significant to conclude that one area was more susceptible to obesity than the other. This is justifiable in that, looking at the household characteristics and the socio-economic dynamics of the population of the two areas, and despite their racial differences, lifestyle and food choices were the same for the two areas.

Furthermore, to ascertain the degree of weightiness in the two areas, researchers aggregated all the categories of obesity, which give a clearer picture of the state of obesity in the study areas. When aggregated, the overall result shows a very high level of obesity. According to the research findings, overall, 33.52% of adults interviewed were obese. About 34.86% in Khayelitsha compared to 32.2% in Mitchells Plain were obese. The percentage of normal weight for both areas averaged at 20%. There were fewer underweight people in Khayelitsha (17.71%) compared to Mitchells Plain (21.81%). It is important to note that these differences were not statistically significant but confirm previous reports about the high prevalence of overweight and obesity in South Africa.

**Figure 17: Obesity in Khayelitsha and Mitchells Plain in %**




*Source: Field Survey, 2016*

### *6.6.3.1. Gender and BMI in Khayelitsha and Mitchells Plain*

Gender differences in BMI have been well documented in the literature (see, for example, Puoane et al., 2002; Perissinotto et al., 2002; Wang and Beydoun, 2007). Puoane et al. (2002) observe that although men were taller than women in South Africa, the mean weight in women was greater than that of men. Similarly, Perissinotto et al. (2002) report that the mean values for BMI significantly differed between gender with the BMI being greater in women than in men.

In sub-section 6.2, it is evident that more women were interviewed compared to men. Ng (2014) states that about 42% of adults and children suffering from overweight and obesity in sub-Saharan Africa are in South Africa. Ng showed that South African men were 39% overall more likely to be obese than women. Our findings show that in the two areas, underweight was higher in Mitchells Plain (4.18%). About 26.74% of respondents in Khayelitsha were of normal weight compared to 25.42% in Mitchells Plain. In the same vein, 34.86% of respondents in Khayelisha were obese compared to 32.20% in Mitchells Plain. Overall, the study found that these results were not statistically significant.

However, from a gender perspective, it was found that 44.66% of males in Khayelitsha were obese compared to 36.07% of females. This could be possible based on the proportion of men and women that were measured during the survey.

**Table 28: Overweight, obesity and gender differences: BMI**

| Overweight, obesity and gender differences: BMI | | | | | | |
|---|---|---|---|---|---|---|
| **BMI** | **Khayelitsha N=450** | | **Mitchells Pain N=430** | | **BMI Overall** | |
| | Male | Female | Male | Female | Khayelitsha | Mitchells Plain |
| Underweight | 14.56% | 14.75% | 15.95% | 16.67% | 17.69% | 21.81% |
| Normal Weight | 23.79% | 26.23% | 22.41% | 23.23% | 26.83% | 25.42% |
| Overweight | 16.99% | 22.95% | 23.71% | 26.77% | 20.66% | 20.56% |
| Obese | 44.66% | 36.07% | 37.93% | 33.33% | 34.82% | 32.20% |

*Source: Field Survey, 2016*

### *6.6.3.2. The association between food choices and BMI*

The food choices of individuals are significant contributors to BMI. Undeniably, the increasing consumption of fatty foods or refined carbohydrates affects the BMI of individuals (Gulliford et al., 2003; Newby et al., 2003). In a study conducted in Baltimore, the United States, Newby et al. (2003) reported an association between relatively smaller gains in BMI and the consumption of a diet high in vegetables, fruit, whole grains, as well as low or reduced intake of processed meat, fast food and soda.

Given the very high level of overweight and obesity in the study area, one of the key objectives of the study was to ascertain the link between food choices and BMI to determine some of the contributing factors of overweight and obesity in Khayelitsha and Mitchells Plain.

In determining the food choices of respondents using a 24-hrs recall, rather than providing a list of food items for the respondent to select from, the approach developed in this study was an open-ended question on the 24-hrs recall. Respondents were asked what they ate in the last 24 hours before the interview. This procedure made it possible to investigate the actual food consumed by respondents. In addition, respondents were asked if what they ate was their usual food. From these food items, the main food choices of respondents were computed. The benefit of this procedure was that it helped to minimise the error of respondents answering or accepting to have eaten a particular food type just because it is in the list presented. The figure below shows the food choices of the respondents using a 24-hrs recall.

**Table 29: Food consumption in the survey area**

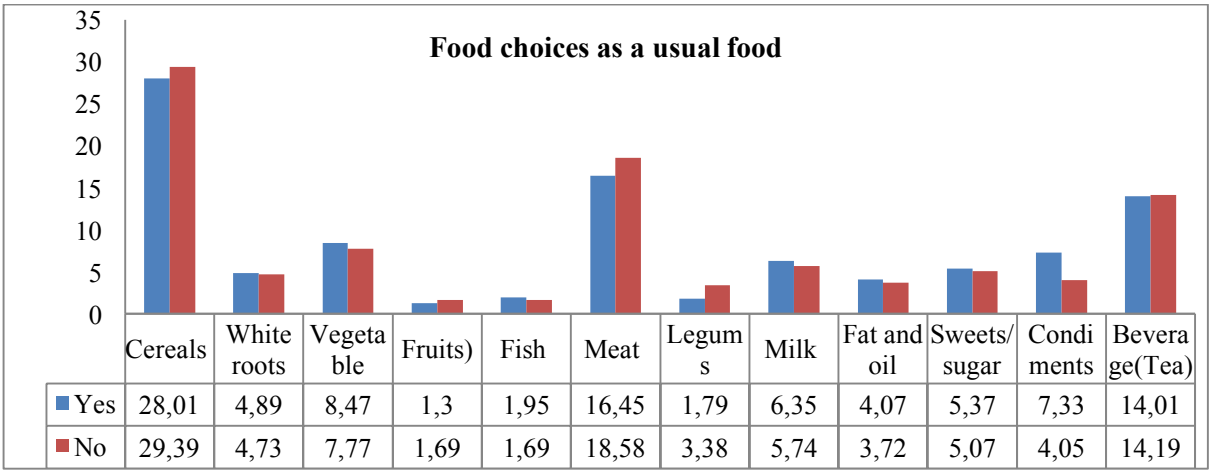
| Food consumption in the survey area | | | |
|---|---|---|---|
| **Food Choices** | **Khayelitsha** | **Mitchells Plan** | **Total** |
| | =% | | |
| Cereals (mealies, maize) | 26.97 | 27.56 | 27.24 |
| White roots (potatoes) | 5.98 | 6.06 | 6.02 |
| Vegetables (spinach, cabbage) | 7.91 | 7.74 | 7.83 |
| Fruits (mango, orange) | 1.77 | 2.31 | 2.02 |
| Fish (including canned) | 1.70 | 1.90 | 1.79 |
| Meat (beef, pork, chicken) | 17.05 | 15.75 | 16.45 |
| Legumes (peas, beans, nuts) | 2.35 | 2.35 | 2.35 |
| Milk (yoghurt, cheese) | 5.94 | 6.29 | 6.10 |
| Fat and oil (butter) | 3.97 | 3.76 | 3.87 |
| Sweets (sugar) | 5.83 | 5.61 | 5.73 |
| Condiments (spices, pepper) | 6.13 | 6.24 | 6.18 |
| Beverages (Tea, coffee, cold drinks) | 14.39 | 14.43 | 14.41 |

*Source: Field Survey, 2016*

The 15 food group items were categorised from the 36 food items identified by respondents as the main foods consumed during the 24 hours before the interview. The result shows a high-level consumption of cereals by the population. About 27.47% of respondents reportedly ate some form of cereals such as bread, rice, mealie meal (otherwise called "stiff papa"), "samp" (a meal highly composed of maize), etc. Meat, including pork, beef, chicken and beef products was at 16.49 % followed by beverages such as coffee, tea, carbonated drinks etc. The result also shows a very low consumption of natural fruits and vegetables rich in micronutrients.

In order to assess the relationship between choices and body mass in the survey, respondents were asked if the food they ate was their usual food. The result showed overall, 69.90% of the population indicated that the food they ate was their usual food compared to 30.10% who reported that what they ate was not their usual food. However, despite the percentage difference in their response, there was no statistically significant difference in their usual food as our chi2 statistics was not significant at 95% confidence interval (Pearson chi2(11) = 10.0935  Pr = 0.522). In addition, there was no significant difference in the food choices of Coloured communities and black communities. From a gender perspective, the same trend was found to be true. This shows that there is a certain level of homogeneity in the food types and food choices of South Africa. Race does not show any significant impact on people's food choices.

**Figure 18: Food choices as a usual food**




*Source: Field Survey, 2016*

### *6.6.3.3. Association between food choices and BMI (Categorised)*

The relationship between food choices and BMI is critical in determining the current increase in BMI. Albeit that there are other associated causes, the choice of food is an important indicator for determining the BMI (Gulliford et al., 2003). The study looked at the relationship between food choices and BMI using the food groups as developed under this study. The evidence from this correlation shows that cereals were highly consumed across all groups of BMI. Three food groups were highly consumed by respondents: cereals (28.06%), meat and meat products (16.01%) and beverages (14.89%). However, the test results show that these differences and association between BMI and food choices were not statistically significant. See Table 30 below.

**Table 30: BMI and food choices**

| BMI and food choices | | | | | |
|---|---|---|---|---|---|
| **Food Group** | **Under weight** | **Normal weight** | **Overweight** | **Obese** | **Total** |
| Cereals (mealies, maize) | 27.18 | 28.57 | 29.25 | 27.44 | 28.06 |
| White roots (potatoes) | 6.67 | 3.97 | 6.60 | 7.62 | 6.28 |
| Vegetable (spinach, cabbage) | 6.67 | 10.32 | 9.43 | 8.23 | 8.71 |
| Fruits (mango, orange) | 3.59 | 2.38 | 1.42 | 3.05 | 2.63 |
| Fish (including canned fish) | 3.08 | 1.98 | 0.94 | 1.22 | 1.72 |
| Meat (beef, pork, chicken) | 19.49 | 14.68 | 18.40 | 13.41 | 16.01 |
| Legumes (peas, beans, nuts) | 2.05 | 2.38 | 1.89 | 2.44 | 2.23 |
| Milk (yoghurt, cheese) | 2.05 | 5.56 | 6.60 | 6.10 | 5.27 |
| Fat and oil | 3.08 | 2.38 | 4.25 | 2.13 | 2.84 |
| Sweets (sugar) | 4.10 | 7.14 | 5.19 | 5.79 | 5.67 |
| Condiments (spices, pepper) | 3.59 | 6.35 | 3.30 | 7.93 | 5.67 |
| Beverages (tea,coffee, carbonated drinks) | 18.46 | 14.29 | 12.74 | 14.63 | 14.89 |

*Source: Field Survey, 2016*

As part of the survey, household members were asked to report on the types of food they consumed in the last 24 hours before the interview. The design of the questionnaire was aimed at getting the respondents to report on the type of food rather than providing a list of food items for them to select from the list. The table above is a summary of the 36 different food items condensed into 15 food groups. These food groups were correlated with the BMI levels of the respondents. Of the sample of 894 participants who reported on household food consumption having eaten cereals, the result shows that 27.44% were obese and 29.25% were overweight. In addition, while obesity was high in most of the food groups, over 30% of those who reportedly ate meat or any meat products were overweight and obese. Fruit and vegetables were also amongst the food types least consumed.

#### *6.6.3.4. Dietary diversity of households in Khayelitsha and Mitchells Plain*

Dietary diversity is commonly used to determine individual as well as household nutritional intake. The more diverse an individual or household diet, the higher the probability of better nutritional intake. However, because there are no standard measures to determine an appropriate dietary diversity of a household, Swindale and Bilinsky (2006) suggest two methodological approaches. Dietary diversity is a useful proxy for identifying and measuring household and individual food security but more so to measure individual access to food for their daily caloric intake (Hoddinott and Yohannes, 2002). Individual dietary diversity can be highly dependent on household food access. In this survey, 36 food types were identified, from which 12 food groups were further developed. This was in line with the methodology of the General Household Survey (GHS) and the Food and Agriculture Organization (FAO) food groups. In analysing the food choices and their association with other relevant variables such as income and BMI, respondents were given open-ended questions which permitted them to list all the food items they ate in the last 24 hours before the interview. It is important to note that only four persons per household responded to the food choices questionnaire and not the whole sample. The rationale is that on average, there are four persons in a typical household in South Africa.

**Table 31: Dietary diversity**

| Dietary Diversity Score (DDS) | | | |
|---|---|---|---|
| **Score** | **Khayelitsha** | **Mitchells Plain** | **Total** |
| | n=2187 | n=2063 | =4250 |
| **1** | 5.08% | 5.57% | 5.32 % |
| **2** | 19.25% | 15.03% | 17.20 % |
| **3** | 19.20% | 24.38% | 21.72 % |
| **4** | 18.34% | 20.21% | 19.25 % |
| **5** | 17.19% | 15.75% | 16.49 % |
| **6** | 11.34% | 9.65% | 10.52 % |
| **7** | 7.09% | 6.69% | 6.89 % |
| **8** | 2.06% | 2.13% | 2.09 % |
| **9** | 0.46% | 0.19% | 0.33 % |
| **10** | 0.00% | 0.39% | 0.19 % |

*Source: Field Survey, 2016*

The average number of food types eaten per day by an individual was estimated at 4 and the maximum was 10. Even though the research design was for 12 groups in the Dietary Diversity Score (DDS), the maximum food group items consumed were 10 food group types within the food group categories.

It has to be noted that over 90% of the food eaten in the 24-hrs recall period was prepared and eaten at home and about 81.77% reported that the food was eaten at night at supper time, that is, between 18h00 and 20h00. Thus, the above analysis of food choices and DDS is a clear reflection of household DDS and not just individual DDS. Furthermore, the results show that on average DDS was 4.0 with a standard deviation of 1.743358. There was a significant difference between the DDS of Khayelitsha and Mitchells Plain.

#### *6.6.3.5. The correlation between removing chicken skin and BMI*

The association between chicken skin and fatness is characteristic of the food choices of the poor living in urban peripheries. Chicken consumption in South Africa is high, especially frozen chicken. Most households depend on chicken for their daily protein intake. However, studies have shown that chicken skin has high levels of fat, which if consumed on a regular basis, could have a great impact on the BMI of the consumers (Weinrich et al., 2007). This study tested the association between removing the skin of the chicken and people's BMI.

In the Table 32, the researchers first looked at the level of chicken skin consumption using a five-point scale. Contrary to other research on the frequency of removing chicken by household members, this study's result shows that about 50% of households reported that

they always removed the chicken skin from their meals, compared to 1.83% who remove none of the skin. About 12.68% often remove chicken skin while 1.31% seldom remove chicken skin.

The researchers further correlated the relationship between the removal of chicken skin and BMI. The table below shows that about 51% of respondents who reported that they always removed chicken skin were also obese compared to less than 1% of those who reported that they removed none. This is evidence that chicken skin, although it contains fat, is not a major contributing factor to overweight and obesity in the study area. The results are presented in the Table 32.

**Table 32: Association between removal of chicken skin and obesity by gender**

| Association between removal of chicken skin and obesity by gender | | | | | |
|---|---|---|---|---|---|
| **Gender** | **Chicken skin removal** | **Underweight** | **Normal Weight** | **Overweight** | **Obese** |
| **Female** | Don't eat chicken | 7.14 | 5.26 | 0 | 0 |
| | Removes none | 25 | 47.37 | 40.48 | 51.95 |
| | Seldom | 7.14 | 5.26 | 4.76 | 6.49 |
| | Often | 21.43 | 14.04 | 19.05 | 11.69 |
| | Always | 39.29 | 28.07 | 35.71 | 29.87 |
| | | | | | |
| **Male** | Don't eat chicken | 0 | 0 | 3.85 | 1.92 |
| | Removes none | 50 | 56.41 | 34.62 | 55.77 |
| | Seldom | 4.55 | 7.69 | 0 | 5.77 |
| | Often | 0 | 7.69 | 19.23 | 11.54 |
| | Always | 45.45 | 28.21 | 42.31 | 25 |

*Source: Field Survey, 2016*

As previously indicated, over 45% of respondents do not remove the chicken skin when cooking chicken. The association between the non-removal of chicken skin which is known for its high fat content is a possible contributing factor of overweight and obesity in the study area.

The table above looks at the association between household members' removal of chicken skin and their respective body mass. The result shows that for each category of BMI, the

percentage of non-removal of chicken skin was higher than other measures except for underweight where those indicated that they always removed chicken skin. However, from a gender perspective, there was a difference between males and females in their removal of chicken skin. About 39.29% of females, compared to 45.45% of males always removed chicken skin. In terms of the removal of chicken skin, 25% of females who are underweight removed none of the chicken skin compared to 50% of males who were found to be underweight. In addition, slightly over 40% of females compared to 34.62% of males who also reported that they did not remove chicken skin, were overweight. The result also shows that 47.31% of males compared to 51.95 % of females were obese. In general, obesity was higher amongst those who removed none of the chicken skin, more so than those who seldom or often removed the skin of the chicken.

**Table 33: Relationship between removal of chicken skin and BMI**

| Relationship between removal of chicken skin and BMI | | | | | | |
|---|---|---|---|---|---|---|
| **BMI** | **Don't eat chicken** | **Removes none** | **Seldom** | **Often** | **Always** | **Total** |
| Underweight | 30(28.04) | 3(2.80) | 2(1.87) | 18(16.82) | 54(50.47) | 107 |
| Normal Weight | 90(33.58) | 5(1.87) | 1(0.37) | 37(13.81) | 135 (50.37) | 268 |
| Overweight | 83(37.56) | 6 (2.71) | 2(0.90) | 26(11.76) | 104(47.06) | 221 |
| Obese | 113(30.29) | 2(0.54) | 3(0.80) | 48 (12.87) | 207(55.50) | 373 |
| **Total** | 316(32.61) | 16(1.65) | 8(0.83) | 129(13.31) | 500 (51.60) | 969 |

*Source: Field Survey, 2016*

### *6.6.3.6. The association between frequencies of taking fried food away from home and BMI*

Excessive consumption of energy dense foods such as fried foods has serious implications for BMI. The literature has established an association between the frequent consumption of fried foods and higher BMI and energy intake (Guallar-Castillon et al., 2007; Braithwaite et al., 2014; Djoussé et al., 2015).

Further compounding the frequency of the fried foods issue is the increasing prevalence of consuming food prepared away from home. It is no coincidence that the rise in the consumption of food taken away from home is matched by an increasing incidence of overweight (Taveras et al., 2005).

**Table 34: Relationship between BMI and eating of fried food at home**

| Relationship between BMI and eating of fried food at home | | | | | | |
|---|---|---|---|---|---|---|
| **BMI** | **Never** | **Once a week** | **2-3 times** | **4-6 times** | **Daily** | **Total** |
| Underweight | 76 | 7 | 2 | 20 | 13 | 118 |
| Normal Weight | 161 | 10 | 12 | 64 | 46 | 293 |
| Overweight | 131 | 15 | 4 | 54 | 39 | 243 |
| Obese | 239 | 15 | 13 | 82 | 58 | 407 |
| **Total** | **607** | **47** | **31** | **220** | **156** | **1,061** |

*Source: Field Survey, 2016*

### *6.6.3.7. Association of BMI and self-perceived health*

The self-perception of health is a subjective indicator of the overall wellness. Self-perceived health is a significant predictor of risk of functional limitation and mortality and can influence the BMI of individuals (Porto et al., 2016). A study conducted by Johansson (2009) found that men and women with self-perceived good health had a lower BMI mean.

**Table 35: Health perception and Body Mass Index (BMI)**

| Relationship between health perception and Body Mass Index (BMI) | | | | | |
|---|---|---|---|---|---|
| **Health Perception** | **Underweight** | **Normal Weight** | **Overweight** | **Obese** | **Total** |
| Excellent | 17.20% | 19.35% | 23.66% | 39.78% | 93 |
| Fair | 18.18% | 29.87% | 20.78% | 31.17% | 77 |
| Good | 20.49% | 22.13% | 22.95% | 34.43% | 122 |
| Poor | 10.53% | 10.53% | 36.84% | 42.11% | 19 |
| Very Good | 20. 0% | 26.00% | 24.00% | 30.00% | 50 |
| **Total** | 18.46% | 22.87% | 23.42% | 35.26% | 363 |

*Source: Field Survey, 2016*

### 6.7. Prevalence of overweight and obesity in children between 5 and 11 years old

This section of the report presents information on the BMI of children between the ages of 5 and 11 years old. From the sampled population, there were about 916 children with age 11 years and less. The average age of this group was 5 years old. However, given that the research looks at children 5 to 11 years old, 581 children were within this age bracket. The mean age within this group was 7 years old.

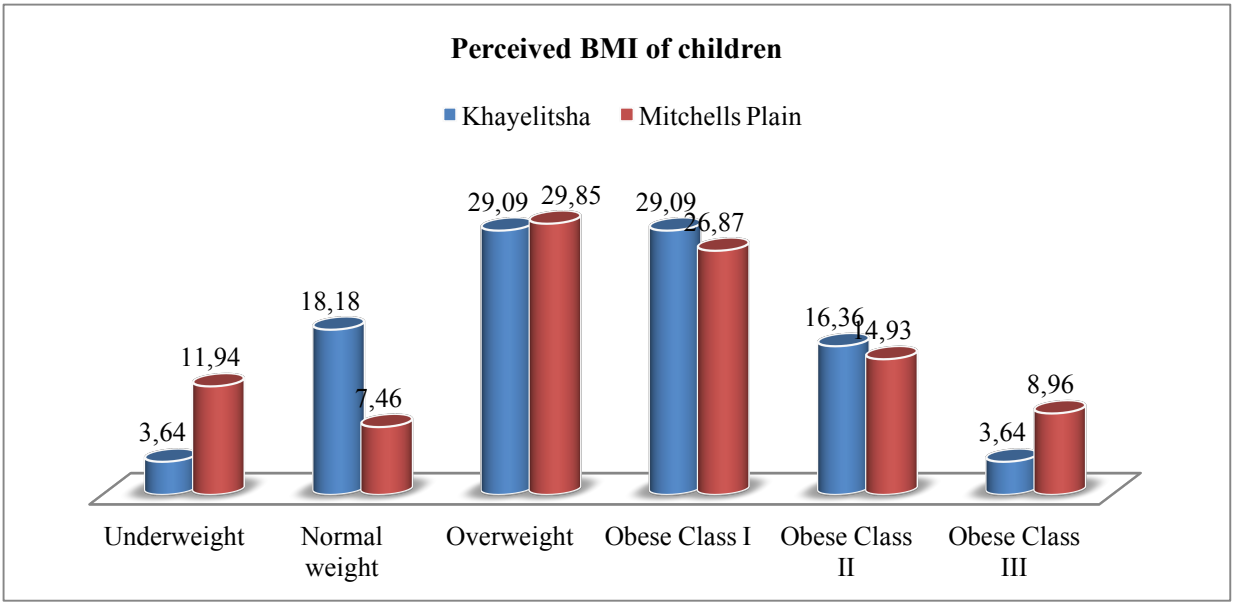
Children were interviewed on their food choices as well as their perceived body sizes; actual BMI measures were recoded. As a proxy to the food choices question, caregivers and older adults reported on the food usually eaten by the children. The researchers looked at the perceived body sizes and compared it with the children's actual BMI. Children were given image of the various body sizes and were asked to state which image most likely represented their body size.

The child BMI was analysed using the WHO guideline for children. BMI cut-offs were applied using percentile ranking of z-scores. Z-score marched to percentiles were classified as follows: $5^{th}$ percentile= z-score (<-1.64; underweight), >=$5^{th}$ percentile to <$85^{th}$ percentile z-score( >=-1.64 to <1.04; normal weight), >$85^{th}$ to <$95^{th}$ percentile =z-score (>=1.04 & <1.64; overweight) and obesity is classified as >=$95^{th}$ which equal a z-score of >=1.64 (Wang and Chen, 2006). These procedures were also applied in the NIDS analysis below.

In 2012, the South African National Health and Nutrition Examination Survey (SANHNES) reported on the increasing trends of stunting and overweight in children. The prevalence of child overweight and obesity combined for children aged 6 to 14 years stood at 13.5% within the period 2009 and 2010 (Mchiza and Maunder, 2013). The result of this survey shows that about 18% of children were overweight and obese in the study area. This result is much higher than that reported SANHNES-1 and the current NIDS wave 4.

Figure 19 shows that the perceived BMI of children. The perception of the children about their image in Khayelitsha shows that about 29% of the children considered themselves as overweight, 29.09% Obese Class 1, 16.36% Obese Class 2, and 3.64% Obese Class 3. On the other hand, the perception of the children in Mitchells shows that 29.85% overweight, 26.87% Obese Class 1, 14.93% Obese Class 2, and 8.96% Obese Class 3.

**Figure 19: Perceived BMI of children**




*Source: Field Survey, 2016*

### 6.8. Conclusion

Khayelitsha and Mitchells Plain are townships in the Western Cape, located on the Cape Flats in the City of Cape Town. They are the largest and fastest growing townships in South Africa. The study indicates that the majorty of the respondents were physically active and used to eat a diet high in fibre and indigenous vegetables, low in animal protein and refined carbs. However, because of modernisation, increased urbanisation and migration, most of the people are currently embracing and following a more westernised diet, which includes food items such as chips and pizzas, which are high in unhealthy fats, sugar and salt.

The study also indicates that there are a number of determinants of food choice in Khayelitsha and Mitchells Plain. These include the households' income and the cost of food, accessibility and availability, cultural influences, palatability/taste, familiarity (especially for vegetables), education/knowledge, social setting, time constraints, religion and food choices, distance travelled to purchase food and food choices.

An examination of the presence of physical activities in Khayelitsha and Mitchells Plain indicates that shopping is the only major physical activity of households. The majority of the respondents also indicated that they spend most of their leisure time watching TV. In addition, about 43.9% of total respondents agreed that their food choices are influenced by TV adverts.

The research also shows that on average, 20.62% of adults were overweight, 14.84% were in their first stage of obesity, 10.05% were in stage two obesity and 8.64% were in stage three obesity. The difference between Khayelitsha and Mitchells Plain was not significant to conclude that one area was more susceptible to obesity than the other. On the other hand, the result of this survey shows that about 18% of children were overweight and obese in the study area. This result is much higher than that reported SANHNES-1. From the above result, it can be deduced that overweight and obesity is gradually permeating the South African adults and children.

### 6.9. Quantitative data analysis: Evidence from NIDS

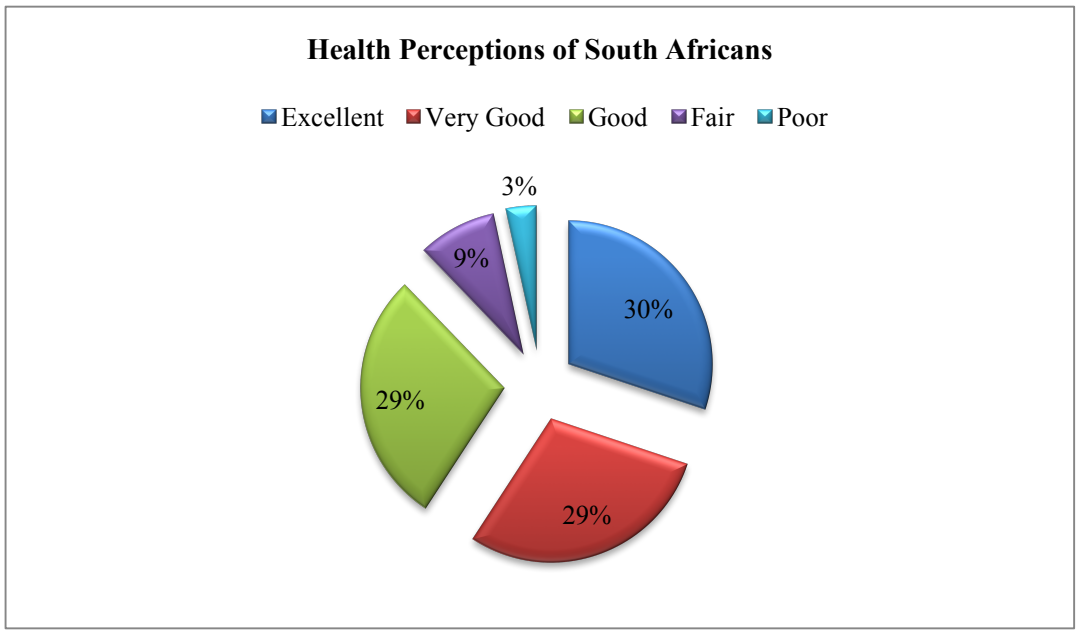
The data analysis used one round of the South African National Income Dynamics Study (NIDS) - 2014/2015. The following section presents the study findings and discussion.

#### *6.9.1. Research findings and discussion*

##### *6.9.1.1. Perceived health status*

The study focuses mainly on how comparing the observed BMI with how South Africans perceive their health status. According to the NIDS data, 30% of the sample perceived their health to be excellent, while only 3% perceive their health as being poor.

**Figure 20: Health perceptions of South Africans**




*Source: Own computation based on based on NIDS Wave 4 (2014-2015)*

#### *6.9.1.2. Health perception by population group*

The result also shows that most Africans perceive their health to be excellent while most of the white people perceive their health to be very good. This is an interesting result considering the high wealth and income inequality between the two groups in the country. There was evidence in the survey that show a strong difference in the way different races perceive their health status. Generally, the result shows that Africans were more likely to perceive that their health condition was generally good and comfortable compared to Coloureds and whites in the population. About 83.65% of Africans perceive their health to be excellent, compared to 13.41% of Coloureds. This leaves a huge gap in the way the different races perceive their health status. It also calls for an in-depth interrogation of the understanding of Africans as to what they mean by 'excellent health'.

**Table 36: Perceived health status**

| Population Group | Excellent | Very good | Good | Fair | Poor | Total |
|---|---|---|---|---|---|---|
| African | 83.65% | 83.43% | 82.13% | 83.56% | 79.55% | 83.02% |
| Coloured | 13.41% | 13.36% | 14.53% | 12.80% | 17.31% | 13.78% |
| Asian/Indian | 0.88% | 1.08% | 0.76% | 0.87% | 1.34% | 0.92% |
| White | 2.06% | 2.12% | 2.58% | 2.76% | 1.79% | 2.28% |
| **Total** | **100.00%** | **100.00%** | **100.00%** | **100.00%** | **100.00%** | **100.00%** |

*Source: Own computation based on based on NIDS Wave 4 (2014-2015)*

#### *6.9.1.3. Health status by gender*

Exploring the health perceptions of South Africans by gender also shows interesting results. The result from the analysis shows that the perception of women concerning their health was higher than men across all categories. About 52% of women reported that they perceived their health to be excellent compared to 47.82% of men. The responses of 'fair' as well as 'poor health' for women were highest across the categories indicating the appalling circumstances women in South Africa, especially African women undergo on a daily basis. Given that females in South Africa, especially in rural South Africa, head a great proportion of households, poor health could act as a strong indicator of household poverty.

**Table 37: Perceived health status**

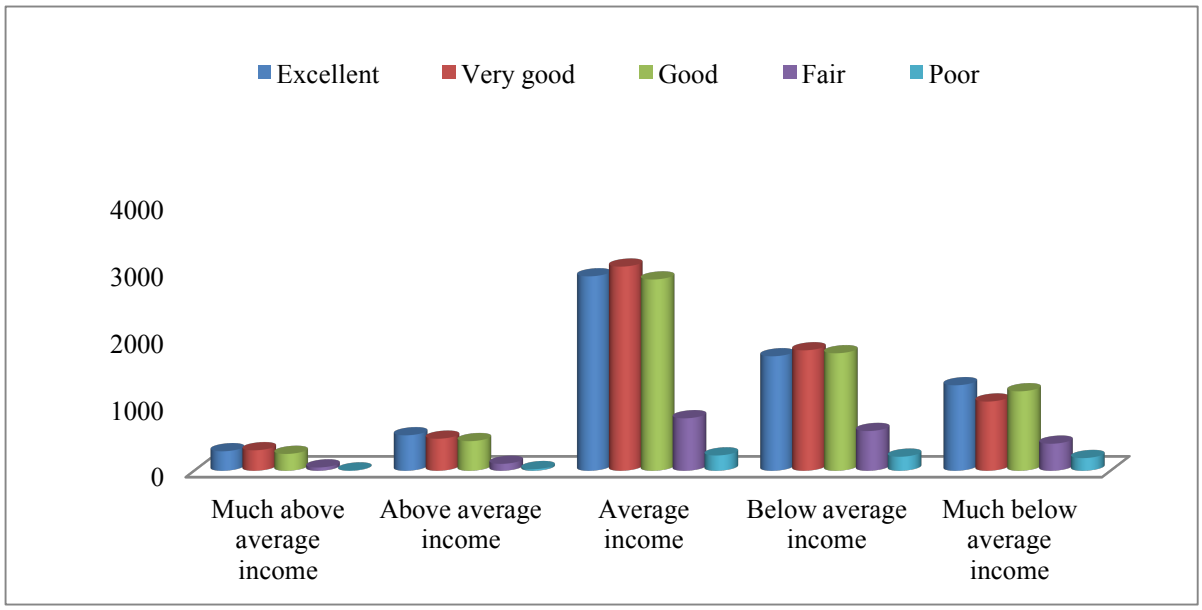
| Gender | Perceived health status | | | | | |
|---|---|---|---|---|---|---|
| | **Excellent** | **Very good** | **Good** | **Fair** | **Poor** | **Total** |
| Male | 47.82% | 41.84% | 38.26% | 32.46% | 33.88% | 9,454 (41.57%) |
| Female | 52.18% | 58.16% | 61.74% | 67.54% | 66.12% | 13,290(58.43%) |
| **Total** | **6,838** | **6,730** | **6,553** | **1,953** | **670** | **22,744** |

*Source: Own computation based on based on NIDS Wave 4 (2014-2015)*

### *6.9.1.4. Perceived health status by income group*

Income inequality in South Africa is one of the highest in the world. Hence, it is vitally important to look into how different income groups in the country perceived their health status. The NIDS data shows that people with income groups of much higher than the average income perceived their health to be excellent. For the population groups with average income and income much higher than the average, very few perceived their health to be excellent or very good. The majority of the population with average income and income below average perceived their health to be very good or good. Poor health was reported highest amongst people with income much lower than average income.

**Figure 21: Perceived health status by income group (Rands)**




*Source: Own computation based on based on NIDS Wave 4 (2014-2015)*

### *6.9.1.5. Health status of population group by age*

Age is an important factor of health. Here the researchers tried to see how perceptions of health varied between different age groups. For this purpose, the age groups were classified into three (child: below 14, working age: 15-64 and old age: above 64). The researchers then compared the perceptions of the working age group and the non-working age group. The result showed that most (98.08%) of the working age group between the ages of 18 and 64 perceived their health to be excellent, compared to 1.92% of old age people who reported that their health was excellent. The relationship between health status and age is evident in this study in that 29.85% of the older population reported that they had poor health.

**Table 38: Perceived health status**

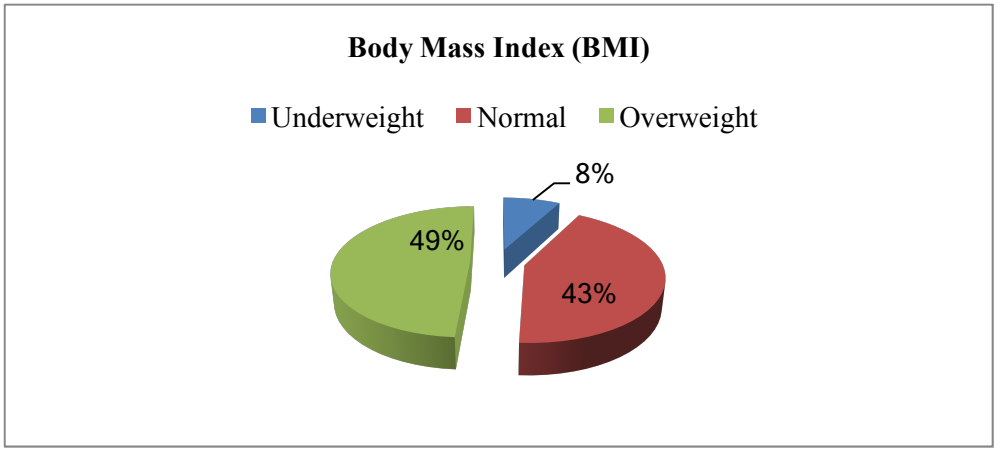
| Age group | Perceived health status | | | | | |
|---|---|---|---|---|---|---|
| | Excellent | Very good | Good | Fair | Poor | Total |
| Working age | 98.08% | 95.2% | 89.76% | 75.58% | 70.15% | 92.07% |
| Old age | 1.92% | 4.8% | 10.24% | 24.42% | 29.85% | 7.93% |
| **Total** | 100% | | | | | |

*Source: Own computation based on based on NIDS Wave 4 (2014-2015)*

### *6.9.1.6. Body Mass Index (BMI)*

Using the WHO BMI classification, results show that 49% of the total sample population measured is overweight. This means that half of the sample population are pre-obese or obese. On the other hand, 43% of the sample population have a balanced height and weight ratio. Of the total sample, 8% were underweight.

**Figure 22: Body Mass Index (BMI)**



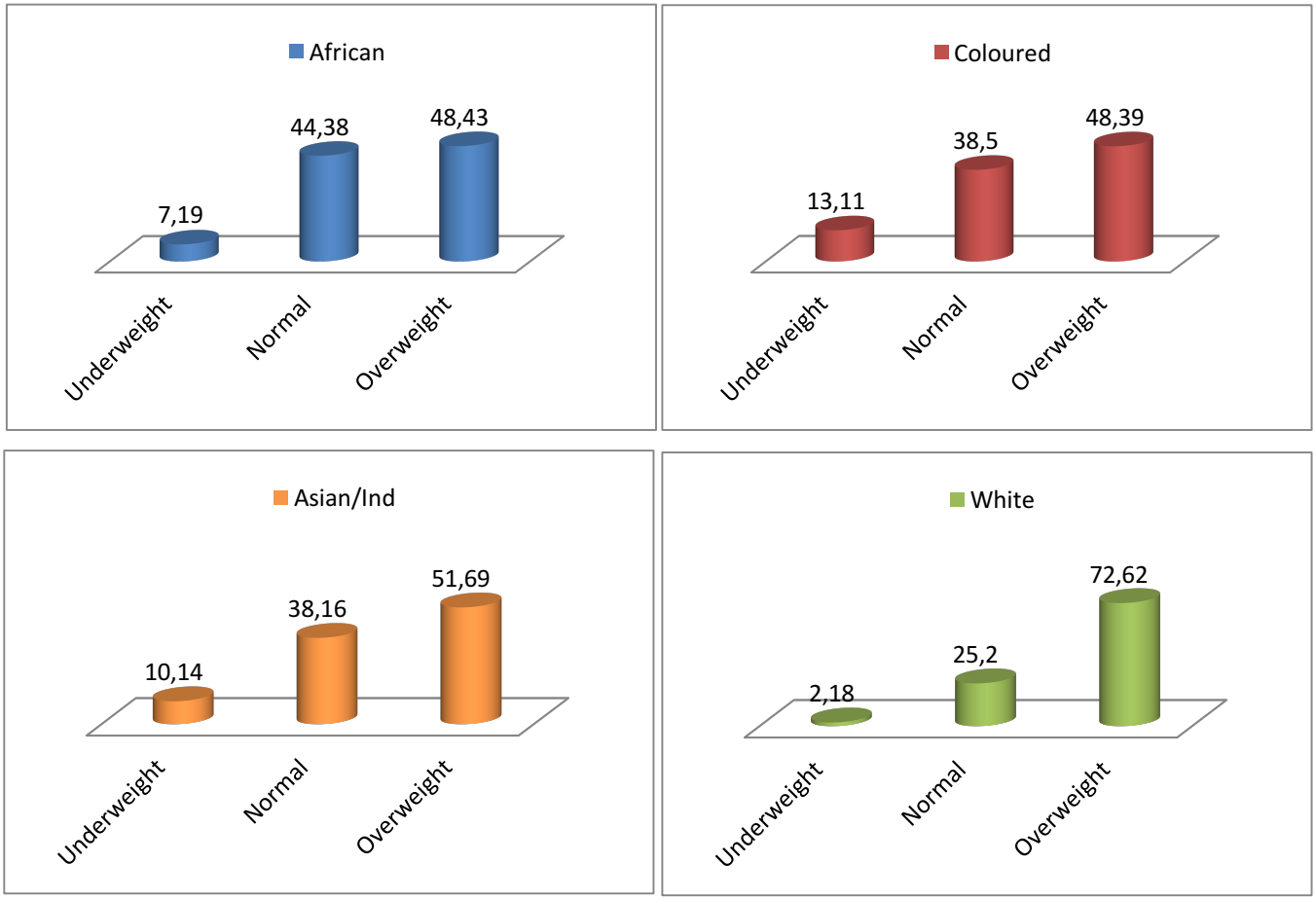

*Source: Own computation based on based on NIDS Wave 4 (2014-2015)*

### *6.9.1.7. Body Mass Index by population group*

Figure 23 presents the distribution of BMI among population groups in South Africa. The result shows that the number of overweight Africans and Coloureds is less than 50%, while overweight among whites is very high. Conversely, the overweight is severe among White people, about 72.62%.

In the analysis below, the study found that more among the male population perceived their health to be excellent, compared to women. The study also learned that more women perceived their health as being good. The cross comparison of BMI and gender also shows that about 59.2% of male respondents' calculated BMI is normal, while most female respondents fall under the category of overweight.

**Figure 23: Body Mass Index by race**

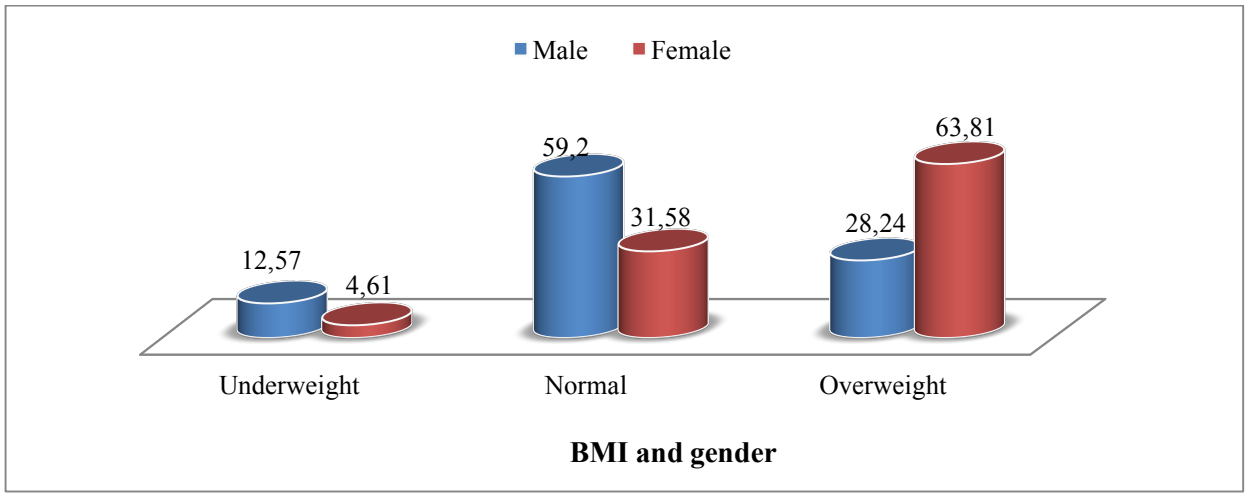



*Source: Own computation based on based on NIDS Wave 4 (2014-2015)*

### *6.9.1.8 BMI and gender*

Ardington (2013) indicates that on average 60% of African Women in South Africa are overweight and obese. Figure 24 shows that BMI by gender. The result shows that on average about 63.81% of female are overweight and obese.

**Figure 24: BMI and gender**




*Source: Own computation based on based on NIDS Wave 4 (2014-2015)*

### *6.9.1.9. BMI by income group*

Results from the NIDS data show that, contrary to popular opinion, people with incomes way above average, show far lower rates of underweight, overweight and obesity. Apart from underweight that was 3.43% amongst this group, the other categories were averaging at 4% across BMI categories. Normal weight and overweight were highest amongst people with above average incomes at 41.37% and 46.85% respectively. On the other hand, underweight was highest amongst people with incomes much below average (see Table 39).

**Table 39: BMI and self-perceived health status**

| Income classification of household | BMI and self-perceived health status | | | |
|---|---|---|---|---|
| | Underweight | Normal | Overweight | Total |
| Much above average income | 3.43% | 4.14% | 4.00% | 4.02 % |
| Above average income | 4.99% | 6.72% | 7.66% | 7. %05 |
| Average income | 38.33% | 41.37% | 46.85% | 43.83% |
| Below average income | 29.79% | 27.80% | 25.76% | 26.95 % |
| Much below average income | 23.46% | 19.97% | 15.73% | 18.16% |
| **Total** | | | | 100% |

*Source: Own computation based on based on NIDS Wave 4 (2014-2015)*

### *6.9.1.10. BMI by age*

Table 40 compares BMI to working population. Even though there were more working group than the aged, about 9.31% of the old age group was overweight while 90% of all the overweight in the sample were from the working group.

**Table 40: Association of BMI and age**

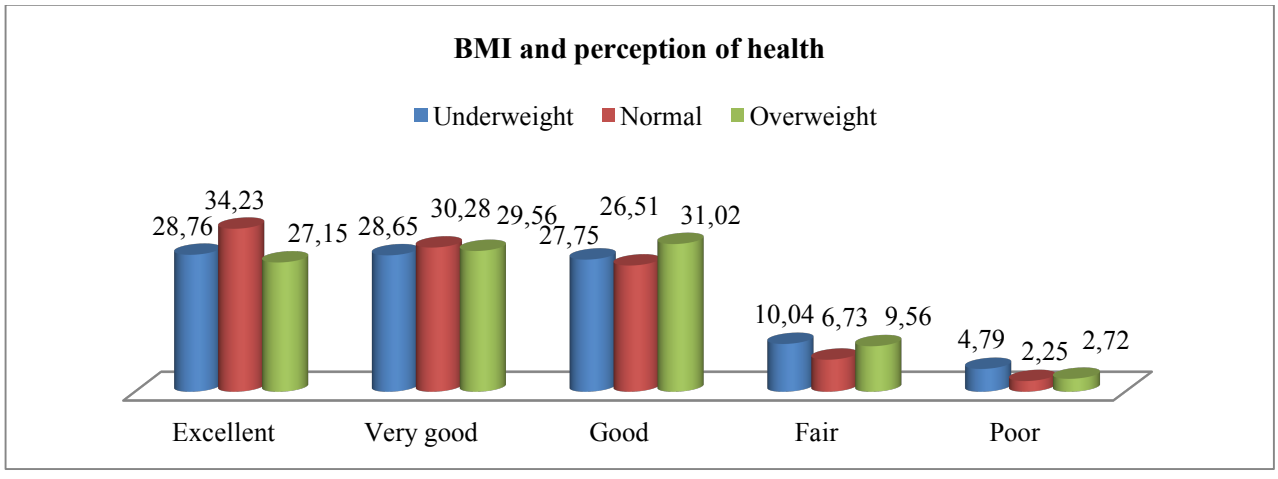
| Association of BMI and age | | | | |
|---|---|---|---|---|
| **Age Group** | **Underweight** | **Normal Weight** | **Overweight** | **N** |
| Working population | 93.85% | 94.59% | 90.69% | 20,739 (92.62%) |
| Non-working population | 6.15% | 5.41% | 9.31% | 1,653 (7.38%) |
| **Total** | **1,773** | **9,644** | **10,975** | **22,392 (100%)** |

*Source: Own computation based on based on NIDS Wave 4 (2014-2015)*

### *6.9.1.11. Health perception and Body Mass Index (BMI)*

The congruence between subjective health perceptions and observed BMI classification is critical for understanding health behaviour and one's ability to determine poor health. If a respondent is able to identify his or her health status as problematic, this could have positive implications for his or her weight maintenance behaviour. Those who fail to identify extreme health statuses, however, may be at risk of being overweight, which will affect their health. Moreover, it will determine the effectiveness of weight loss and obesity prevention efforts. The graph below shows the relationship between the health perceptions of South Africans and their observed BMI.

**Figure 25: Body Mass Index and perception of health**

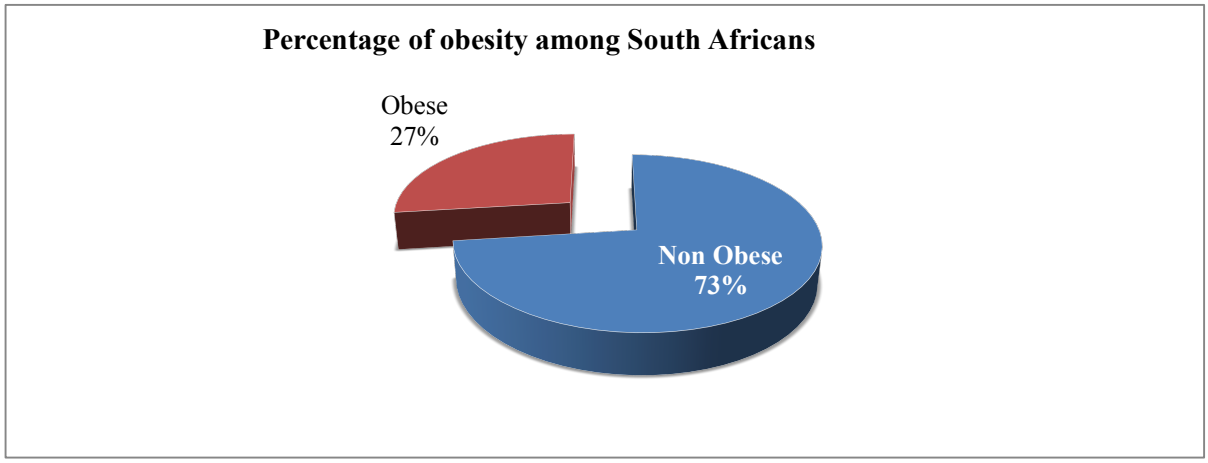



*Source: Own computation based on based on NIDS Wave 4 (2014-2015)*

### *6.9.1.12. Obesity*

For this section, the sample population was classified into two groups of obesity and non-obesity using BMI. The observed data from the NIDS 2014/15 data survey shows that 27% of the sample populations are in obesity conditions while 73% are non-obese, normal or underweight.

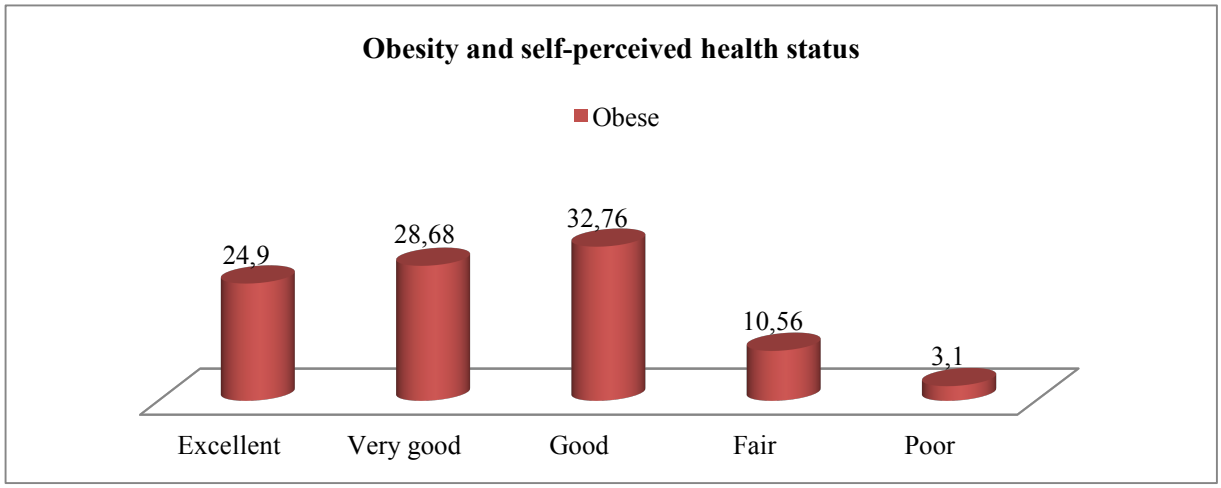
**Figure 26: Percentage of obesity among South Africans**




*Source: Own computation based on based on NIDS Wave 4 (2014-2015)*

The cross tabulation between observed obesity and health perception in South Africa shows that from the total of the 4,544 population, who are categorised as obese based on the BMI category, more than 86.34% of them perceived their health to be good and better. Only 13.57% of those assessed to be obese stated that they perceived their health to be fair or poor.

**Figure 27: Obesity and self-perceived health status**




*Source: Own computation based on based on NIDS Wave 4 (2014-2015)*

### *6.9.3. Child obesity in South Africa: age 5-11*

Child obesity is no longer a new phenomenom to the government, researchers or civil society. Some localised studies in the context of South Africa continue to show an increasing trend in overweight and obesity amongst South Africa's below 15 years and above 15 years children (Mchiza and Maunder, 2013a). Results from Kirsten study in Stellenbosch in the Western Cape, show that about 13% of chhildren aged 6-13 years were overweight and obese In South Africa, socio-economic factors such as maternal employment hours are significatly associayed to child overweight and obesity (Kirsten et al., 2013). These results are not different from recent national surveys carried out in South Africa.

According to the South African National Health and Nutrition Examination Survey (SANHNES-1) of 2009 to 2010, about 13.5% of children age 6 to 14 years were ovwerweight and obese which was higher than the global prevalence (Shisana et al., 2014; Mchiza and Maunder, 2013). Using the NIDS Wave 4 survey, findings show increase in the prevailence of overweight and obesity amongst children 5 to 11 years of age. The results show that child overweight and obesity combined increase to 16.96%.

**Table 41: BMI Percentile rankings for children 5 to 11 years old**

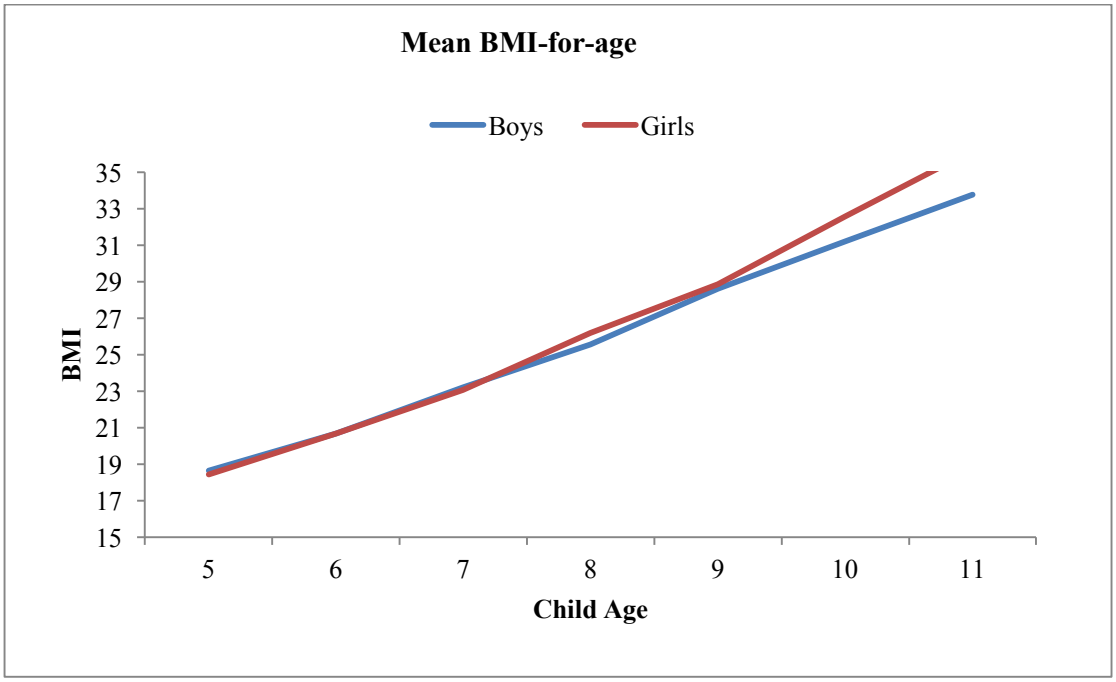
| **BMI Percentile rankings for children 5 to 11 years old** | | | |
|---|---|---|---|
| **BMI** | **BMI Percentiles** | **Boys** (N=3,085) | **Girls** (N=3,061) |
| Underweight | <5$^{th}$ centile | 6.32% | 6.08% |
| Normal weight | 5$^{th}$ to <85$^{th}$ centile) | 78.18% | 76.97% |
| Overweight & obese | 85$^{th}$ centile | 15.49% | 16.96 |

*Source: Own computation based on based on NIDS Wave 4 (2014-2015)*

Average BMI for age was estimated at 26.0Kg/m$^2$ which is greater than the cut-off point for adult normal BMI. The use of percentile in understanding childhood obesity simplifies our undestanding of the concept (Wang and Chen, 2012). A child whose BMI is equal to or greater than the 5$^{th}$ percentile and less than the 85th percentile is considered a healthy weight for his or her age. A child at or above the 85th percentile but less than the 95th percentile for age is considered overweight. A child at or above the 95th percentile is considered obese. A child below the 5th percentile is considered underweight which may be severe in some cases. Studies indicate that while body weight increases linearly during childhood, the BMI declines from infancy to about 5-6 years of age, then increases linearly with age through childhood and adolescence. From this study shows a stady increase in mean BMI for boys

and girls. However, at the age of 7, mean BMI increased for girls as they move twards teenage age.

**Figure 28: BMI-for Age for boys and girls**




*Source: Own computation based on based on NIDS Wave 4 (2014-2015)*

Figure 28 clearly indicates that there is a positive correlation between age and weight. Data from the NIDS shows that mean body BMI gradually increase during most of children life at 5–11 years of age in both boys and girls. From the above results, it can be argued tha majority of children within the 9-11 age group were overweight and obese and were found to be above the 95$^{th}$ Percentile.

### 6.10. Conclusion

Chapter 6 assessed the circumstances and factors determining food consumption; identified the relationship between food choices, self-perceived health status and actual BMI measurements; and, measured the relationship between food choices and obesity in adults and children. In Khayelitsha and Mitchells Plain, the research found that the average household income was R2401-R3600/month. The findings also showed that about 43.7% of households are recipients of child support grants, 27.27% benefit from old-aged grants, 13.11% receive disability grants and a small proportion of the households are beneficiaries of foster care grants. This indicates that there is a high dependence on the South African social grants. The research identified that there are many aspects to food choices, which act as a barrier to eating a healthy diet. These include the households' income, the cost of

healthy food, and accessibility. In addition, cultural influences, palatability/taste, familiarity (especially for vegetables), knowledge, social setting, time constraints, religion and food choices, and the distance travelled to purchase healthy food are also found to be the obstacles in the case study areas. The research also showed that low-income groups have a greater tendency to consume unbalanced diets and in particular have low intakes of fruit and vegetables. Due to unaffordability, inaccessibility and lack of knowledge, most people consume energy-dense foods, such as potato chips, sweets, Coca-Cola products, fast foods; snacks, etc. Research indicates that high energy-dense foods are mostly associated with overweight and obese.

The study found that about 20.62% of adults were overweight, and 14.84% were in their first stage of obesity, 10.05% were in stage-two obesity and 8.64% were in stage-three obesity. The difference between Khayelitsha and Mitchells Plain was not significant to conclude that one area was more susceptible to obesity than the other. In addition, from the national perspective, the NIDS 2014/15 data anlaysis shows that child overweight and obesity combined was 16.96% for children 5 to 11 years of age. The next chapter provides qualtaitive analysis of the study.

# CHAPTER 7: QUALITATIVE DATA ANALYSIS: EVIDENCE FROM KHAYELITSHA AND MITCHELLS PLAIN

## 7.1. Introduction

This section presents the findings of the study based on information gleaned from the qualitative data gathered in the case study areas of Mitchells Plain and Khayelitsha. The qualitative data findings highlighted here complements the quantitative data findings presented in the previous section.

In conducting qualitative research, the researchers attempted to get in-depth information and knowledge on the issues – obesity and food choices – that were under investigation (see Patton, 1990). The qualitative research enabled researchers to understand the dynamics of people's experiences, their behaviours and attitudes as well as their interpretation of the social reality in which they live, especially as it related to issues of food choice and obesity (Mouton, 2001). Moreover, following a qualitative approach afforded the researchers an opportunity to gain an 'insider perspective' (Babbie and Mouton, 2001) on how our interviewees from Khayelitsha and Mitchells Plain made food choices, thus providing insights into South Africa's obesity and overweight epidemic.

We conducted 100 semi-structured interviews in Khayelitsha and Mitchells Plain, 50 in each site. Of the 50 interviews per site, 30 were conducted with adults (age 18 and above) and 20 with children (age 5 to 11). The interviews provided the researchers with a deeper understanding of the complex set of factors that influenced peoples' food choices and how this influenced their eating practices. Moreover, as Henning (2004) noted, interviews served as 'communicative events' which helped reveal what our participants thought or felt about specific issues, such as food choices and obesity. In addition, 3 Focus Group Discussions (FGDs) were conducted in each site: the first FGD was conducted with a mixed group of adults (males and females), the second FGD was conducted with a female's only adult group, and the third FGD was with children (boys and girls).

The qualitative research findings cover the views of research participants on a wide variety of themes ranging from eating pattern to school feeding programmes. The section begins by highlighting the participants eating habits or patterns. It then evaluates the factors that influence foods choices and consumption patterns. The participant's self-perceived health status is then examined followed by an appraisal of the weight management practices that respondents engaged in to address the obesity and overweight epidemic. In the penultimate

section, the contributions of school feeding programmes have on the eating habits of children is discussed. Finally, the section concludes with a summary of the main findings of the qualitative.

## 7.2. Eating Patterns

Eating habits are important in relation to health and overall quality of life. By assessing the dietary habits of people, we can learn a lot about their life as it relates to their health, culture, religion, economic status, among others. The food people consume impacts many aspects of their life. In children, for example, a lack of nutritious food can affect their ability to concentrate. In most cases, poor diets can affect children's physical and cognitive development, which could lead to stunting and poor educational outcomes in children (Walker et al., 2005; Brown and Pollitt, 1996). Additionally, poor diets with low nutritional value can put one at risk of developing non-communicable diseases like diabetes and cardiovascular disease. Therefore, examining dietary habits is important to encourage and promote healthier eating habits among South Africans.

This section of the report examines the eating patterns of participants, which involved the assessment of their dietary habits and dietary diversity. Firstly, the dietary guideline of South Africa as well as changing dietary habits globally is discussed.

### *7.2.1. The South African Food-Based Dietary Guideline*

The South African food-based dietary guideline seeks to promote nutritious eating in a consumer friendly manner (Vorster, ND; Vorster, Badham and Vester, 2013). Over the years, dietary recommendations have changed to reflect changing dietary patterns (Vorster, ND). Today, the Food Dietary Guideline promotes a diversity of food items, which includes daily consumption of fruits, vegetables, and dairy, whilst starchy foods have been recommended to be eaten with most meals (Vorster, ND). Protein can be eaten on a daily basis, whilst fats, especially saturated fats, and sugars should be eaten sparingly. Moreover, the guidelines promote drinking of lots of water as well as being physically active (Vorster, Badham and Vester, 2013). One of the main reasons for its development was to address nutrition issues within the country. Further, in developing this guideline the team took into account a variety of issues, such as affordability, cultural sensitivity, food safety as well as the promotion of healthy activities.

### *7.2.2. Changing Dietary Habits*

Over the years, the types of foods consumed by South Africans have undergone transformation. A number of factors may be account for these changes: income, availability of food, time, age and the region and area in which one resides (Popkin, 2002). With the onset of globalisation, people have been exposed to different types of foods including western or other diets. Popkin and Gordon-Larsen (2004) note that there haves been significant dietary shifts in the past 20 years. These contemporary diets are high in sugars, saturated fats, low in fibre, and have been characterised as the Western diet (Popkin and Gordon-Larsen, 2004).

Today, 'fast food' or western diets have gained popularity globally, which not only means a loss in the nutritional value of some diets, but also a loss of cultural identity. This was evident when Greek diets began to resemble Western diets in terms of higher rates of protein consumption and lower rates of vegetables and fruit consumption (Kafatos et al., in Papadaki, Hondoros, Scott, Kapsokefalou, 2007). Prior to this, the Greek diet, or what is popularly known as the Mediterranean diet, was globally recognised for its health benefits. A Mediterranean diet is typically comprised of generous amounts of vegetables, fruits, legumes, wholegrain cereals, healthy monounsaturated and polyunsaturated fats found in fish, lean meats, olive oil, nuts, and some dairy products. Research has shown that the Mediterranean diet lowers the risk of developing medical conditions like type 2 diabetes, high blood pressure and high cholesterol, which all trigger heart diseases. Moreover, research has shown that people who follow a Mediterranean diet are less likely to be overweight or obese and lead healthier and longer lives. For example, a study by Sofi, Abbate, Gensini and Casini (2010: 1195-1196) found that following a Mediterranean diet "is significantly associated with a reduced risk of mortality and the incidence of main chronic degenerative diseases." However, the globalization of a fast food culture has rapidly changed t dietary habits in Mediterranean countries like Greece, Italy, and Spain. In Greece, the birthplace of the Mediterranean diet, the explosion of fast foods outlets serving pizza, burgers, ice cream and other convenience foods has adversely affected the health of its children: two thirds of Greek children are now overweight and afflicted by diabetes, high blood pressure, and high cholesterol (Rosenthal, 2008). Dr. Stagourakis, reflecting on the obesity and overweight epidemic affecting Greek children, stated, "this is a place where you'd see people who lived to 100, where people were all fit and trim. Now you see kids whose longevity is less than their parents" (cited by Rosenthal, 2008). This nutritional transition is a change in diet over space and time. A shift from a high carbohydrate and high

fibre diet with low fat coupled with high levels of physical activity has made way to a sedentary lifestyle accompanied by a diet that is high in carbohydrates, sugars, saturated fats, and cholesterol.

Food cultures are not static; they have evolved over time. However, with the urbanization of the world, the spread of trade liberalisation, the rise in migration across borders, and the globalization of communication and transport technologies, food cultures, especially of the 'fast food' variety, have spread across the globe. There is a territorialisation of previously held food cultures that were generally healthy and nutritious towards a homogenous and convenient fast food style Western diet. The tracing of such advancements adjusts with the local diets, altering them to their style. For example, globalised fast food chains have been selling convenience with locality: in South Africa, the fast food chain Kentucky Fried Chicken (KFC) has an option of having their deep-fried chicken with *pap* (maize porridge), creating the 'Streetwise 2 pap' (two pieces of chicken and porridge), and the signature McDonald burger has been localised to India's large vegetarian diet to create the 'Chicken Maharajah Mac' (Kannan, 2014). The rapid increase of food outlets is associated with an increase in obesity and type-2 diabetes. As with all epidemiological transitions, lower socio-economic classes are the most affected.

### *7.2.3. Dietary Diversity and Eating Patterns*

Dietary diversity is one of the ways in which eating habits is measured. It refers to a range of foods that fall under a variety of food groups and which characterise the diet of an individual, home or community (Onyango, 2003). Dietary diversity has been used as an indicator for food security as well as an indicator of the nutritional content or value of diets (Onyango, 2003). With better nutrition comes better development mentally as well as physically, therefore it is important to assess the variety of foods consumed in determining health. Eating a variety of food items can increase the intake of valuable nutrients (Frayne, Battersby-Lennard, Fincham and Hayson, 2009). Steyn and Ochse (2013) emphasise that there is no one type of food that has all the nutrients needed; therefore, it is important to have a diet which will have many food types.

Adult participants in Khayelitsha seem to eat many similar vegetables such as potatoes, carrots, onions, cabbage, and spinach. Their diets are similar in terms of eating staple foods like bread, *pap*, and rice. They consumed a wide array of vegetables. Participants from informal settlements in Khayelitsha mentioned fewer vegetables such as broccoli, cabbage, potatoes, carrots, and they often use one vegetable as a substitute when it was not available. This means that although they eat vegetables they do not have a variety of vegetables on

their plate. Additionally, one participant, Siphokazi, from the Endlovini informal settlement in Khayelitsha, mentioned how much she loved spinach but could not afford to buy it: "*[B]ecause ... I'm not working there's nothing ... I can buy. Even if I like that spinach I can't get it*". Participants from formal settlements, included in their list vegetables such as spinach, corn, mixed vegetables, as well as butternut, in addition to those eaten by participants in informal settlements.

Another means of assessing eating habits is through the description of the type of foods they eat. In the study, the majority of participants classified themselves as meat eaters and only a few participants remarked they were vegetable eaters. Consumption of high carbohydrates foods is also evident since foods such as porridge, *pap*, and rice were very common amongst both adults and children. One participant reported that she was a 'luxury' eater, stating that she was into chocolates and sweets. Other participants stated that they were like sweet eaters as they were putting about 3 teaspoons of sugar in their coffee.

The most common food group enjoyed by most of the child participants were foods that were high in carbohydrates and saturated fats (e.g. pasta, bread, pizza, cheese, rice and maize meal). However, some children also mentioned that vegetables such as potatoes, carrots, pumpkins were used in their favourite dishes while others mentioned fruits as their favourite foods. On the consumption of snacks among adult participants, a few reported that they ate luxuries, such as sweets and chocolates whilst others ate fruit as a snack. Children, on the other hand, listed various items such as chips, sweets, *bompies* (iced juice) and bubble-gum. When asked about the liquids they consumed and enjoyed at school most children listed sugary carbonated drinks and juice, which have a high sugar content whilst a minority enjoyed drinking water.

### 7.3. Factors influencing food choices and consumption

Over the last few decades, there has been a global increase in metabolic diseases such as hypertension, high cholesterol, and type-2 diabetes. Research has shown that a diet high in carbohydrates and saturated fats can lead to hypertension, high cholesterol, and diabetes. In line with this, there has also been a parallel dietary transition which has seen an increase in the consumption of fats and sugar, and a decrease in fibre intake (Popkin et al., 2012). This has been the result of adverse eating habits which have been on the rise globally, particularly in developing countries. Obesity, for example, is an epidemic that has emerged from the change in eating habits which has been driven by the proliferation of fast food outlets globally. In light of this, governments and global institutions such as the World Health Organization have increased efforts to promote healthy eating habits through educational

programmes and the media (WHO, 2007). Despite these important initiatives, too few people have become aware of the importance of a healthy diet and its effect on health.

However, knowledge regarding healthy eating is not the only factor that influences a person's decisions around food choices. The multifaceted process of making food choices is influenced by a number of interconnected factors which include culture, affordability, food quality and availability of food. These factors can be attributable to an individual's cultural, emotional, social and economic circumstances. According to Kennedy et al. (2004), globalization has dissolved traditional foods and expanded the available food choices people have and this has greatly influenced what food people choose to eat.

### *7.3.1. Constraints of Income on Eating Habits*

Due to financial constraints, low-income households tend to rely on cheap foods. . Most of these foods are high in carbohydrates and fat (Tanumihardjo, Anderson, Kaufer-Horwitz, Bode, Emenaker, Haqq, Satia, Silver, and Stadler, 2007). The quantitative findings of this study showed that the average household income fell between R2 401-R3 600 across both research sites. According to the City of Cape Town, the threshold to determine whether households are indigent is when the household earns R2 800 per month (Battersby, 2007). Thus, the households interviewed are either living below or just above the City's indigent threshold. Affordability and income are thus some of the main factors which influence food choice and ultimately eating habits. Results from the study showed that in Mitchells Plain and Khayelitsha, low incomes affect dietary patterns. One participant, Anthony, of Mitchells Plain, succinctly described his eating habits as being that of a "budget eater". What Anthony is trying to convey is that because his budget is constrained, he is forced to choose foods that are unhealthy. Anthony's metaphor of being a 'budget eater' and its impact on food choices was widely reflected in our research in Mitchells Plain and Khayelitsha This, in turn, has major implications for addressing South Africa's growing problem of overweight and obesity.

Further investigation indicates that although people do have a general understanding of healthy food options and healthy eating, they simply cannot afford it. Thus, although people have the knowledge in terms of what food items are more nutritional, they are often unable to exercise that choice. A tension arises among poorer households who then have limited choice in terms of what they are able to purchase versus what they would like to purchase. For instance, Kelly, from Westridge, Mitchells Plain hinted that she was a vegetable eater and stated that:

> *[I]f I could eat [vegetables] every day, you know if the money is there because it seems to be very expensive nowadays. So, if I could eat it every day I would eat it every day. I eat it when I can.*

This remark points to the fact that while she views herself as a vegetable eater, her lack of income and issues of affordability constrains her ability to purchase and consume vegetables regularly. Kelly, like other respondents, ends up compromising her food choices and preferences simply because the vegetables she likes to eat are expensive. This point was well articulated by Maryam from Mitchells Plain who remarked that:

> *I mean foods stuff in the shop it's expensive. I don't think people can eat that healthy anymore. ... To be like a healthy person it costs ... it's not on not for the lower class people maybe the [rich] people that is there…they can still afford to eat things like that.*

These findings resonate with a study done by Sedibe et al. (2014) in Soweto which revealed that the consumption of unhealthy products in communities was mainly related to price and issues of accessibility. The study revealed that participant's diet consisted of foods high in fats and limited fruit and vegetable consumption (Sedibe et al., 2014). This is not unusual as other studies argue that when faced with economic constraints the buyer will purchase foods that will fit into their budget (Tanumihardjo et al., 2007). For example, one of our respondents in the women's focus group in Khayelitsha exemplies this process of stretching the budget to make end meet: *"Cabbage is like meat when you don't have anything. When I'm down to my last R10 I buy that. ... you just place your cabbage in a pot and fry, fry, fry, finish!. [Laughter]."* Income and affordability thus have a direct impact on the eating habits of individuals and households as their choices are constrained by cost. Essentially in many households, lack of adequate income impacts the ability to make better and healthier food choices despite their knowledge of the implications of eating unhealthy food.

South African food prices are high. A regular report released by the National Agricultural Marketing Council (NAMC) shows the rate of price inflation for a basic 23 item food basket over the last year (November 2015-November 2016) amounted to 11.85%. The food basket consisted of various items such as, apples, bananas, tinned fish, chicken portions, beef chuck, white and brown bread, super maize meals, tomatoes, potatoes, onions among others, which had increased from R536.50 to R598.60 (National Agricultural Marketing Council,

2016). This brings to attention the impact cost and income have on food choices of poor households.

Our research revealed that interviewees in Mitchells Plain and Khayelitsha, when faced with food scarcity consumed different foods and at different intervals due to lack of sufficient income. The majority of the participants acknowledged the need to eat at least 3 meals per day; however, on further probing some said they were only eating twice or even once a day. Fatima, an elderly respondent from Woodlands, Mitchells Plain, shared her struggle to eat on a regular basis:

> *...at night umm as l told you sometimes then l make a pot of food. If there's not a pot of food then we go sleep on bread, tea and whatever there is to put on the bread.*

Similar experiences such as this have been reported in Khayelitsha. When there was a shortage of food, respondents would normally consume bread and a hot beverage, typically tea. Siphokazi, from Endlovini informal settlement, lives in a household of five, with two school going children. The three adults are all unemployed and the only regular source of income that the household receives is R700/month from two Child Support Grants. Siphokazi, who is unemployed since 2014, eats six slices of bread with margarine for lunch every day, usually with tea. Sometimes she has polony on the bread. Siphokazi highlights the crucial role that social protection programmes such as Child Support Grants exercise in the lives of poor households. Lack of or limited income thus shapes the food choices of the poor who are forced into purchasing calorie dense but nutrient poor foods. There are, however, also cases when the food does not last for the month, which push households to borrow money or buy on credit from spaza shops. One of the respondents from the women's focus group in Khayelitsha stated that:

> *I won't lie, I go to the Somalian shop to ask for credit around the 20th of the month. I get whatever I don't have on credit, even electricity. I get it from them. I take credit, then repay them when I have money.*

When the probed further a number of the focus group members acknowledged that they too bought food on credit while others borrowed money from loan sharks at high interest to purchase food.

Fatima and Siphokazi, and the focus groups members represent the face of urban poverty in Cape Town's largest neighbourhoods of Khayelitsha and Mitchells Plain. They also

epitomise the growing outlook of South Africa's 'urbanisation of poverty' and of urban food insecurity. The FAO (2002), in its State of Food Insecurity in the World report, defines "Food security [as] a situation that exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life." It is evident that Siphokazi and Fatima, and the focus group members, along with others in South Africa, do not have regular access to sufficient food, let alone access to nutritious food. People living in a situation of irregular access to sufficient food have limited food choices. The other side to Siphokazi and Fatima's experience of undernutrition is the rising tide of overnutrition reflected by the rising rates of overweight and obesity in South Africa. This double burden of under and overnutrition is a major challenge facing South Africa and other countries, and the empirical data – both quantitative and qualitative – from our case study areas of Mitchells Plan and Khayelitsha reflect this 'double burden' very well (FAO, 2006).

Although one's health should be the most important factor in shaping the food choices we make, various economic factors which include the cost of food and income play a significant role. Monetary constraints have been cited by various scholars as a key determinant of food choices, particularly for individuals who belong to low socio-economic groups (Cade et al., 1999; Drewnowski and Darmon, 2005; Caswell and Yaktine, 2013).

Studies show that a healthy diet tends to be more expensive to maintain compared to an unhealthy diet (Wiggins and Keat, 2015; Carlson and Frazao, 2012). An inability to afford healthy food has led to the consumption of unbalanced, non-nutritious diets as poor people begin to prioritize the quantity of food to address food insecurity as opposed to the quality of food. A number of respondents in both Khayelitsha and Mitchells Plain stated that the cost of certain food was too high for them. One of the respondents from Mitchells Plain, Robyn – a pregnant mother of one – stated the following:

> *Like I say the stuff is too expensive to choose what stuff you must buy because if you go buy the expensive stuff then you can make with that, but with that money, you can make three pots of food for a week with that stuff. Because [of the price of] the rice now, how much now? Eight rand[s], and if you buy the type Chopsticks you get a difference. But I go for cheap.*

Respondents from Khayelitsha shared similar sentiments regarding the cost of food. Thumeka is a mother of three who lives with one of her children. She stated the following regarding food costs: *"It's money that influences me I do not have money to buy expensive*

*food."* By contrast, Faith, who is also from Khayelitsha, is much stronger financially and is thus not constrained in her food choices compared to Thumeka. She says:

> *It is the money that people have and status…Because I notice that when I buy food, I buy food that people on my status buy… [P]eople that can't afford don't buy what I buy.*

Faith highlights how one's class position in society influences what one can buy, but being from the middle class does not necessarily mean that one will buy healthier food. Most of our respondents placed emphasis on the cost of food, highlighting that they preferred cheap food as it was more economical, especially in the long run. The need to buy food that could be cooked over a long period and feed the whole family was a key reason why people purchased cheaper food. Additionally, reference was also made to social class where low social status was associated with cheap food whilst high social status was associated with expensive, although not necessarily more nutritious food.

De Irala-Estevez et al. (2000) states that individuals who belong to low-income groups are more inclined to consume low quantities of fruits and vegetables which adversely affects a number of nutrients they take in. The price of fruits and vegetables resulted in some respondents foregoing these foods or purchased them occasionally. Hence price was seen as a barrier to accessing healthy food. Buhle is unemployed and lives in Khayelitsha, she is also HIV positive. She stated that: *"If there is money to buy fruit, I buy fruit but in a house you have to buy electricity also and bread so it's already expensive."* Buhle flags the difficult choices low-income families have to make between buying fruit and other basic necessities like electricity to sustain their daily lives. What our findings illustrated is that respondents were willing to add healthy components to their diets such as fruits and vegetables, but questions of affordability make it difficult to purchase such foods on a regular basis.

The availability of adequate financial resources, as stated above, influences food choices. However, unemployment has resulted in some people not having any income at all to spend on food. Hence alternate sources of money for food are sought which often don't bring in enough money for adequate food, let alone costly, healthy food. Drewnowski and Spencer (2004 cited in Dorodnykh, 2017) support this notion, stating that households living in poverty often have low food expenditure due to financial constraints. Such constraints are usually directly linked to unemployment. In this research, it was evident that unemployment as a determinant of food choices was more prevalent in Khayelitsha as compared to

Mitchells Plain. For example, Siphokazi highlights the difficulties that lack of employment brings: *"I think it's because I'm not working…I'm struggling…It was better when I was working but now ohh…tjoo it's not enough food because they are not working. All of us*." Mathilda similarly illustrates how unemployment frustrates the purchase of food, *"You know sometimes, like me, I'm not working. I'm just staying here in the house. I don't have money to go and buy lettuce and cucumbers, you see."* Due to unemployment, respondents did not have adequate food expenditure to purchase not only healthy food but also a sufficient quantity of food. This, in turn, leads to the purchase of cheap or unhealthy foods.

### *7.3.2. Advertising*

Marketing and advertising have an impact, both positive and negative, on the food choices people make through the dissemination of information regarding various goods and services. Advertising has proved to be an effective and efficient way of influencing the purchasing behaviour of consumers. A study on fruit and vegetable consumption in Scotland revealed that 48% of focus group participants attributed advertising to their increased intake of fruits and vegetables (Anderson et al., 1994). While media can shape the purchasing of healthy foods, it has generally tended to influence the purchase of cheap, processed unhealthy and highly sweetened foods. According to Aktas (2006), contemporary globalized marketing strategies have promoted the advertising of unhealthy foods. This statement is substantiated by Ofcom (2004 cited in Haroon, et al., 2011) who adds that the advertising of fast foods and convenience foods which are high in sugars and fats has increased.

This study investigated the extent to which advertisements influenced the food choices of people in Mitchells Plain and Khayelitsha. There were mixed feelings regarding advertisements and their influence on food choices amongst participants. For example, Rose, a grandmother living in Makhaza, Khayelitsha stated that when it comes to advertising: *"Such things don't influence me. I do what feel right to me."* Similar sentiments were shared by Thumeka, who stated that *"No, I don't buy what I see or hear advertised. I do crave for burgers I see on TV but I do not go and buy them."* However, some respondents admitted that advertising to some degree played a role in informing their food choices. Dumisani, a young man who lives alone in Khayelitsha, stated that *"I follow things that I see on TV, but money controls the extent to which I buy food of certain prices."* Advertisements were also seen as being informative with regards to food and this also added to their ability to influence food choices. One Khayelitsha participant, Menzi, a thirty-three year old, single man said: *"Sometimes I would be watching TV and see a certain food and think, 'That's what I want'."*

The respondents had varying views on the extent to which advertisement influenced their food choices. Interestingly respondents who mostly stated that they were not influenced by advertisements were women, and of these women, it was mostly mothers. Men, by contrast, stated that they were more inclined to be influenced by food advertisements and that this shaped their food choices. It is important to note that these men are single and live alone. In light of this, it can be said that a lack of dependents allows for more financial flexibility and increases food expenditure. However, low-income people with dependents, especially children, are less influenced by TV advertisements, even if it is something they want.

For other respondents, television advertisements only informed food choices if the advertisement was on a promotion or special. Perreault (cited in Shamout, 2016) describes a promotion as a form of communication which aims to effect customer decisions and encourage customers to buy certain goods and services over a specified time frame. The most effective promotions, especially when it comes to food, are ones that either shows a reduction in prices or those that offer two-for-one deals. Such promotions are economically enticing to consumers. Participants in this study were very specific about when their food choices are influenced by television advertisements. A large number stated that specials or promotions encourage them to purchase certain foods. Joyce, a resident of Khayelitsha and a mother agreed that specials do influence what food she buys and where she buys it from: *"I mix them because I wait for specials from Shoprite…because I rush for the special sales."* Another Khayelitsha resident who enjoyed specials was Buli, who also mentioned the effect of supermarket specials on her food choices: *Yes, it affects me. When I see it better there I run and go buy it at Shoprite."* Thato, a father of two girls similarly believed that advertisements on the radio and television swayed his decision on what food to buy: *"Yes, things we see on television and hear from the radios maybe we hear that a specific chicken from a specific place is cheap."*

The most appealing factor of food advertisements for most participants was the information regarding specials and sales. A striking trend that could be seen amongst respondents is that a majority of the participants whose food influences were affected by specials and promotions were residing in Khayelitsha, a largely low income area. This suggests that specials and promotions allow for a more economical use of the food expenditure households have, allowing residents of the area to either purchase more food or save money.

### *7.3.3. Health Status and its influence on food choices*

Because of health problems, some people may adopt a new dietary lifestyle. Some participants assume strict health conscious diets which they have been advised to follow by a medical practitioner or because a family member has had to adopt a new diet to improve their health. For example, one of our respondents, Catherine, from Westridge, states that *"[My] doctors tell me what I must eat you see? For the diabetic and for cancer."* She also confirmed that she follows the diet strictly because of the health issues within her home. Another participant, Simone, in Strandfontein, Mitchells Plain reported a similar change in diet when her husband was diagnosed with diabetes. She then began to change the entire family's food eating. She is more health conscious now and reports that when they do have take-out foods they prefer having grilled foods rather than fried or oily foods. While some people may be able to change their eating patterns as a direct result of certain health problems, other may not.

For many people, choosing healthy food that is low in sugar and fat is important for them to maintain or achieve good bodily health. Hence health can be seen as a determinant of food choices. A study conducted by Lennerans et al. (1997) on people's perceptions of what influences their food choices in Europe found that one of the top five influencing factors mentioned by participants was health. In this study, health was mentioned by some participants as shaping of their food choices; however, most who mentioned this were those suffering from a disease or illness. Mathilda is an overweight, unemployed woman living in Khayelitsha who is a diabetic and also suffers from heart problems and high blood pressure. When asked about the types of foods she eats, Mathilda made reference to her health conditions as reasons why she chose certain foods:

> *I'm sugar sugar diabetic…I've got high blood pressure and I've got a…heart problem…I think my health drives me to buy…these things…I use olive oil…I think it's healthy…[I drink] just rooibos…black rooibos [without milk].*

Buhle, who is unemployed, diabetic and HIV positive, similarly stated that some of her food choices are determined by her health state *"Yes, I have tea and coffee and a brown sugar…only two spoons…because I'm on a diabetes."*

The interviews showed that a majority of the respondents who suffered from illnesses, which mediate their food choices, were women residing in Khayelitsha. Most of these women are also overweight or obese. However, although some of the Mitchells Plain respondents were also overweight they did not suffer from major health problems. Shortness

of breath and tiredness were highlighted as the issues faced by Mitchells Plain respondents. Puoane et al.'s (2006) research showed that amongst black Africans living in urban areas – particularly townships – in South Africa, there was a high prevalence of non-communicable diseases such as obesity and hypertension. The information given by respondents correlates with Puoane's findings and have an added gender dimension as women tend to be more prone to such illnesses as compared to men.

### *7.3.4. Religion and Culture*

Religion and culture play a role in the types of foods people eat as well as in food preparation. Culture plays a great role in determining the choice of food and preparation method of food for a number of people across the world. Culture brings with its traditions and beliefs, some of which are tied to food. In all countries food plays an important role in cultural identity; the food bought and consumed by many people is a reflection of their cultural background. This notion is supported by Nestle et al. (1998) who state that culture can dictate which foods are permissible or not for consumption and at what time or during which period certain foods are eaten. Hence, in as much as it is important to learn about a culture from the food consumed, it is equally important to analyse how culture can, in turn, affect the food choices of people. According to Ludy and Mattes (2012), culture influences the kind of food one is exposed to, hence it can also condition a person into preferring certain types of food.

Culture came up as a determinant of food choices, particularly in Khayelitsha. Some participants made reference to their cultural background when describing the kind of food they consume. Rose is an elderly Sotho woman living in Makhaza, Khayelitsha. For Rose, being raised within the Sotho culture has influenced her food choices even now in her adult life:" *I like pap. We are Sotho people here at home. We were raised on pap."* Palesa is also an elderly woman staying in Khayelitsha. Palesa is Xhosa and prefers to eat her cultural food rather than eat other types of food. Palesa says that she cooks traditional meals such as *"imifino"* (spinach, bitter greens and maize-meal) and *"umngqusho"* (samp and beans). She proceeded to state that she does not like *"Western food"* and prefers *"Xhosa meals."*

Religion and food behaviours provide a similar context of belonging and identity that many people are proud to practice and which comes with its own health risks and benefits. As can be seen, religion seemed to play a strong role in how one of our interviewees, John, a Rastafarian, perceives and values certain foods. He highlights the important role religion plays when people make decisions around the foods they eat. When John was asked about

whether his diet is vegetarian and is guided by spirituality, he responded: *Yes, 'ital' foods. Everything is spiritual."* When probed to explain '*ital*' he described it as:

> *Ital means food that is clean and vital into our souls. Also, the food that we eat must be colourful, into your eyes. In Babylon language you can say beautiful, looks terrific. But the food you prepare and eat must always catch your eye and be natural. Definitely, when there is no cow, blood, it is healthy.*

As evidenced, John seems to make choices around food strictly according to his religious beliefs and views. Spiritual aspects around food here are regarded highly. For John, his Rastafarian religion ascribes to what he calls the "Babylon system" which puts emphasis on consuming fresh food and avoiding processed commodities. Hence John only purchases food that is culturally acceptable to him:

> *I don't like to differentiate food like that. Babylon have a different culture than yours so when [I] go to shop, [I] go to the Babylon shop. … [T]here is always veggies and ganja. You see. So, the things that are in normal shops are not the same things that would be in our stores.*

Although this is just one example in which religion impacts eating habits, many similar examples can be found throughout various other faith groups. Judaism and Islam, similarly have specific requirements around food. Jews, for example, cannot mix specific foods like meat and dairy. Islam, like other faiths, sees fasting as a virtuous act of devotion. Essentially, culture and religion play strong roles in the dietary habits of its members for various reasons. This, in turn, may have an impact on their health, whether positively or negatively. As can be seen, religion and culture have distinct food practices and have been maintained amongst community members over generations.

Khayelitsha is a culturally diverse area. People of different cultures placed emphasis on sticking to their cultural foods which they were raised on. The cultural dimension of food choice influences can also be attributed to familiarity. For some people, being raised on certain foods creates a sense of familiarity and comfort which results in them continuing to consume these foods when they are older. Culture is, however, is neither static nor homogenous. For example, people in the Xhosa ethnic group who grew up eating the balanced and nutritious diets (with fibre, vegetables, and legumes) that Palesa describes may have incorporated a fast food western diet over time. Thus, cultures shape food choices, but they also evolve and incorporate healthy and not so healthy foods. The challenge for

governments seeking to promote healthy food choices is to draw on those aspects of culture that will promote healthy eating. Here governments and NGOs can host 'cultural food fairs' in communities across the country to highlight and promote the healthy, nutritious foods in different cultures and illustrate how these foods facilitate healthy living.

Moreover, by looking into the dietary behaviours of various communities we can also ascertain why certain groups may be more prone to specific diseases (Shatenstein and Ghadirian, 1998). One of the participants, Palesa, in Khayelitsha mentioned explicitly that she preferred eating traditional foods over what was perceived as Western foods:

> *I like eating. ... I most cook traditional Xhosa meals. Mostly I cook imifino [a meal made up of spinach, bitter greens, and maize-meal] or umngqusho [samp and beans]. I don't like eating Western food. I prefer Xhosa meals.*

Here, we can see the esteem, among some respondents, through which culture shapes eating habits. It provides identity and a sense of belonging to a specific group as it is not merely a typical meal; it is a meal that belongs to a specific community. Additionally, having distinct food practices and meals comes with certain health benefits or health risks. It is important to study different cultural and religious practices with regards to food as it may be indicative of the trends in health issues. Ultimately, where there are trends in eating habits there may be trends in health problems. Culture can promote either healthy or unhealthy food consumption. In Palesa's case, her preference for traditional food has resulted in her plate comprising of a balanced mix of carbohydrates, vegetables, as well as legumes, and whole grains like samp (crushed maize kernels).

### 7.4. Self-Perceived Health Status and Health Conditions

Central to the growth and development of a nation is the health of its citizens. Stubs (2016) advocates for an active civil society that campaigns for a healthy nation. For governments to be proactive in coming up with grassroots based healthy policies, policy makers need an understanding of how citizens perceive their own health. This research investigated participants' perceived health status. The research results revealed that the majority of the participants in both case study areas considered themselves healthy. Maryam, an elderly respondent from Mitchells Plain aptly commented, "*I am not diabetic, l haven't got high blood, I haven't got any of the ailments. I seldom go to the doctor for any complaints l see myself as a very healthy person."* Shariefa , also an elderly respondent from Mitchells Plain stated that: "*Ma'am, my health is good. It is just fine*." In Khayelitsha, Noxolo stated that

her health was fine since she was "*not sick"*. Our quantitative survey also shows that the majority of our participants' health was good as highlighted earlier on in this chapter.

It is interesting that most respondents measured their state of health with whether they were suffering from some form of sickness or not. This was common amongst participants from both areas. While a substantial number of participants stated that they were healthy, some participants in both areas indicated that their health was not in a good state. Fatima from Mitchells Plain reported that *"I am not a healthy person"*. Another female participant Tasneem, from the same area, remarked: *"l can feel my body, l am not healthy.*" On a similar note Nomsa, from Khayelitsha, stated that: "*l am sick now; l have diabetes, l have high blood pressure."* This brings to attention the fact that people consider themselves as unhealthy if they are aware of any sicknesses that they might be having.

Apart from how people perceive their health, body image also influences perceptions around health status and condition. Body image refers to an individual's feelings and opinions about their bodies (Grogan, 2016). It is a multi-faceted phenomenon with both physical and psychological manifestations associated with health status, physical activity and self-evaluation (Olmsted and McFarlane, 2004). Perceptions on body image play a critical role in shaping individual's eating habits, weight management practices and overall satisfaction with body weight. The literature reveals a dynamic link between food consumption, body image perceptions, and obesity. Furthermore, food choice and body image preferences are intrinsically connected with the cultural, environmental, psychological and other factors active in society at a specific time.

### *7.4.1. HIV/AIDS and body image*

This research demonstrated that participants placed careful consideration on the social repercussions of body image changes. As such, participants evaluate and internalise the societal body image expectations, using these as a guideline to select ideal body types. The sub-Saharan African region has one of the highest HIV/AIDS rates in the world. Within sub-Saharan Africa, Southern Africa is the most affected region (Shisana et al., 2014). Scholars further note that about 5.6 million people are living with HIV/AIDS in South Africa. The prevalence of HIV/AIDS is highest amongst Black South Africans of child bearing age (15-49), with populations in low-income and informal areas the most at risk of infection (Shisana *et al.*, 2014).

The participants reported fear of victimisation should they lose weight as that would be seen to be an indicator of an HIV/AIDS or TB infection. This was true even amongst those

participants who had knowledge of the health risks associated with obesity. Khayelitsha has one of the highest TB incidences in the country as well as one of the highest HIV/AIDS incidences in the Western Cape (Garone et al. 2011). During the interview, Mandla talked at length about the important role of exercise for health and of the need to combat obesity. He and his friends jog and play soccer several days a week. Despite this, Mandla is very reluctant to lose weight as he believes that would subject him to public scrutiny, including suspicions that he is HIV positive:

> *There is sickness out there, like AIDS and weight loss. [Pause]. When a person loses weight. One moment a person is big and the next time you see them, they have a small body. Then everyone will think; "Oh! What happened since the person was bigger and why has the body become smaller now?*

The association of weight loss and thinner body size with HIV/AIDS or TB is consistent with similar studies in South Africa. Devanathan et al.'s (2013) study of women in Durban revealed that 99% of participants associated thin body size with HIV/AIDS and believed underweight symbolised HIV/AIDS while also perceiving themselves to have a lower BMI than in reality. In a similar study in Cape Town, 69% of women associated thin body size with HIV/AIDS while 33.5% preferred a larger BMI (Puoane, 2002). Intrinsic to this belief was the need to avoid the social prejudice that was assumed to follow weight loss or thinner body. The stigma associated with disease and the subsequent impact it has on body image expectations and body image perceptions is not unique to sub-Saharan Africa. The literature on body image perceptions amongst societies experiencing social problems in the form of war and health pandemics suggest that in these societies, larger body images are preferred (Renzaho, 2003; Grivettil, 2001). Such communities view larger bodies as indicators of social status and power. These views act as yardsticks by which individuals formulate concepts related to body image.

### *7.4.2. Perceptions and gendered differences in body size*

The perceptions of self and ideal body size were measured by using the Figure Rating Scale (FRS). The FRS is a psychometric measurement tool used to determine body dissatisfaction; it consists of six male and female schematic silhouettes, ranging from underweight to obese (Thompson and Altabe, 1991). Participants were asked to report on current body image, the ideal body as well as ideal body for individuals of the opposite sex.

In this study, both men and women perceived themselves to have lower BMI than actual measurements found, a phenomenon that is referred to as BMI distortion, which refers to the

tendency of individuals to incorrectly report BMI size (Mchiza et al., 2015). As pointed out to in the quantitative data analysis section, only 5% of participants perceived themselves to be overweight and obese. Yet, actual BMI measurements indicate that 55% and 52% participants in Khayelitsha and Mitchells Plain, respectively, were overweight and obese. A recent study by Mchiza et al. (2015) produced similar findings. Using data from SANHANES-1, the authors found that 75% of the participants aged 15 years and above could not correctly identify their body size. In addition, 64% of the participants in the study underestimated their body size.

In addition to body size distortions, participants in this study showed gendered differences in body image satisfaction, as well as ideal body image preferences. Women indicated greater dissatisfaction with their body size compared to men, who reported less difference between their current and idealised body size. Additionally, men felt more empowered to engage in weight management practices so as to obtain their ideal body. Menzi strongly viewed obesity as a serious health concern. He reported that he and his friends engage in regular exercise so as to avoid being overweight. He states that "*We value exercise because we know it is a way of keeping our bodies healthy... so we exercise. When you don't monitor your weight it is easy for you to get diseases*". In addition, Menzi was one of the few participants in the study who thought of obesity as a disease.

The majority of men in this study reported a preference towards larger body sizes. This ideal body for men was described in terms of 'bold', 'big' and 'masculine' and was viewed as indicating a greater capacity for physical activity. Additionally, adult male respondents centred their ideal body selections on practical concerns such as the ability to perform manual tasks that are required of low socio-economic men. Mandla stated "*Work is the most important thing. I work in construction. [Being larger means that] I will be able to [carry out the tasks assigned to me] and finish my work*." From this, it is clear that working class manual labourers use their job requirements as models to formulate body image ideals.

Women also reported a preference for larger body sizes for men. In a very vibrant discussion about ideal body sizes for men, participants in the Khayelitsha female focus group stated that it was important for men to be bigger than women. This was seen as an indicator of wealth and thus an ability to provide for their families. Furthermore, larger body sizes for men were also identified as important to the fulfilment of masculine stereotypical roles and activities such as acting as provider and protector. A female participant in the focus group

associated larger body sizes for men with dignity and that the presence of such a male lends prestige to the home:

> *I don't think it's good for a man to be skinny. It's undignified. At least a 4 or 5 [on the Figure Rating Scale] for a man. Not too big but also not too small. When you come into my home you should be able to see that there is the man of the house.*

Other participants associated larger bodies for men with increased ability to fulfil masculine roles such acting as protectors. This was a sentiment shared by the majority of the female participants. Female participants were requested to explain the ideas that supported their preferences of ideal bodies for men. In a very emotive response, a female member of the Khayelitsha focus group had this to say: *"You see, this man [5], he can sit here next to the door [stand guard] and when a thug comes he can overpower them or chase them if they run."*

There were mixed feelings with regards to the ideal body size in the two research sites. The women in Mitchells Plain mostly preferred smaller body sizes and modelled their body image expectations and food choices on mainstream media such as television and magazines. On the one hand, women in Khayelitsha tend to rely on social comparison, often using normalised body sizes in their communities to determine ideal body preferences. In a study on body image satisfaction amongst urban white and African-American women in the United States of America, the media was found to play a large role in influencing body image ideals amongst white women while black women mostly modelled their body image ideals from women in their immediate surroundings (Milkie, 1999). In our study, it was found that crafting body ideals based on media leads to greater body dissatisfaction. Individuals who did so more often than not selected ideal body sizes that were smaller than their current body and also reported wanting to lose weight. Paradoxically, these media images failed to translate into increased healthy food choices and an engagement in weight management practices; they only resulted in body dissatisfaction and depression. This is illustrated by a female participant in Mitchells Plain:

> *I think I'm over-weight… And [Long pause] sometimes I feel so miserable, but I [cannot do anything about it] [Uncomfortable laughter]….when [I see] the divas on the TV then sometimes I wish 'Hey! Can I have that body, and can I have those [breasts]! You see?' [Uncomfortable laughter].*

Amongst overweight and obese women, there was a tendency to focus on specific body parts such as mid-section, arms, and legs instead of over the actual weight problem. Amongst North American women, it was found that obese women use this as a distraction in that it served as a temporary buffer from stigmatisation due to overweight and obese (Myers and Rosen, 1999). Conforming this phenomenon, a middle-aged woman in the female a focus group discussion in Khayelitsha who classified herself as a '6' [severely obese] exclaimed that:

> *I would like for my stomach to be smaller. Oh! If these arms could be smaller! [Laughter]. I look at myself in the mirror sometimes and just flap them, and they do this [Flapping arms]. [Laughter from group]. My God! If only I could have them and my stomach reduced because I can't even bend to scrub my feet. I would like to be a 5.*

### *7.4.3. Body image and weight*

Rosen (2002) states that overweight and obese women tend to not view their weight as a problem. Instead, they chose to focus on their dissatisfaction with other body parts such as hair or skin pigmentation. There was a sense of normalisation of overweight and obese, combined with a misinterpretation of normal weight or normal body size. As such participants who showed higher body image satisfaction reported that their weight was normal, regardless of whether their measurements fell on the underweight, normal weight, or obese BMI scales. The Khayelitsha sample showed a bias towards larger BMI body types, while most Mitchells Plain participants preferred normal BMI for youth and larger BMI for older men and women. For both areas, the accumulation of body fat around the mid-section and arms was identified as undesirable. Both adult males and females preferred a woman to have larger body size. Andile, a male participant, had this to say about ideal body size for women:

> *I choose number three because I feel that clothes fit much better on a woman who is curvy. A woman must not be thin [laughs], they need to have a body that is big enough to be able to hold their children on their rear end.*

These body image standards are used as indicators of affluence, nurturing, fertility, maternal abilities, and beauty. Studies on body image perceptions amongst Black South Africans support the view that African communities prefer larger body sizes as bigger body sizes are equated with good health and affluence (Puoane, 2005; Puoane et al., 2010; Devanathan, 2013). Even though both women and men preferred larger body size for men, the sentiment among the female

participants was that women should have larger body sizes. For example, Thumeka stated that:

> *It is better if it's the woman who is a bit over weight than a man. A man just cannot be fat. No, he just can't! The thing is a woman must not be overweight but she still needs to needs to be voluptuous*.

The sentiment here is that a larger weight contributes to a woman's sexual appeal. It also is used as an indicator of fertility, child nurturing and good health. For both men and women, a larger body is desirable as an indicator of good physical health. It is interesting to note that none of the participants attributed obesity as a health concern in itself, it was mostly viewed as a gateway to chronic health conditions such as diabetes and hypertension.

Researchers further probed participants on whether they would want to gain or lose weight. Most of the participants who remarked that they were comfortable with their weight also stated that they were not interested in either gaining or in losing, with some of them indicating that they would seek medical attention if they start losing weight. Noxolo, from Khayelitsha remarked, "*If l lose a lot of weight l would go for a check up to make sure l am not sick and just losing weight"*. Another interviewee, Nomsa, from the same area indicated that *"it is important but it is not important to lose a lot because in our days we judge each other*." Richard from Mitchells Plain reflecting on what losing weight means stated:

> *[T]hat would really be a concern to me I would prefer gaining a little weight. I will feel really uncomfortable I will surely go to check myself out 'cause if you start losing weight just like that then there is something not right.*

Drawing from Richard and Noxolo's excerpts, seemingly people associate weight loss with some form of sickness as they were quick to point out they would seek medical attention in the event of weight loss. On the other hand, Nomsa's remark indicates that some people might be worried about what other people will say if they lose weight. This is consistent with Carey, Donaghue and Broderick's (2010 cited in Paige, 2013:5) observation that at times public comments have a bearing on how people perceive their body images.

A participant in the female focus group in Khayelitsha associated larger body mass with both tradition and genetics:

> *To us... in the olden days there wasn't a problem. In fact, women were not considered good looking when they were thin. For you to be considered good looking you had to have a bit of [uses hands to gesture for large breasts and buttocks]. As a girl, having a good looking body ... gave [us women] a sense of dignity. [All agree]. I have always been this size. I only lose weight when I fall sick. I have never been small. So for us Black people, this body looks best on women.*

Changing diets and urbanisation were highlighted as contributors to weight gain and thus changing body image perceptions. Many of the participants reported the abundance of obesoogenic convenience foods such as low quality meat off-cuts called "*ntyorontyoro*" (innards), *amagwinya (vetkoek)*, pizzas, *samoosas* (fried pastry snacks filled with savory ingredients) and pies as a contributing factor to the high prevalence of obesity in the case study areas. Consumption of these foods was attributed to weight gain and the normalisation of overweight and obese body types. In the sample older participants reported being more concerned with their diet, often citing concerns about health and contracting non-communicable diseases associated with weight gain as motivations for adhering to changes in diet. Amongst this group a larger BMI and a larger body frame is viewed as undesirable. Ntsiki, a participant in her 50s, states that gaining weight would be a sign of illness which would limit her physical abilities. She reports to eating a diet that consists mostly of vegetables and low fat foods:

> *It would be a sign that I am sick. It doesn't make sense for me to suddenly be overweight in old age. That is a health concern! I wouldn't be able to do anything. Just sit or sleep and eat. You see? It seems as if being fat makes you eat a lot, you crave fats and meat. Yho! I just stay as far away from fats as possible. I remove fats on meat and even the skin from chicken!*

Amongst older participants, overweight and obesity were associated with limited mobility as well as poor health. Participants cited lethargy, reduced ability for self-grooming as well as the susceptability to chronic health conditions such as diabetes, hypertensions and heart problems. These acted as deterrents towards (future) possible weight gain.

#### *7.4.3.1. Health, age and body image*

This study found that even though women preferred larger body sizes, they were also aware of the health risks associated with overweight and obesity. Additionally, all the participants correctly identified overweight and obese body types and associated these with poor health and risk of non-communicable diseases such as diabetes and hyper tension. Gadija, a

participant in Mitchells Plain, who characterised herself as obese identified 'luxury foods' as the cause for her weight gain and stated she feels unhealthy. When asked if she would be willing to give up her luxury foods in order to be healthy, she replied by saying "Maybe for two months". She further explained that being obese has resulted in a lot of health concerns as she struggles with asthma, which she attributed to age:

> *Most of the time I am out of breath but I always think its ok because [of] your age. You see that you so out of breath and then I also have asthma. I wouldn't say I'm like tip top shape but you know I try to now and then … [W]hen I … gain too much weight then I stop and then I put myself on a level again and try something new and ok then I'm there again but then I just flop out again [laughs].*

Many women in the sample viewed overweight and obesity as a normal factor of the ageing process. Many cited child birth, certain medications for hypertension and diabetes as causes of weight gain. This resulted in overweight and obesity being accepted as normal. As with Gadija above, some women engaged in weight management practices such as exercise, but only did so for a short period before giving up. Amongst younger women, occasional exercise routines were linked with seasonal change and shifting body image expectations between colder and warmer seasons. Summer and the desire to obtain 'summer bodies' influenced younger women to exercise. Furthermore, both normal and overweight women in their youth associated overweight and obesity with poor health, poor hygiene, and unattractiveness. Yolanda, a woman in her 20s, identified as overweight, and reported struggling with weight gain after losing her job and being unemployed for 6 months. She was unhappy with her current weight and wanted to lose weight. Yolanda challenged the view that bigger bodies were attractive:

> *It is not attractive actually since we are approaching summer… when you are a woman, first of all, you want to be more approachable [and] attractive. So, if you are overweight there are certain things that happen to you. [Pause] You get sweaty,… you don't smell nice. … I don't want to be in that situation.*

The notion of attractiveness was also brought up in the female focus group. For married women, larger body sizes were seen as a threat to intimacy in the relationship and were associated with old age and unattractiveness as a focus group participant stated:

*Yet when you have a [slimmer] body you can dress well. For example, with us younger people your husband will lose interest in you when you are fat. He will be thinking 'What happened to the [young lady] I married?' Just because you are fat.*

In addition, female participants indicated greater internalisation of social expectations and often cited external pressures such as being considered attractive and beautiful as motivators for body desires to lose and gain weight. This is consistent with studies in both developed and developing countries (see Tiggemaan, 2004; Mchiza et al., 2015; Devanathen et al., 2013).

Appearance in clothing, specifically as it pertains to looking stylish or presentable, was expressed to be an important influence on body image perceptions by the majority of respondents. For many, the need to fit into specific clothing and to look good in public was presented as a motivator for the desire to both lose weight and maintain a smaller body weight. For example, Moeneeba, a female from Mitchells Plain was very happy to lose weight and keep a slim figure in addition to being able to "dress good":

*Because you look good and you can dress good. Clothes don't look funny on you. When you are obese then nothing fits you properly and that is my problem, like when I was number five, I felt uncomfortable. But luckily I lost weight rapidly.*

Across age groups, men were more accepting of their body size and many reported satisfaction with their bodies. The adult female sample show mixed results. As indicated before older women associated obesity with limited physical mobility and poor health. Body image perception amongst older women, those aged 50 and above, was linked to functional mobility with overweight and obesity cited as inhibitors to normal daily activities such as household chores and self-grooming. This is consistent with finding in the literature which illustrates that older women associate obesity with reduced abilities (Tiggemaan, 2004). A female participant in the Khayelitsha female focus group stated that the larger body size she obtained after child birth limited her ability to carry out her daily activities, and it also impacted her ability of self-care and grooming:

*Being obese is not good because it is a struggle and a problem to people around you. For example, you can't put on your own shoes. You can't bend. You are always tired. You can see other people being energetic and you wish you could be like them but you can't.*

Both young and older women tend to internalise social expectations on body image and using these as motivations to evaluate their body images. Gadija, from Mitchells Plain, states that gaining or losing weight would be motivated by "*Acceptance by other people but for me personally [it doesn't matter]. I'm over 40 already. So, if [I lose weight] I won't suffer from shortness of breath and other things.*" From this we can infer that women internalise social expectations of body images; yet, older women are somehow able to reject these expectations. This is similar to findings by Tiggamaan (2014) that younger women are the most prone to external body image influences.

#### *7.4.3.2. Body Image perceptions amongst children*

The children in the study indicated greater awareness of their body size as compared to the adult sample. When asked to choose the body type closest to theirs, the children were able to correctly identify their body type and selected body images closest to their actual body size from the Figure Rating Scale. Moreover, the children were able to identify overweight and obese body types; many associated obesity with restricted physical abilities. When asked about how she would feel is she gained or lost weight, Saarah, age 11, states that gaining weight would hamper her dreams of playing sports when she is grown up:

> *I would want to lose weight…[be]cause I want to stay as thin as I am. When I am older I wanna run for sports I still wanna play volley ball, cricket, soccer. I wanna be fit and in shape so I can do all that sport[s] stuff.*

This was a recurrent theme as the majority of normal weight children state that they appreciate their bodies because they can engage in physical activities. Nine year old Onke loves playing soccer and states that his body's ability to engage in sporting activities is the best thing he appreciates about it. When asked to elaborate, he had this to say:

> *[My body] feels strong... maybe it's in between [normal weight]. When ... there is a race at school I don't struggle to run. I won't be slow. [When doing chores] I can get to where my mother wants me to go fast. With a bigger body, I would be very slow… I wouldn't feel good. Because when I am fat I won't be picked for sporting competitions at school because I would not be able to run.*

This indicates that the children in our study from age 5-11 have a greater awareness of their body and were not subject to external pressures when forming body image ideals. A study by Maximova et al. (2008) revealed that overweight children who experienced overweight and obesity amongst adults at home or amongst peers were more likely to misperceive their

weight status than normal weight children. From our findings, children who identified as overweight using the FRS did not perceive themselves as being at risk of facing health challenges. In addition, such children indicated a preference for larger BMI for children of the same sex. Tatum is one such child. She identified her body size as 'F' (overweight) and also indicated that as the ideal size for girls. When asked what she thought about losing weight she responded, "*Oh I won't [want to] be thinner. Because I like being fat. [When you are fat] you are strong and that's all*".

The majority of children reported that girls should have a larger body size than boys. This is possibly the result of cues from the social environments children grow up in. In South Africa school aged girls have larger body size than boys. A study by Armstrong et al. (2008) illustrated that the prevalence of obesity is higher amongst girls (18%) as compared to the 14% for boys. This is common across ethnic groups. The children in this study not only associated higher BMIs with girls but also associated higher BMI with eating healthy. Onke best illustrates this when asked to explain why he thought girls should have larger BMIs than boys, "*Because... girls don't like eating. That's why they have to look like that. Boys like eating sweets and such. That is why they don't get fat. Girls eat healthy."*

Many evaluated their bodies in terms of physical abilities such as dancing, running, playing sports, and defending themselves against bullies. Phila, age 8, stated that she likes that her body to be strong so she can fight back when bullies pick on her. Phiwe age 11, mentioned that she mostly liked her face at is was beautiful. When asked about her weight she added:

> *I'm fine with my weight but would like to have a figure [flat stomach] ....not have a big tummy. Because when I'm wearing skin tight clothes people will see that I have a big belly and they will make fun of me... I feel good [about my body] because I can dance, play sport like running.*

Beauty and appearing good in public was a common concern amongst girls age 10 and above. At this age children begin internalising body image ideas portrayed in media and their surrounding environments. The ideals they formulate at this age forms the foundation for their body image perception for their adult lives (Sands and Wardle, 2003). At this stage children also engage in social comparisons using females in their immediate environments as models for body ideals. Sinazo, 11, presents a good illustration of this. Sinazo reported being happy with her current weight but would like to add a bit of weight. She thinks girls should be bigger than boys and u**ses** the females in her family to formulate body image

ideals. She states that *"The things is the people in my family grow to be big. When they get old they get big arms or big buttocks. So, that's just how my family is."*

This is consistent with the literature that suggests that girls are more preoccupied with their weight than boys (Phares et al., 2004). The majority of children associated thin body sizes with weakness and associated overweight and obese with lethargy. Underweight was associated with being weak and unable to do your normal activities. The children indicated that being teased by others at school is the reason why they would not like to gain weight.

Participants' perceptions with regards to their health status and conditions were shaped by various aspects. Most importantly respondents' knowledge on whether they were suffering from some form of sicknesses determined whether they viewed themselves health or not. Further to that, the investigation obtained subjective perspectives on what shaped participants' perceptions of ideal body image and size. The research revealed that the aging process, ideas of masculinity, cultural standards and traditions impact participants' views on losing or gaining weight. It is paramount to note that how individuals perceive their health may influence their lifestyles, weight management practices as well as eating habits. This then means that policy makers and governments have to take into account people's perceptions of their own health status in combating overweight and obesity challenges.

### 7.5. Weight Management Practices

Sedentary lifestyles predispose individuals to obesity. Obesity is singled out as an independent risk factor towards cardiovascular diseases (Barnes, 2012). Comorbid diseases such as respiratory diseases, type-2 diabetes are also linked to obesity (Poulain et al. 2006). Within the South African context, overweight and obesity have recently gained the attention of policy makers and the South African government as it is affecting the health and well-being of millions of people (DoH, 2015). The significance of conducting regular physical exercises is well documented (Watson, 2013; Jensen, 2007; WHO, 2003; Kruger et al., 2002). Despite the numerous benefits of physical exercise, South Africa is classified as an "inactive" country (Watson et al., 2013:13). Earlier studies conducted by WHO (2003) revealed that food consumption patterns and regular physical exercises play a significant role in the fight against overweight and obesity. However, this is not the only manner in which people control their weight. This study investigated the different types of weight management practices amongst study participants. This section explores weight management practices, as understood by some of the participants, and challenges faced in that endeavour.

As mentioned above, South Africans are classified as inactive. There is a distinction between physical activity and physical exercise. Physical activity encompasses all skeletal muscle movements that result in energy expenditure (Caspersen, Powell, and Christenson, 1985). Exercise, a subset of physical activity, is regular, planned and structured. Its immediate objective is geared towards physical fitness (health or skill related attributes) (Caspersen, Powell, and Christenson, 1985). As stated earlier in the quantitative section, 54.2%, 68.1%, 69.9% and 79.9% of the respondents have never engaged in dancing, swimming, running and working out in a gym, respectively. Some of our participants said they exercise. When probed further, it seems that the understanding of exercise is not distinct from physical activities among some of the participants. Eyler et al. (1998) conducted a focus group study amongst ethnic minority women in the United States. Arguing for a more inclusive measure of physical activity and its patterns, the study highlighted that measures of physical activities taken by women (especially minority women) around the household were misinterpreted as that group did not have "leisure time".

The definition of exercise as defined by participants is not for the purposes of getting physically fit. That is, the respondents are involved in light to moderate physical activity. Our qualitative data findings affirm that people regard daily routine tasks around the house as exercise. For example, Erica, a 74 year old woman from Mitchells Plain, regards it as "*just a walk around the block".* Shariefa, a female from Mitchells Plain, also views walking to her cousin's place as exercise. How people define exercise is important for any health intervention. Asked if whether she was involved in any physical exercises an elderly female teacher in Mitchells Plain, Maryam stated that *"don't go there (giggles) l am not an exercise person, no."* On a similar note Joyce, from Khayelitsha exclaimed that *"l am very passive for exercising ... [I am] very lazy".* Joyce further stated that in Khayelitsha no one was involved in physical exercises. These findings are in line with the quantitative data analysis covered early on in this chapter, which revealed that only 35.7% of the participants exercise to manage their weight.

Safety concerns and lack of gym facilities were cited as some of the factors that inhibited physical exercise in the case study areas. In Mitchells Plain, interviewees from the low income neighbourhoods of Tafelsig and Eastridge stated that it was not safe for people to embark on outdoor exercises. There were constant warnings from the community members that these were not safe areas with a news agency classifying Eastridge and Tafelsig as "high risk" neighbourhoods (IOL, 2016). Adding on Debbie from Woodlands, remarked that *"this is a very cruel area and people are scared to go out because they gonna get robbed or*

*maybe killed"*. She further stated, "*that is why people are scared to run early mornings."* Apparently, Debbie revealed that she used to be involved in sports such as athletics and netball and she felt that if the area was safe then people would maybe get involved in outdoor physical exercises. Interviewees from Khayelitsha echoed similar sentiments stating that gangsterism inhibited outdoor exercise. The reality of crime in Khayelitsha and its impact on physical exercises was further confirmed by Joyce who stated that *"[Y]ou would say you are jogging and then next you get robbed there"*. The Western Cape Government (2015) also notes the high levels of crime in Khayelitsha. This finding tallies with an investigation conducted by Sedibe et al. (2014) which revealed that security issues and the absence of sporting centres limited female adolescents' physical activities in Soweto. This lack of physical activities may contribute to the high level of overweight and obesity. Addressing high levels of crime in Khayelitsha and Mitchells Plain, as well in South Africa as a whole, is thus crucial if we are to promote and encourage outdoor physical and recreational activities as important components of a broader weight management strategy to combat the country's overweight and obesity problem.

Apart from security issues and limited sporting facilities, some participants in both areas reiterated that at times it was difficult to control their weight because of the foods they are consuming. Ntsiki from Khayelitsha stated:

> *I also blame [the] food. Do you know that back in the day we didn't have things like spices? We ate food grown on our gardens and only used salt. I grew up that way. A part of e blames the things we use to season food. And the way food is grown and produced. Food is grown too fast and the meat! Everything is injected (with hormones) to grow fast. Do you notice that everyone is sick nowadays? It is the food we eat.*

Inferring from the above, Jensen (2007) notes that eating the right food leads to good health. However, for the participants, healthy foods were simply too expensive and beyond their financial means. As highlighted earlier on these are low income areas. For instance, the South African Census (2011) revealed that about 10.4 % of Mitchells Plain and 18.8% of Khayelitsha's population had virtually no income. Simply put, with little or no income people's food choices are limited. The quantitative survey further revealed a lack of income in the case study areas as the average income of our participants was between R2401-R3600 across both research sites. A substantial number of our participants were surviving on child support grants and other government sponsored grants.

In both case study areas, most of the participants indicated a desire to control their weight. This desire was, however, not accompanied by practical measures participants were taking. For example, in Mitchells Plain, one of the researchers asked Simone, a middle aged female participant, whether she was involved in any exercises. She remarked that:

> *I hate it with a passion. I started walking for a while and then just stopped … I just hate exercising. I just wish there is an easier way out than to exercise [laughs]. I tell myself no. I sweep here and I do everything that's enough exercise for me.*

Drawing from this excerpt one can note that some people are not involved in exercises simply because they are not interested. Lack of interest in exercises can be attributed to lack of knowledge on the potential benefits of exercises. The majority of elderly individuals interviewed argued that they were unable to undertake physical activity or exercise. Among some of the interviewees, there was a feeling that government sport and recreation policies prioritised the youth over the needs of the elderly. On top of the fear of crime, some of the elderly were not motivated to exercise individually and called for initiatives that bring groups of the elderly together to exercise. The feeling was that group exercise sessions would motivate the elderly to exercise. The implication is that a community where elderly individuals are not physically active seems to feedback to others that the existing avenues are not accommodative of elderly people.

South Africa's legacy of socio-spatial segregation has seen most township dwellers staying far from their work places. Scholars such as Bourne et al. (2002) state that people spent a lot of time travelling to and from work in townships which leaves them exhausted with little time or energy to exercise as they have to care for their children or do household chores. This lack of energy or time tends to push people into making to do with convenience or calorie dense and fatty take away foods t in Khayelitsha and Mitchells Plain.

While the majority of participants indicated that they were not involved in any exercises some participants in both Mitchells Plain and Khayelitsha remarked that they were actively involved in physical exercises. Sithembiso, from Endlovini in Khayelitsha, indicated that he was jogging "*seven days"* a week. Menzi, a male interviewee from Enkanini, also stated that *"everyday after supper l exercise"* and he proceeded to say "*there are some people who join me"*. Researchers further probed what motivated participants to exercise. Bomikazi, a female participant in Khayelitsha, stated that "*it is important because sicknesses are brought about by these fat bodies.*" Adding to what motivates participants in undertaking exercise, Richard from Mitchells Plain remarked that:

*Ehh! My friend's sister, she is very huge, that is what encourages me. I don't want to look like that. Just by seeing her, you [will] understand what I am saying. I mean, she is heavy-overweight. She can hardly move, and she is just a few years older than me. She is my age but just to see her it is enough for me to control my weight*.

Drawing from these excerpts one can see that the two participants deeply resents being overweight and obese. Various authors have indicated negative attitudes towards obese people in communities and in some cases discriminatory practices have been reported in the work place (Brownell et al., 2005; Puhl et al., 2008; Nowrouzi et al., 2015). This means that people can simply be motivated against gaining weight due to negative societal opinions of obese people.

According to the World Health Organization (2003), governments should provide proper health and social programmes to improve the health and well-being of their citizens. It is in this sense that this study investigated how the government could assist people who have difficulties managing their weight. The research showed that there were mixed and subjective responses on this issue. In both research sites, some participants felt that community members themselves had to take the responsibility for managing and controlling their weight, with a participant, Jacky, in Mitchells Plain remarking that "*if you can't help yourself, how the heck can government help you. Some people just don't care about themselves."* Bomikazi similarly stated that "*[G]overnment should not do anything; someone's weight depends on them*". For her, it was important to manage her weight and she was not interested in either gaining or losing weight. Paradoxically, whilst she was aware of the need to manage her weight she indicated that herself and her neighbours were physically inactive.

While Bomikazi and Jacky placed the responsibility of weight management on community members themselves some participants felt that government could make use of the media to relay healthy eating habits to communities. For these participants' weight management was a difficult process without paying attention to the foods that people consume. Richard stated that:

*…we have got TV there and pamphlets government should double adverts you know most people are watching TV or even they can use ads and even children are going to the internet just to make people aware of obesity and the type of food they are eating man.*

This participant highlights the role of media in promoting behavioural change in this circumstance. For Richard, healthy eating related information is crucial so that people can make informed decisions. Within this view, the World Health Organization (2003) encourages various governments to make use of the media in relaying suitable messages to promote proper diets and physical activity. However, there seem to be competing views on the use of media on weight related issues as some scholars suggest that the media seems to portray overweight and obese people in a negative light (Puhl and Heuer, 2008). The media, however, has an important role to play in conveying healthy eating habits and promoting positive weight management practises.

Some participants in both Mitchells Plain and Khayelitsha felt that ordinary citizens needed government's intervention in instituting strict price control measures. By doing that people would not have to spend a lot of money buying healthy foods. Anthony, a knowledgeable and political aware participant in Mitchells Plain, opined that:

> *They should stop allowing big corporations to set their own pricing because that's not working, that's not working. The food conglomerates especially, they are stealing from people. There's no need for them to be making such huge mark ups… food prices are out of control*.

This view was echoed by Joyce who suggested that "*they should bring down high prices"*. Drawing from these excerpts one can note that these participants felt the government could intervene on a policy level. Food prices have been rising which further constrains the ability of households to make better and healthier food choices. For them, weight management was not entirely up to an individual. Some of the people in the community are struggling to put food on the table due to lack of income and unemployment. There are other aspects that the government could address which would make it easier or less costly for people to eat healthy thus minimizing the risk of weight gain. Apart from price control measures respondents in both areas felt that government could assist in providing more affordable and accessible gym facilities as it was reported that there were none in some of the areas.

### 7.6. School Feeding Programmes, Undernutrition, Overweight and Obesity

Many countries experience a double burden of malnutrition, a situation where undernutrion coexists with overnutrition (overweight and obesity). Moreover, individuals who experienced undernutrition early in life are likely to be overweight and susceptible to non-communicable diseases (e.g. diabetes) later in their lives (WHO, 2016). Addressing undernutrition, especially among children, is thus imperative. Chronic hunger and poverty

remain crucial developmental challenges confronting many countries. In recent decades, progress has been made in reducing the prevalence of global hunger from almost 19% in 1990-1992 to 11% in 2012-2014 (FAO, IFAD, and WFP, 2014). Over the same period, hunger in developing countries was reduced substantially from 23% to 13.5%. This progress can in part be attributed to global and national commitments to realizing the Millennium Development Goal 1 (halving hunger by 2015) and the Sustainable Development Goal 2 (eradicating hunger and malnutrition by 2030) through policy interventions such as school feeding programmes or SFPs (UN, 2010; FAO, IFAD and WFP, 2014).

SFPs have featured prominently in the hunger eradication campaign over the last two decades. In 2011, approximately 26 million children were served school meals in 60 countries by WFP, with about 10.9 million from Africa (WFP, 2012). SFPs, whether in the form of in-school feeding or take-home rations, bring significant benefits to children (Bundy et al. 2009; Gelli, 2010). Besides guaranteeing children's right to food as enshrined in the International Human Rights Declaration, SFPs are part of a broader policy agenda for ensuring food and nutritional security, improving health and making an important contribution to educational outcomes (Tomlinson, 2007; Bundy et al., 2009).

SFPs have grown over the last two decades in both developed and developing countries, particularly in countries where poverty, as well as food and nutritional insecurity, are high. While SFPs were first introduced in the 1930s in the United Kingdom and United States of America (Tomlinson, 2007), research shows that 65% of the 108 low and lower-middle income countries are implementing some form of school feeding intervention today. Moreover, Jomaa et al. (2011) found that SFPs generated positive impacts on energy intake, micronutrient status, school enrolment, and attendance of children. In this regard, a study by Ahmed and del Ninno (2002 cited in Adelman et al., 2008) on take-home rations in Bangladesh found that after a year of implementation, school enrolment for participating schools had increased 35% compared to 2.5% for non-participating schools. Furthermore, Adelman et al. (2008) also found that SFPs positively affected school drop-out rates, academic achievement, and learners' cognitive development.

A lack of adequate food intake can lead to hunger and undernutrition. However, while hunger is associated with eating insufficient food, undernutrition is a consequence of a lack of micronutrients (e.g. vitamin, iron, zinc). A protracted period of undernutrition can lead to underweight or stunted children, with severe consequences for cognitive development, educational performance, and increased risk of illness (Altman, Hart and Jacobs, 2009: 350-

51; Oxfam, 2014). Thus, a providing access to food is important in generating positive educational outcomes, the nutritional quality of the food is just as essential. In this regard, McEwan's (2013) research on Chile's school feeding programme found that a narrow focus on increasing caloric intake is unlikely to positively affect educational outcomes; rather, it is likely to contribute to increased childhood obesity, thus offering a cautionary note for developing countries like South Africa where SFPs were established fairly recently.

The implementation of the National School Meal Programme (PNAE) in Brazil has resulted in significant declines in the prevalence of stunting and wasting amongst children under the age of five. In Brazil, about 45 million children benefited from the PNAE in 2012 (IPEA 2014 cited in FAO, IFAD and WFP, 2014), and Borlizzi and Cafiero argue that about a third of gains made in the decline in undernourishment in Brazil can be attributed to the PNAE (cited by FAO, IFAD and WFP, 2014). Research by Roka (2004 cited in Tomlinson, 2007) revealed that the introduction of SFP's in Malawi had a positive impact on girls' enrolment. In Ghana, the implementation of the Ghana SFP helped improve educational outcomes and school attendance, attentiveness in class, and ensured the food and nutrition security of children (Government of Ghana, 2010; Abotsi, 2013). The research has shown that SFPs are making a vital contribution towards realizing the MDGs and SDGs through its three-fold objective of improving educational outcomes, enhancing health and nutritional outcomes, and boosting employment opportunities.

### *7.6.1. School Feeding Programmes in South Africa*

The efficacy of SFPs globally led the post-apartheid government to implement a similar programme in South Africa. The Reconstruction and Development Programme (RDP) established the Primary School Nutrition Programme (PSNP) in September 1994 as one of the Presidential lead projects to address the problem of short-term hunger among primary school learners (KPMG, 2008). According to the White Paper on Reconstruction and Development (1994: 46), the Primary School Nutrition Programme was established:

> *To contribute to the improvement of education quality by enhancing primary pupils' learning capacity, school attendance, and punctuality and contribute to general health development by alleviating hunger. Educating pupils on nutrition and also improving nutritional status through micro-nutrition supplementation. Parasite eradication where indicated. To develop the nutrition component of the general education curriculum*.

The PSNP, which was managed by the Department of Health in the early years of the post-apartheid period, was later broadened to include secondary schools in poor neighbourhoods and renamed the National School Nutrition Programme (NSNP) and housed in the national Department of Basic Education. The NSNP, which supports 8.8 million students, has made an important contribution towards improving learner nutrition across all nine provinces. In addition to improving school attendance, learning capacity, and the health and nutritional status of learners (Public Service Commission, 2008: viii), the NSNP also seeks to promote food procurement from, and food production by, small farmers. Since its inception, internal and external evaluations of the NSNP have generally revealed positive outcomes for food security, school enrolment, retention, and performance, although this varies across provinces (Kallmann, 2005).

### *7.6.2. The impact of school feeding programmes*

When Joyce, a mother in Khayelitsha, was interviewed regarding the importance of school feeding programmes (SFP), she said that SFPs are very important for children from poor households, especially as *"some they go there with empty stomachs and the children's brain does not function well when hungry"*. When probed further she stated that she is often concerned about what is being served at these feeding schemes, as she is aware that people are desperate and are willing to eat any food that was provided. She was concerned about how the food was prepared and what quality of ingredients was used as many were not aware of the nutritional quality of the foods. Furthermore, she stated that regardless of her concerns, children have to eat what is available to avoid hunger.

Tomlinson (2007) states that a lack of meals, especially breakfast and lunch, results in a lack of concentration as well as a difficulty in retaining information. When children were interviewed about food intake most of them stated that they ate breakfast at the school feeding schemes. The meals provided through the NSNP thus provide poor learners with much needed nutrition that will enable them "*to focus during lessons"* as one of our interviewees, Noxolo, noted. Indeed, a study by Vailsman, Voet, Aknis and Vaklil (1996) found that the intake of breakfast alone had a positive impact on children's cognitive performance. Apart from attempting to combat short-term hunger, school feeding schemes also serve as a means of reducing absenteeism in schools. When interviewing learners, especially those from poor households, many said that they were excited to go to school, because they looked forward to the meals they received. Like the international experience, studies in South Africa show that SFPs exercised an important role in promoting school

retention rates and reducing absenteeism. For example, the Public Service Commission (2008), in a study that examined the impact of the NSNP on learners in the Eastern Cape Province found that 90% of school principals and teacher coordinators reported that absenteeism had declined (see also Tomlinson, 2007; KPMG, 2008).

### *7.6.3. Evaluation of feeding schemes*

When asked about their experience of eating in a feeding scheme most children displayed a positive attitude. For example, two Grade 6 students, Saarah and Amber, who were interviewed in Westridge, Mitchells Plain, said that the food they received from the school's feeding scheme was among their favourite foods. Aside from providing food to disadvantaged learners, feeding schemes also serve as an important avenue through which to provide balanced, nutritious diets for children. When Saarah was asked about the types of food she ate at school she listed a nutritious set of foods:

> *[T]hey used to make this beans with lots of sauce, like I said I love sauce. And they used to make this fish with the rice … carrot food with a little bit beans and … baked pumpkin squash … and they used to give you milk maybe two times or three times a week … They used to give us … apples and maybe sometimes oranges but always used to be fresh so you always get the juiciness out of the fruit.*

For children from poor households who do not have regular meals or have calorie dense but nutritionally poor foods, the SFPs – as Saarah's description above highlights – provide foods with greater nutritional diversity to ensure that they get the essential micro and macronutrients that are crucial in addressing undernutrition (which is a consequence of a lack of micronutrients such as vitamins, iron, zinc) and therefore of the problems of underweight and stunting. Lentz and Barrett (2013) note that there is a growing awareness that food assistance programmes such as SFPs need to contain a better balance of micronutrients (minerals and vitamins) and macronutrients (calories, healthy fats, and proteins), so that they can facilitate better cognitive development and hence better learning outcomes.

The curriculum at primary schools also promotes information on healthy eating habits. For example, one of our respondents, Abongile, said that the Lifeskills Class teaches students about the benefits of eating healthy foods. More specifically, she that the "*Teacher says we must eat healthy food like cabbage, samp and beans, spinach, potatoes and mixed vegetables. Those are healthy*." When probed on the benefits of eating healthy foods, Abongile recalled that the teacher said that *"You won't get fat, you will become skinny."*

While there was generally a positive outlook to SFPs, some students raised concerns. Sinazo, a learner interviewed in Khayelitsha, stated that he does not always eat from the feeding scheme, even when hungry because he did not like the way the food was prepared. When probed further, he stated that he did not enjoy the way the kitchen staff at the feeding schemes prepared the food, stating that "*When the carrots are cut into big chunks they don't taste good…it becomes too soggy."* He went on to explain that often when other students are hungry they refrain from eating from the school feeding scheme due to the way food is prepared, as well as the lack of cleanliness within their kitchen. Regarding the latter, he said that "*The problem is, they don't wash their dishes properly. They only use cold water."*

Jacky, who works at a school feeding scheme in Mitchells Plain, stated that before working for the feeding scheme, she had not anticipated that there would be so many children who attend school hungry. This worried Jacky who often asked some of the children to bring lunch boxes to give them extra food to take home. She said *"there were three children ... two brothers and a sister. Every day when they come I dish in their lunch boxes for them to take home.*" Jacky stated that there are many days that there is food left over but they are forced to throw it away. When probed further her response was the following: *"Despite being aware of breaking the rules, Jacky's conviction that food cannot be wasted while others are hungry."*

As we note from Jacky and some of the students' comments, there are problems associated with SFPs. However, these problems can be resolved. Overall, however, evaluations of the NSNP have generally revealed positive outcomes for food security, school enrolment and retention, although this varies across provinces (Kallmann, 2005; Public Service Commission, 2008; KPMG, 2008). Some students and adults raised a concern that the neediest do not have access to food over weekends and school vacations. If South Africa is to meet its commitment in attaining the UN Sustainable Development Goal 2 of eradicating hunger and malnutrition by 2030, expanding and strengthening SFPs will be important in this endeavour.

### 7.7. Conclusion

This section outlines and presents an analysis of the qualitative findings of this study. In sub-section 7.2.2, we highlighted changing dietary habits globally and in South Africa. Assessing dietary habits are important because diets with low nutritional quality can adversely affect the physical and cognitive ability of children and limit their ability to concentrate in class. Moreover, diets that are high in sugars, saturated fats, and

carbohydrates, but nutrient poor can put individuals at risk of developing non-communicable diseases such as diabetes and high blood pressure. In this section, we found that traditional diets that are high in fibre and protein rich legumes and wholegrain cereals along with fruits and vegetables have been replaced through the globalization of a highly processed fast food 'western diet' that is high in sugars, unhealthy fats and low in fibre and vegetables and fruits. As pointed out in this and the previous section, this transition to fast convenience foods, along with more sedentary life styles, has led to a rise in the number of South Africans who are overweight and obese as well as the spread of non-communicable diseases.

In sub-section 7.3, we evaluated the factors that influenced the food choices that our respondents made. We found that income, advertising, the health status of individuals, and cultural factors were among the principle factors that influenced the foods that our respondents ate. Cash-strapped families with low or no income struggle to meet their food security needs. The interviews that we conducted highlight how low incomes shape the food choices of the poor and force them to purchase cheap, highly processed calorie dense foods as well as sugary beverages and fatty foods, which are low in the micro and macronutrients that are essential for healthy lives. If South Africa is to address its growing problem of obesity and overweight, then the low-income issue will have to be addressed to ensure that the poor are able to purchase sufficient food that is nutrient rich at regular intervals. Research shows that advertising can strongly influence the food choices that people make. The findings in our study were mixed: some interviewees stated that advertising did not shape their food choices while others stated that they were influenced to purchase, but generally when supermarkets ran specials. This suggests that for low-income families advertising that promoted cheaper foods resonated with them as it allows them to 'stretch' their limited budgets. Affordability was thus a key criterion for the poor. Some of our respondents also stated that they had to buy food on credit and borrow money to purchase food. South Africa is officially food secure in that it produces sufficient food for the country, but 26% of the population still struggles to feed itself because they do not have sufficient income (Oxfam, 2014).

Many of our respondents who suffered from a health-related illness such diabetes, high blood pressure, HIV/Aids or cancer said that they changed to more healthy diets to improve their health or ensure that the condition did not worsen. This research did not investigate how effective these diets were. Further research should thus be conducted to investigate whether these health-related shifts to healthy diets has influenced other household members to choose and eat more healthy foods. Furthermore, policy makers should look into ways of

encouraging people with health-related illnesses who shifted to healthy diets to become role models for people with similar health problems but who have not been able to shift to healthy diets.

Culture can also exercise an important role in the foods that people choose to eat. Some of our respondents stated that their ethnic or religious background influenced their choice of healthy foods. However, these respondents seemed to be the exception as the majority were choosing unhealthy food because it was what they could afford.

In Section 7.4, we evaluated the self-perceived health status of our respondents. Like the quantitative findings, the qualitative research similarly found that most male and female respondents perceived themselves to have a lower BMI than actual measurement demonstrated. Our research also found gendered differences between body image satisfaction and ideal body image preference which respondents had to identify on the Figure Rating Scale which showed silhouettes ranging from thin to obese. Women showed greater dissatisfaction with their body size compared to men, who reported less difference between their actual and idealised body size. Moreover, in Khayelitsha, both men and women showed a preference for men with a larger BMI since larger body size was seen as representing wealth, status, masculinity, and good health. While women reported greater dissatisfaction with their bodies, there were mixed feelings regarding the ideal body size. Most women in Mitchells Plain preferred smaller BMI and modelled their body image expectations and food choices on mainstream media such as TV and magazines. By contrast, women in Khayelitsha tended to rely on social comparison and often used normalized body images in their communities to determine ideal body preferences. Perceptions of body image exercise an important role in shaping an individual's eating habits or food choices and weight management practices. We found that crafting body images based on the media led to greater body dissatisfaction and individuals who did so tended to select ideal body sizes that were smaller than their actual weight. In the qualitative interviews, these individuals said that they wanted to lose weight, but this desire did not translate into healthier food choices nor increased engagement in weight management practices.

In Section 7.5, we evaluated weight management practices. Eating healthy, nutritious food and engaging in regular physical activity are widely regarded as crucial in combatting the obesity and overweight epidemic; however, despite this knowledge, South Africa is regarded as an "inactive" country. Most of our respondents said that they exercise; however when probed on the types of exercise they engaged in, many said they "walked" to the shop or that

they cleaned the house. Most of our respondents in Khayelitsha and Mitchells Plain stated that high levels of crime inhibited physical activity. The South African government views increased physical activity as an important component in its *Strategy for the Prevention and Control of Obesity* (DoH, 2015). However, to realize this strategy, the government will have to address high levels of crime to create safe communities so that outdoor physical and recreational activities can become important cogs of a broader weight management strategy to combat the country's overweight and obesity problem. Most respondents also showed a strong desire to engage in physical activity to address their weight problems but said that they were 'lazy' or that they did not want to exercise by themselves. In this regard, the national Department of Sports and Recreation, along with its provincial counterparts, should promote collective or community exercise and recreational activities (e.g. fun runs, walks, yoga, pilates). Here government can work with community-based institutions such as churches and mosques, among others, to get as many of their congregants and their family members and neighbours to participate in recreational activities that are fun and, in the process, raise greater awareness of the dangers of overweight and obesity, and of the importance of healthy eating and weight management.

# CHAPTER 8: RESEARCH FINDINGS, RECOMMENDATIONS AND CONCLUSION

## 8.1. Introduction

The aim of this research was to empirically explore and quantify food choices and Body Mass Index (BMI) in relation to people's self-perceived health status and actual measurements using the 2014/2015 National Income Dynamics Study (NIDS) data in South Africa and empirical research drawn from Khayelitsha and Mitchells Plain in Cape Town South Africa. In addition, Black students in South Africa have historically, not been exposed to quantitative research methodologies/statistical packages such STATA, SPSS etc. As an integral component of this project, historically disadvantaged students have been trained and empowered to use these methodologies throughout the stages of the research process.

Within the limited scope of this study, the research identified the kinds of foods that were consumed in Khayelitsha and Mitchells Plain in South Africa; assessed the circumstances and factors determining food consumption; identified the relationship between food choices, self-perceived health status and actual BMI measurements; determined the relationship between food choices and obesity in adults and children; empowered six historically disadvantaged South African postgraduate students in quantitative research methodologies; disseminated research outputs via policy briefs, a national level symposium and facilitated evidence-based policy making for effective multi-level intervention approaches in health promotion practice across South Africa.

In spite of the difficulties encountered (e.g. time and resource constraints, "fees must fall" national student protests, availability of targeted children for interviews in selected households) over the course of the research, the team managed to achieve most of the deliverables as stipulated in the Service Level Agreement. In the sub-sections that follow, a summary of research findings and specific recommendations are presented. Finally, the section provides a brief conclusion.

## 8.2. Research findings

This research began to provide an answer to the following research questions: What kinds of food are consumed in the research area? What are the circumstances and determinants in selecting the types of foods? What is the relationship between food choices, self-perceived health status and actual measurement (Body Mass Index - BMI) scores? Is there any relationship between food choices and obesity in adults and children? The following part

provides answers to the research questions and presents the summary of the research findings.

### *8.2.1. Determinants of food choices and consumption*

A mixed bag of factors determines people's food choices: economic, social, and cultural (Lichtenstein et al., 1998; Sanchez-Villegas et al., 2003; Brehm et al., 2013). The study clearly indicated that there are a number of determinants of food choice in Khayelitsha and Mitchells Plain, namely, household income and the cost of food, accessibility and availability of food, religious and cultural influences, palatability/taste, familiarity (especially for vegetables), education/knowledge, social setting, time constraints, distance travelled to purchase food and food choices etc. The following part provides a summary of the determinants of food choices and consumption in Khayelitsha and Mitchells Plain.

#### *8.2.1.1. Affordability (the cost of food)*

The main determinants of food choices in Khayelitsha and Mitchells Plain included households' income, socio-economic status and the cost of food. In general, the empirical study in Khayelitsha and Mitchells Plain clearly indicates that healthy food tends to be more expensive and as such, most people cannot afford it. For example, low-income groups have a greater tendency to consume unbalanced diets and in particular have low intakes of fruit and vegetables. Kamphuis et al., (2015) argue that people with high socio-economic positions have better diets than those in lower socio-economic positions as the latter groups are more likely to consume diets high in fat and have lower intakes of fruits and vegetables, thus increasing their susceptibility to diet-related diseases.

#### *8.2.1.2. Accessibility and availability*

One of the important factors influencing food choice in Khayelitsha and Mitchells Plain is accessibility to shops. The most accessible shops in Khayelitsha and Mitchells Plain are the Spaza shops. They play an important role as retailers of household grocery items in the communities. Spaza shops trade items that are regularly in demand by the locals such as bread, milk, grain staples, cool-drinks, soap, cigarettes and alcohol. The study shows that the majority of Spaza shops are unregistered, informal businesses and mostly do not adhere to the municipal rules for conducting business in residential areas. Local Spaza shop owners are mainly Somali, Bangladishi, Pakistani and Ethiopian nationals. The study also shows that accessibility to nearby shops (e.g. tuck shops, grocery shops, big stores e.g. Shoprite,

Pick n Pay, Spar, etc.) is another important physical factor influencing food choice, which is dependent on resources such as transport and geographical location.

#### *8.2.1.3. Educational attainment*

The research clearly indicated that in terms of educational attainment, people with tertiary education consumed more cereals, such as mealies, maize, Bread (white bread), Pasta (Spaghetti, Macaroni, Noodles (51%) compared to people with technical education (40.6%), secondary education (46.6%) and primary education (45.8%). Interestingly, respondents with little or no education consumed less cereals (32.7%) than others that have some form of education while people with better or higher education consumed more cereals and milk compared with the lesser educated respondents with lower educational attainment who consumed more vegetables and flesh meats than those with higher education. The higher consumption of vegetables found among individuals with lower education is contrary to allusions in the literature that individuals with higher education, income and social status consume more vegetables than those with lower socio-economic status (see for example, Pollard et al., 2002; Kamphuis et al., 2015; Darmon and Drewnoski, 2008). The high consumption of meat is, however, consistent with the literature as lower socio-economic groups, according to Kamphuis et al. (2015), consume diets high in fat than individuals with higher socio-economic status.

#### *8.2.1.4. Religious beliefs*

Many individuals choose to eat or avoid certain foods in order to preserve certain religious tenets, beliefs or laws. In most religions, the observation of dietary tenets or rules such as food taboos and fasting periods is an expression of religious identity and intensity (Alonso, 2015). The types of food consumed by people vary according to different religions and cultures. For example, Muslim people in both Khayelitsha and Mitchells Plain do not eat pork. They also believe that the kinds of meat have to be killed in a certain way and kept apart from other foods when it is being prepared. Some Christians also believe that one should not eat meat on Fridays. Muslims consume more cereals (48.2%) than Christians (44.5%) and Traditionalists (40.9%). The foregoing analysis has highlighted differences in the food consumption patterns among the different religious observers. Based on dietary recall, Muslims consumed more cereals, vegetables and fruits than Christians and Traditionalists, whereas the Traditionalists' consumption of beverages, milk, flesh meat and white roots (potatoes) was higher than other religious groups.

#### *8.2.1.5. Familiarity (especially for vegetables)*

Consumption of sufficient amounts of fruits and vegetables are recommended as part of a healthy diet. Fruits and vegetables may reduce chronic diseases and more specifically, coronary heart disease. Faber et al. (2013) reported that South Africa is characterised with low intake of fruits and vegetables. For instance, 12–18% of rural and 27–44% of urban South Africans consumed fruit in 2000 (Nel and Steyn 2002, cited in Faber et al., 2013), and the overall prevalence rates of insufficient fruits and vegetables (FV) intake was at 68.5% with the mean intake of 4 servings of FV among adults which is less than the WHO recommended daily intake of 5 servings of FV (Peltzer and Phaswana-Mafuya, 2012). The research also indicates that most of the respondents regarded it as expensive additional fruit and vegetables in addition to their normal grocery basket. Findings from the present study clearly indicate that people in both Khayelitsha and Mitchells Plain do not include the recommended level of fruit and vegetables as part of a healthy diet.

#### *8.2.1.6. Distance travelled to purchase food and food choices*

From the analysis, 39% travel less than 700m to purchase cereals, 51% travel between 701m and 2100m, and 11% travel above 2100m. In addition, 47.8%, 42.1% and 40.7%, respectively, travel less than 700m for the purchase of white roots, milk and milk products, as well as sugar. On the other hand, more than two-thirds of respondents travel less than 700m to purchase beans and peanut butter (66.7%) and candies or sweets (75%). The high percentage obtained in the latter item can be explained by the fact that people tend to purchase sweets or candies in smaller shops closer to home and the fact that the items are readily available and accessible in those shops.

### *8.2.2. Eating habits in Khayelitsha and Mitchells Plain*

#### *8.2.2.1. Fried food (potato chips) and availability of energy-dense foods and drinks*

The empirical study clearly indicates that about 67.40% and 43% of respondents consumed fried foods more than once a week at home and outside the home, respectively. High energy density of foods/drinks (MJ/kg) is the key influence on daily energy intake (Cahill et al., 2014; Peltzer and Phaswana-Mafuya, 2012). Due to availability, accessibility, affordability and acceptability most of the people in Khayelitsha and Mitchells Plain take many energy-dense foods (MJ/kg). Potato chips, sweets, Coca-Cola products, fast foods, snacks, etc. are examples of energy-dense foods and drinks. The survey further indicates that 35.9% and 46.6% of the households do not remove visible fat from meat and chicken skin, respectively.

#### *8.2.2.2. Consumption of visible fat*

The study revealed that 19.8% of respondents in Mitchells Plain do not remove visible fat in meat before eating, while that of Khayelitsha stands at 58%. Similarly, results of the analysis for the chicken skin removal indicates that 30.8% of Mitchells Plain respondents do not remove chicken skin before eating, and an astoundingly high 68.3% of Khayelitsha respondents do not remove chicken skin before eating. Evidently, the majority of households do not see the removal of visible fat from meat and chicken skin as necessary, as they do not remove the visible fat and skins before eating meat and chicken, respectively. The proportion of those who never removed visible fat from meat and skin from chicken is higher. In general, Schonfeldt et al. (2013) argue that excessive consumption of fried foods causes more harm than good to the human body as they are sources of unneeded fats and calories. Studies on dietary choices leading to obesity have focused overwhelmingly on the sugar and fat content of snacks, fast foods, beverages, and confectionery.

### *8.2.3. Physical activities and weight management practices*

#### *8.2.3.1. Frequency of physical activities*

The importance of physical activity to health and wellness cannot be understated. Physical inactivity is the fourth leading risk factor for global mortality and the persistently rising levels of physical inactivity globally have dire implications for global health (WHO, 2010). Physical activity can reduce the risk of cardiovascular diseases, diabetes, breast cancer and is a major determinant of energy expenditure, thus exerting influence on energy balance and weight control (Miles, 2007; WHO, 2010). An examination of the presence of physical activities in Khayelitsha and Mitchells Plain indicates that shopping is the major physical activity of households with 82.6% of households involved. This is expected as shopping is not an exclusive preserve of some particular set of households but is practiced by nearly all households due to the onus to meet basic needs. However, engagement in other beneficial physical activities is low, as 54.2%, 68.1%, 69.9% and 79.9% of respondents have never engaged in dancing, swimming, running and working out in a gym respectively. Following the categorisation of intensity of physical activities in the literature (see for example, Miles, 2007), it is inferable that the majority of respondents are involved in light to moderate level physical activities. The foregoing portends a dire situation as households do not actively and consciously engage in weight management practices.

#### *8.2.3.2. Influence of TV on the choices of food*

The influence of TV on the choices of food consumed by households and on the management of their weight was also examined. TV watching is a passive and sedentary activity which is often accompanied with snacking and drinking. It has been associated with mindless eating and evidence abounds in the literature of the significant positive relationship between hours of TV viewed and obesity in children and adolescents (Boulos et al., 2012). Excessive TV watching can thus lead to weight gain, especially when it is combined with late-night eating. Respondents were asked if they spent most of their leisure time watching TV, and the majority (60.8%) answered in the affirmative. While 38.7% of respondents strongly agreed that they spent most of their leisure time watching TV, 22% agreed to the notion, and 30.1% either disagreed or strongly disagreed that most of their leisure time was spent watching TV. In relation to the issue of whether or not TV adverts influenced household food choices, opinions were nearly evenly divided among respondents. About 43.9% of total respondents agreed that their food choices were influenced by TV adverts while 43.2% gave a divergent opinion. Nevertheless, it is arguable that TV plays an influential role not only on sampled households' weight management practices, but also on their eating habits and food choices.

### *8.2.4. Prevalence of overweight and obesity in adults*

More than 54% of the population sampled was overweight and obese. About 45.84% on average form those who were either underweight or normal weight. The results portray a strong indication of the risk of an increase in overweight and obesity in urban areas. On average, the study found that 20.62% of respondents were overweight, 14.84 were in their first stage of obesity, 10.05% were in stage two obesity and 8.64% were in stage-three obesity. The difference between the two areas was not significant to conclude that one area was more susceptible to obesity than the other. This is justifiable in that, looking at the household characteristics and the social economic dynamism of the population of the two areas, and despite their racial differences, lifestyle and food choices were the same for the two areas.

### *8.2.5. Prevalence of overweight and obesity in children 5-11 years*

Scholars (Armstrong, et al., 2006; Coovadia, et. al 2009; Kimani-Murage, et al., 2010; Kruger et al., 2005) indicate that the number of overweight and obese children in South Africa is dramatically increasing. According to them, the main causes of obesity in children

include unhealthy food choices, lack of physical activity and family eating habits (Armstrong, et al., 2006; Kimani-Murage, et al., 2010).

The prevalence of overweight pre-school aged children is increasing fastest in Khayelitsha and Mitchells Plain in South Africa. The study clearly indicates that an estimated 6.3% of children between the ages of 5-11 years were overweight. From the above result, it can be deduced that overweight and obesity is gradually permeating South African children. About 35.48% of children in Khayelitsha were overweight compared to Mitchells Plain (25%). In total, about 30% of the sampled children population were overweight. Cumulatively it can be said that child obesity is gaining grounds and needs urgent attention. The research also shows a relationship between perception and actual body sizes. According to the result, there is a high probability that children in Khayelitsha and Mitchells Plain are likely to become obese given that more than 65% of the population of children that were measured were either overweight or obese.

### 8.3. Recommendations

Evidence suggests that the promotion of healthy diets and physical activity, are key to attaining the overweight and obesity targets (Bourne et al., 2002; Collaboration, 2007; Haskell, et. al., 2007; Joubert, et. al., 2007). In this regard, cost-effective policies and interventions for reducing the prevalence of overweight and obesity in South Africa become imperative. Thus, based on the above findings, the following recommendations are proffered. These recommendations draw on policies and individual-based interventions that have worked elsewhere.

- ***Affordability (the cost of food)***: Price is often reported as a barrier to the purchase and consumption of healthy foods. ***Hence, it is recommended that*** strategies that increase incentives for purchasing healthier food options be pursued.

- ***Physical activity***: Consumer awareness of physical activity can be achieved through sustained media and educational campaigns aimed at increasing the consumption of healthy foods, or reducing the consumption of less healthy ones. These campaigns have greater impact and are more cost-effective when used within multi-component strategies. To maintain a healthy weight, there must be a balance between energy consumed (through diet) and energy expended (through physical activity). In addition, a settings-based approach reaches families and communities where they live, work and play. ***Hence, it is recommended that*** physical activity initiatives

should be launched at different levels (national, provincial, municipal, district, etc). These should also include settings such as schools, universities, workplaces, communities, and health-care and religious centres, which should be used in preventing and controlling overweight and obesity.

- ***Consumption of fruits and vegetables***: Findings from this study have validated the general assertion that South Africans have diets that are low in fruits and vegetables but high in fat and sugar. Reversing this phenomenon would require a mix of policy actions at different levels and for different groups. First, there will be the need to promote the consumption of fruits and vegetables nation-wide through various media outlets especially the television, radio as well as the print media. To make this national drive accessible to all South Africans, active involvement of various civil society organizations particularly community-based organisations like schools, religious institutions, and NGOs would be crucial. Second, there is the need for government to increase support for the production of fruits and vegetables especially for home gardens in urban areas. This effort will help increase peoples access, especially low income families, to fresh fruits and vegetables. Third, it is recommended that government, with support from the private sector and NGOs, roll-out food voucher interventions that may directly promote the consumption of fruits and vegetables. This may be implemented in a way that targets specific low income groupings as well as marginalised persons. In addition, the school system could be an important entry point for improving fruits and vegetable consumption amongst children and young adults. The promotion of school gardens, for example, could make a significant difference. Aside from contributing to the provision of better and diverse school meals, school gardens can also inculcate in children positive attitudes towards the consumption of more fresh foods as well as alter their outlook for farming.

- ***The increase of taxes to reduce unhealthy food consumption***: Taxation schemes that produce large changes in price can change purchasing habits and are likely to improve health. It is recommended that the rationale behind South African Government's sin taxes (e.g cigarettes) and the recent sugar tax be extended to reduce the consumption of foods high in sugars.

- ***Promoting schools' initiative***: The school is an important setting for promoting healthy diets and physical activity. A "whole of school" approach focused on

improving both diet and physical activity (including the provision of a healthy food option in school cafeterias, a supportive environment for physical activity, and specialised educational curricula) can be very effective in improving dietary patterns both inside and outside the school. ***Hence, it is recommended that*** the provision of fresh fruit and vegetables to students at school be supported. At the school level, all of these efforts cannot be achieved independently of the National School Nutrition Programme and the Integrated School Heath Policy. A well-coordinated approach that leverages on existing interventions and strategies is crucial.

- ***Nutrition education and social marketing campaigns***: Measures can be even more effective in changing consumer behaviour and consumption patterns. ***Hence, it is recommended that*** education and social marketing campaigns should focus on impacting dietary and physical activity behaviour in both children and adults.

- ***Further research:*** Research to generate evidence on the effectiveness of individual and population-wide interventions to prevent and control overweight and obesity is important going forward. ***Hence, it is recommended that*** further research should be undertaken in exploring and quantifying food choices and Body Mass Index (BMI) in the context of other provinces in South Africa.

### 8.4. Proposed policy options that influence the prevalence of overweight and obesity

While a wide range of policy options that influence the prevalence of overweight and obesity exist, this research proposes practical interventions within the context of South Africa:

- ***Policy implementation on the regulation and marketing of foods and beverages***: An important step towards addressing the problem of obesity and overweight within the Western Cape Province and at the national level is the adoption of regulative measures especially in the area of advertisement. As this study and others have pointed out, strong evidence exists on the links between television advertising to children's food knowledge, preferences, purchase requests and consumption patterns. There is the need for the initiation and enforcement of policy actions that will regulate excesses from these food advertisements.

- ***Policy on fruit and vegetable initiatives in schools:*** As pointed out, an important conduit for engendering fruits and vegetables consumption among children is the

schools. Already, the National School Nutrition Programme menus adopted across the across encourage the use of vegetables. This should be promoted further including the use of leafy vegetables which tend to be abundant in some provinces.

- ***Policy on physical activities in the school and community***: For children, physical activity includes play, games, sports, transportation, recreation, physical education, or planned exercise, in the context of family, school and community activities. More policy efforts are needed in this regard.

- ***Policy on social marketing and campaigns***: Social marketing campaigns use paid and non-paid forms of media, across multiple channels, to increase knowledge and change attitudes towards diet and physical activity. These campaigns often run parallel with community-based activities and can serve to complement them.

### 8.5. Conclusion

Mass Index (BMI) in relation to people's self-perceived health status and actual measurements using the 2013 National Income Dynamics Study (NIDS) survey in South Africa and empirical research drawn from communities in Khayelitsha and Mitchells Plain in South Africa. As discussed in this report, to prevent obesity, the multi-sectoral population-based action is required, focusing on prenatal, infancy and childhood health actions targeting the most vulnerable groups. The Ministry of Health should take a leadership role and engage with relevant government sectors and civil society organizations and the private sector in a national multi-sectoral action plan. Policies should simultaneously address different sectors that contribute to the production, distribution and marketing of food, while concurrently shaping an environment that facilitates and promotes physical activity.

For the management of obesity, low-energy diets are effective in the short term, but reducing inactivity, increasing walking, and developing an activity programme can increase the effectiveness of obesity therapy. Treating associated health risks and established complications is important. In addition, there needs to be a strengthening of health systems to address obesity and diabetes as clinical entities through primary health-care services for early detection and management. Regular monitoring of the prevalence of obesity and diabetes should be instituted as part of routine surveillance. By implication, government ought to be adequately prepared in terms of responding to the future situation.

Furthermore, the context of this study should be seen as the emerging discourse around exploring and quantifying food choices and Body Mass Index (BMI). Overall, it is envisaged that government and other stakeholders, both at the national and Western Cape Provincial level, will prioritise the policy recommendations outlined in this study by implementing the right mix of policies and programmes aimed at addressing the growing challenge of overweight and obesity and its attendant health risks in South Africa.

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**Annexure**

**Annexure-1: National Symposium: Food Choice and Obesity in South Africa**


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# National Symposium: Food Choice and Obesity in South Africa.

**19 January 2017, Protea Hotel Tyger Valley**

**Organised by**

**Institute for Social Development, University of the Western Cape**

**&**

**DST-NRF Center of Excellence in Food Security**

## Table of contents

## 1. Executive summary

The National Symposium on Food Choice and Obesity in South Africa aimed to bring together leading academic scientists, scholars, researchers, postgraduate students, government departments and other participants to exchange and share their experiences and research results on all aspects of obesity. The Symposium provided an interdisciplinary platform for participants to critically discuss the current situation and challenges related to food choices and obesity.

The Rector and Vice-Chancellor of the University of the Western Cape, Prof Tyrone Pretorius, pointed out that the challenges of food security and diet are not just a research phenomenon but that it was a reality at many campuses around the country. He said many students come from poor households who struggle with hunger, malnutrition and food shortages. While many students get assistance through access to financial aid, the reality is that many do not.

In her keynote speech, the Minister of Health for the Provincial Government of the Western Cape, Nomafrench Mbombo, highlighted the fact that South Africa was considered food secure at the national level. However, agricultural production was at inadequate levels when compared with countries of similar development.

During Session 1, Dr Mulugeta Dinbabo outlined the 'Food choice and obesity in South Africa' research project, which was conducted in partnership with a number of academic research institutions. He said obesity was growing at an alarming rate, globally, on the African continent and in South Africa, with a significant impact on individuals, society, health and the economy.

In Session 2, Dr Dinbabo presented the quantitative findings from two case study areas, and the National Income Dynamics Survey (NIDS). Mr Michael Nguatem then presented the qualitative findings from the two study areas, at the conclusion of which the floor was opened for discussion. Much of the discussion centred around the proposed tax on sugar-based foods and beverages and what constituted junk and healthy foods.

Session 3 focused on three presentations, followed by discussion. Prof Thandi Puoane made the point that limited choice options can sometimes be construed as there being no food choice options at all. Dr Coretta Jona gave a geospatial analysis of food consumption patterns in South Africa, while Prof David Sanders presented the findings of the study, 'Policy-relevant research on obesity in South Africa'.

Discussion centred around, among others, people's ability to make better food choices, the need for advocacy and awareness raising, and issues around the imports of international food stuffs that may be detrimental to public health, such as the recent import from the United States of cheap chicken and the African Growth and Opportunity Act (AGOA), which eases trade between the two countries.

### Recommendations

During the final session, participants broke away into groups to brainstorm suggestions for possible policy solutions to the various problems associated with poor nutrition and obesity. Allowing for duplication, altogether 31 suggestions have been grouped into six themes. These

are regulatory interventions; subsidies and taxes; schools and ECDs; food production; awareness; and community. Schools and ECDs, regulatory interventions and subsidies and taxes were the themes that gave rise most recommendations.

In the following section the report provides (a) an official welcome and keynote speech (b) an introduction of the project; (c) presentation on the project findings; (d) presentation on similar/related research in South Africa; (e) discussion on policy issues and group discussion/feedback. Finally, conclusions and next steps are provided.

## 2 Official welcome, key note speech and introduction

### 2.1. Welcome speech,

### by Prof Tyrone Pretorius, Uwc Rector and Vice-Chancellor

We are living in troubled yet exciting times, especially in South Africa, where these are times of opportunity. While we are grappling with new concepts of universities, and the traditional concept of the university is constantly being challenged, one role that is not in dispute is that of the university's societal mandate to bring research and academic skills sets to the challenges of our time, such as climate change, poverty, nutrition and obesity. UWC is structurally well-placed and organised to respond to these challenges. At UWC, we have fully embraced an interdisciplinary approach and our approach to the challenges of food and nutrition security is testament to this.

Our approach is innovative, and the university now hosts Africa's largest distance learning programme in public health. The School of Public Health is one of the few public health programmes with a specialist stream in public health. The Institute of Food and Agrarian Studies (PLAAS) has established itself as a unit with international standing, one whose research is influential in shaping national and continental policy. I'm sharing this with you to indicate how, in various departments and units, we grapple with the issues of food security, nutrition and public health.

Such developments don't happen in isolation; they are part of a broader narrative of a university that has been hard at work over the last few years to enhance its capacity as a research-led institution. And we are recognised for the quality of the work that we do. Typically at this point, in stressing the quality of the work we do, I would bore my audience with a long list of accolades that the university has accumulated over the last few years, and it is indeed a long list, but I generally reserve it for graduation ceremonies, so I will spare you that list today. Instead, let me simply indicate that there is enough empirical evidence attesting to remarkable development and growth at UWC. We are a university that is continuously pushing at frontiers of knowledge and science. We are a university that continues to produce excellent-quality research and inspire our staff and students to promote excellence.

As I conclude, let me point out that the challenges of food security and diet, of malnutrition and hunger management are not just a research phenomenon, it is not just a phenomenon afflicting distant communities. At the University of the Western Cape, and at many campuses around the country, this is a reality. Many of our students come from poor households who struggle hunger, malnutrition and food shortages. While many students get assistance through access to financial aid, the reality is that many do not. And the problem of food security is very acute during this time of registration. Therefore, we make it our duty as a caring

institution to try to find ways to attend to the plight of hungry students. We, as a university, continue to support students in need in a variety of ways.

Finally, I wish to express the hope that this symposium will provide you, the participants, an appropriate platform for sharing new knowledge and practice, to express knowledge and insights and, in so doing, enhance our collective efforts to promote healthy lifestyles. I wish you all the best in your deliberations for this day. Thank you very much.

**2.2. Keynote speech, by Nomafrench Mbombo**

**Minister of Health for the Provincial Government of the Western Cape**

Director and Vice-Chancellor, Prof Tyrone Pretorius, Director of the DST-NRF Centre of Excellence in Food Security, Prof Julian May, Principal Researcher Dr Mulugeta Dinbabo, Prof Rina Swart, Prof Thandi Puoane, Chief Director of the National Department of Health, who was instrumental in coming up with a national obesity strategy, I was tasked to talk about policy around nutrition and diets at the national level. When I asked for material to inform my talk, I received a whole lot of academic stuff, to which I responded that people are not only interested in policy but rather in the implementation of knowledge.

Firstly I would like to highlight that South Africa is considered food secure at the national level. However, our agricultural production is at inadequate levels when compared with countries of similar development. It is acknowledged that food security is regarded a human right under the South African Constitution in terms of Section 27 of the Bill of Rights.

The Western Cape has developed a draft strategy framework, guided by research, and I wish to acknowledge some of those who contributed to the draft, among them Prof Julian May, Sibonile Khoza, Tristan Görgens, Shakira Maharaj, Darryn Durno and many others. The Western Cape Cabinet approved this framework in September 2016. Previously we were working in silos, so the research that came from the Centre, and also from some of the other contributions, resulted in this draft strategy, which is now in the process of being implemented. We are approaching the task in a holistic manner, and on the transfer side, we are working with all departments. Social Development works around getting food to the table, while Agriculture concentrates on food production.

As I have indicated, the Western Cape Government Strategic Framework for Household Food and Nutrition Security was approved in September 2016 and now it's sitting in the Premier's policy unit, which currently deals with strategic programmes.

I would like to take you through some of the measures we are taking to address issues of food security in the province. As I have indicated, we don't work in silos. We work closely together. Each department is represented as we go through the consultative process with the departments of health, social development, finance, environment and so on. A task team has been appointed to engage in one-on-one consultations specifically with those who will be directly involved in dealing with issues of food insecurity.

We have to be responsive to those who are vulnerable to good insecurity, such as women, children, the poor, and female-headed households. In the food system, we have to make a point of securing people's access to food. In terms of food production, the Western Cape accounts for 23% of the national agricultural output. Challenges such as climate change, fire, resource constraints, water, drought, logistics, transport, distance from and access to markets

all have an impact on food security. However, in line with the Sustainable Development Goals, we do have a responsibility to promote nutrition and reduce hunger and malnutrition.

The Strategic Framework is built on six pillars, namely food assistance, food awareness and safety, food-sensitive planning, food resource management for the future, food-inclusive economy, and food governance. At the risk of boring you, I'd like to highlight some of the programmes or interventions that have already been implemented.

The Integrated Nutrition Programme consists of three aspects, the first beginning in 2008 under the Department of Health, and focusing on children from conception to two years of age. Studies have shown that good nutrition in these early years contribute greatly toward fighting off non-communicable diseases. Among other issues, this programme champions breastfeeding and concentrates on breastfeeding policies. In this regard, the Western Cape has played a role in motivating the national department to reinforce the importance of breastfeeding. In partnership with the Department of Social Development, the Department of Health has applied itself to improving access to food for some children who had previously not had access. The second aspect of the programme is the stimulation of the child, and the third the child's lifestyle. Sometimes, even when there is food in the house, children are being neglected and not getting fed.

The Western Cape on Wellness (WOW) programme focuses on youth at schools, communities and other groupings, the ultimate goal being the prevention of non-communicable diseases, including obesity. When I go to Khayelitsha and meet with community workers, I always ask them that whatever they do to carry the message of good nutrition to their communities to prevent NCDs. We work closely with partners such as WOW and colleagues from two universities to track people participating in the programmes. We also work with the Department of Sport to make exercise part of the curriculum, and we want to see and track data on the benefits of physical education at schools. We involve community members from clubs and churches to do this tracking. At schools, physical educators help us do this.

We are also engaged in public spaces. Every Tuesday at Cape Town station, we provide free physical activities for senior citizens, and this is also where they are given free information and guidance around food and nutrition.

School feeding programmes are our third area of focus. As part of the national programme across South Africa, every child receives lunch. However, in the Western Cape, we add two further meals, so every child gets three meals a day, breakfast, as part of the Western Cape Department of Education school feeding scheme, lunch, as part of the national grant, and afternoon, through the Department of Culture and Sport, where kids stay behind to participate in activities related to sport and to attend supervised homework. The overall aim of the afternoon programme was to protect children from gangsterism and crime, since kids tend to roam the streets after school, and parents arrive home only very late in the afternoon. Through intersectoral collaboration with municipalities, we are trying to come up with by-laws related to food security and food production.

I would like to congratulate you on this symposium and we look forward to working with you going forward.

## 2.3. Introduction to the project

By Dr Mulugeta Dinbabo (Principal Investigator of the Project)

A number of academic research institutions, including the University of the Western Cape, University of Missouri, Human Sciences Research Council, the University of Cape Town, Research ICT Africa Network, postgraduate students and community have participated in this project. The research team would also like to acknowledge our partners, the Programme to Support Pro-poor Policy Development, the Department of Science and Technology National Research Foundation Centre of Excellence in Food Security, the Department of Planning, Monitoring and Evaluation.

The specific objectives of this project were to identify the kinds of food that are consumed; measure the relationship between food choices & body mass index (BMI); empower selected students in empirical research; facilitate national/international dialogue & ensure EBP, and disseminate research outputs and policy briefs.

The researchers started this long journey by posing these specific research questions:

- What kinds of food are consumed?
- What are the circumstances and determinants in selecting the types of foods?
- What is the relationship between food choices, self-perceived health status and actual measurement (BMI) scores?
- Is there any relationship between food choices and obesity in adults and children

They identified two communities in which to conduct this empirical study, namely Khayelitsha and Mitchells Plain.

Dr Dinabao pointed out that Khayelitsha was a township was built on the principle of racial segregation. It is the second biggest black township in South Africa after Soweto with a population of 391,749 (as of 2011). Of the residents, 85% were born in the Eastern Cape. Approximately 90.5% of the residents are black Africans, 8.5% are Coloured and 0.5% white.

The residents of Mitchells Plain are largely Coloured, and it was conceived of as a 'model township' by the Apartheid government. The 2011 census placed the population at an estimated 290,000 to 305,000 residents, consisting of 90% Coloured, 7.32% black African, 0.62% Indian/Asian, and 0.19% white.

In terms of housing, both case study areas have informal structures as well formal (RDP) housing. The research team members employed a mixed methodology, i.e. quantitative data was collected by way of self-administered questionnaires (K&M), and using the National Income Dynamic Study (2014), Qualitative data was collected by semi-structured individual interviews, focus group discussions, and observation and data analysis was performed, analysing quantitative data by way of STATA, and qualitative data by categorising the data and organising the information into themes and subthemes. They visited 1,051 households and interviewed 4,300 respondents, 57% female and 43% male. The sampling techniques used were random sampling, simple random sampling and non-random sampling.

He said the survey methodology consisted of five steps:

**Step 1** The national census sample frame was split into enumeration areas (EAs) from Khayelitsha and enumeration areas from Mitchells Plain.

**Step 2** EAs were sampled for each stratum, using probability proportional to size (PPS).

**Step 3** A listing was compiled for each EA. These listings served as sample frames for the simple random selections of households.

**Step 4** Twenty-four households were sampled using simple random sampling for each selected EA.

**Step 5** All household members who were 15 years or older were interviewed.

Dr Dinbabo said one of the interesting aspects of this study was the community-based fieldwork. Unemployed matriculants, community members and university graduates were hired to conduct the surveys. The team didn't commission consultants or private companies to do the work. Instead they turned to local resources. The field teams were selected taking gender, language, religious and other cultural factors into account. Using community members for the survey provided local knowledge, decreased several survey risks, increased local ownership and provided skills to the community. Survey management and quality control were done by selected postgraduate students from the Institute for Social Development and senior researchers working on the project.

The research team consulted a number of sample questionnaires before drawing up their own, and they also reviewed a number of data collection instruments before developing our own.

When energy expenditure exceeds energy intake, a lack of proper nutrition results because of not having enough to eat. True starvation results in a disease known as Marasmus, which is characterised by a very thin, skeletal appearance, papery skin, weakness and misery. When energy intake exceeds energy expenditure, health and weight problems result because of excessive intake.

Obesity is growing at an alarming rate, globally, on the African continent and in South Africa, with a significant impact on individuals, society, health and the economy. They physical effects of obesity are numerous, among them, the risk of stroke, disease of the respiratory, gall bladder and cardiovascular, diabetes, hormonal abnormalities and cancer.

A number of research studies have been carried out globally, notably in Europe, America and Australia, calculating the costs of obesity. Direct costs include health services expenditure, drug prescription charges, hospital costs, and costs associated with death. Indirect costs include disability, unemployment and early retirement, sick days, loss of self-esteem, relationships and pain.

**Facts about obesity (WHO global estimates)**

Globally, the World Health Organisation (WHO, 2016) estimates that obesity has more than doubled since 1980. In 2014, more than 1.9 billion adults were overweight and, of these, more than 600 million were obese. During the same time, 41 million children under the age of five were overweight or obese. The cost of obesity in the US alone runs to $117 billion, an increase of more than 17% during the period 1996 to 2004.

South Africa is not immune to the global challenge of obesity, having the highest overweight and obesity rate in Sub-Saharan Africa. The Medical Research Council places the country's overweight rate at 61% (2011). In 2009, obesity among adults in South Africa was 27.4% (OECD, 2012:6). Unless urgent steps are taken to address this crisis, obesity is set to rise steadily.

**Project outputs and results**

The project was designed with four outputs in mind, the first being the formulation of a research framework. The second output was to publish at least four peer-reviewed journal articles and to write some evidence-based policy briefs, to be submitted to policymakers. The third output was to empower historically disadvantaged South African students by training them in quantitative research methodologies such as STATA and SPSS. The fourth output was to promote international and national dialogue by ways of symposiums, conferences and workshops across the South Africa, and to disseminate materials and outcomes resulting from these events among stakeholders.

**Study limitations and challenges**

Some factors proved challenging and to some extent limited the project, chief among these the student protests at UWC during 2016, as the #FeesMustFall movement gained traction. Also, because of time and resource constraints, the team employed a once-off 24-hour recall dietary assessment method, instead of a multiple 24-hour dietary recall. The availability of target children for interviews in selected households (five to 11 years old) was a further challenge, as was interviewers' (justifiable) fears of crime such as hijacking, gangsterism, rape and robbery.

**Research findings**

Despite challenges and limitations, and within the limited scope of the study, the research nonetheless identified the kinds of food that was consumed, assessed factors determining food consumption, identified the relationship between food choices and BMI, and measured the relationship between food choices and obesity in adults and children.

## 3. Session I: Food Choice and Obesity in SA

### 3.1 Quantitative findings from Khayelitsha and Mitchells plain

Please see the presentation attached.

### 3.2 National Income Dynamics Survey (NIDS)

Please see the presentation attached.

### 3.3 Qualitative findings from Khayelitsha and Mitchells Plain

Please see the presentation attached.

## 3.4 Discussion

*In light of the proposed tax on foods that contain sugar and salt, how is caffeine regarded?*

Some of the literature addresses the relationship between caffeine and obesity. On the other hand, other scholars argue about the importance of caffeine, so it is difficult to make a clear demarcation with regard to caffeine. Countries' experience varies and different arguments exist, so no clear black and white demarcation exists on this issue. A while back, a detailed methodology workshop was attended by number of scholars and experts in the field to consider clearer demarcation for this issue. The workshop identified clear research questions for post-graduate students. This is an important research question for masters and PhD students in the research project to investigate.

*In the households interviewed, who was responsible for procuring food for the families?*

Although not presented, most of the households reported that they collectively went to the shop, with household heads who were responsible for the income paying for the food.

*What shape did your food and vegetable initiative take? A body of research has shown that if there is education around nutrition choices, if there is education along with working in food gardens, this immensely improves food choices.*

Some famillies had home gardens. In Khayelitsha, for both backyarders and frontyarders, there is virtually no space, although vertical gardening is something the team looked into. There's interest in growing their own food, but access to land is a problem, although some people can produce some of their own food. Government gives grants, which is good and people need them, but they don't give food grants, which should be considered. Brazilians pay a set price for a kilogram of fruit or vegetables. These were heavily subsidised by the Brazilian government. Fruit and vegetables were sourced from small-scale farmers in surrounding peri-urban areas. This is something that should be looked into.

*How do people know what is junk food and what is not?*

In making a distinction between what is junk food and what is not, people couldn't always tell. For example, if it's cheaper-quality meat, there's a danger that the fat quality will be higher, especially with offall.

However, some internal organs are healthy, so people must be careful in labelling junk food when some internal organs are very healthy food items. One study on the status of children in the Northern Cape showed that the one critical food item that made the difference in ensuring that these children had the best Vitamin A status in the country was the consumption of liver, an internal organ that is cheaply available. One wouldn't want to discourage some of those practices.

*When people make proposals on taxing bad foods, one really wants people to substitute away from those. But economists will tell you there's always an income effect. If people are hooked into sugary foods, tobacco, and you tax that, you need to think about how to implement policies, so that you don't redistribute money away from those people to other purposes, further impoverishing them. That is something you want to measure in your data. Can your data tell us how big such substitution effects are? And when you look at those budgets, how*

*much are people spending on alcohol and tobacco? That will also affect how much money is left for food. It is widely known that there are programmes to get people get hooked early on, for example tobacco. What impact does that have on nutrition?*

Question regarding money spent on alcohol and tobacco is an important research question, and one the researchers will have to look at.

*Growing up in Soweto, I noticed a difference between knowledge, attitude and behaviour. Some people say, "I'm an African, therefore I can't be thin", and that affects their food choices. In future methodology, it may be useful to consider observing behaviour for a month. A researcher may see no money for food, when in fact that money would arrive in the evening when the breadwinner comes home. These factors should be taken into account. Today, there's a proliferation of fast food outlets in the townships. And what about frozen food? Are these an option, or are there no freezers? People can make excuses, such as it taking money and time to go to the shop and cook. It comes down to attitude to change behaviour, and people need to work on their attitudes and knowledge to change behaviours.*

This is a crucial question and have a very aggressive campaign is needed to create awareness at the grassroots level. There are specific braai areas in Khayelitsha where people from all walks of life go on weekends, and even for the higher-income earners awareness creation is very important if you want to change behaviour. The implementation modality should be community based. This symposium represents colleagues from all over, from Khayelitsha, from Mitchells Plain, research participants, which is a starting point to working closely with communities at the grassroots and community levels. Once communities are involved, next steps can be taken. So awareness creation is very important, and discussion is needed about what kind of strategies can be followed to create awareness at community level.

*In segregating food groups, the grains category is very high, and although bread is part of grains you have categorised it separately. Were you able to to distinguish between bread and grain consumption? And were you able to determine fruit consumption in the households?*

The frequency of eating vegetables and fruit was very low. Looking at percentages, which the team got when they developed the model of food types, the researchers were able to measure the percentage of each of these food types and it became clear that vegetables were very low in consumption over the 24-hour recall period. Bread and grains were separated (*see 4.4 below*).

*Two smoking guns have come up about the quality of the research. The one was the implication that people knowingly bought food that they suspected might be hazardous, and that they relied on smelling the food to test whether they could eat it or not. Have you got any data on this? It's not just that people consume unhealthy food because unhealthy food is often cheaper, but it is not necessarily safe. The other smoking gun was the assertion that some medications caused people to gain weight, and the indication was that this might be diabetes medication, but what about ARV treatment? Research published last month reported quite high levels of weight gain on ARVs. Do you know any more about this and should it be looked at?*

One person reported losing weight on ARVs, although she was not very happy about it. She said she walked all the time, about four or five times a day, to the mall, library and church. In this instance, it could be that physical activity was helping to keep her weight down. In other cases, people felt that medication did affect their weight, so the experience may be different.

As to the comment about people buying food that may be hazardous, this is correct, it is imported to be aware of how data is presented and interpreted.

*Comment from the floor:* It is very complex because there are people who make choices within limited resources. There are also industry people who play into the psychology of poverty, which makes it easy for poor people to access unhealthy food. Much as it is important to advocate for healthier options to be cheaper, industry people are always ahead of the game, trying to package unhealthy food to make this accessible to the poor. Once, on a TV programme, KFC explained how they packaged their meals so that even children could afford them. A bigger advocacy approach is needed to try and address this, so people can be made aware of how industry is playing with our minds. There are schools where KFC is next to the school gate. More choices are needed so that the choice issue is not only a poverty issue.

*Could you comment on the potential limitations around the 24-hour recall period. Factors such as time of year, fasting, time of day, all have an impact.*

Field workers had many challenges. They went out on a daily basis, so every day of the week was involved. They had to establish what foods were eaten on a given day and establish lifestyles and food choices based on that information. The team will still do further in-depth analysis to establish whether the day of the week or the time of day related to specific eating habits.

*What are the distances people travel to shops? For example, do they walk 700m to a spaza shop to buy their everyday food? And what foods and fresh produce are available from distribution centres as opposed to what is available at spazas? These questions have a lot to do with ease of access and choice. Is this something to be considered for inclusion in policy recommendations?*

An article was published recently, which presented emprical research to assess the impact of the spaza shops that are mushrooming in every corner. In terms of their service, there are two arguments. In the results presented earlier, there are indicators from Stats SA that reflect their importance in terms of job creation and their contribution in the area of micro-finance. On the other hand, when it comes to issues of public health, the quality of products come into question. Some operate from residences. Quality control measures are needed. Some expired items have been found in these shops. These are issues that need to be discussed and addressed.

## 4. Session III: Similar/Related Research in South Africa

### 4.1. Food choices and obesity where there are limited choice options

Please see the presentation attached.

### 4.2. A geospatial analysis of food consumption patterns amongst sa's foods

Please see the presentation attached.

### 4.4. Policy-relevant research on obesity in sa: current knowledge and some key imperatives

Please see the presentation attached.

**4.4. Discussion**

*If you analyse the data according to different age categories, different departments provide different food security options for different categories of children. What would be interesting to know is an analysis of separate data for infants, aside from the rest of the children. In terms of breastfeeding, it would be interesting to have disaggregated data on the status of the mother, that is, whether she is employed or unemployed, whether she breastfeeds, and so on.*

Clearly, among young children there are different groups in different settings that need to be reached. A primary school nutrition programme does exist, but this is not the most important group. The most important group by far is the pre-schoolers. The problem is that only a small minority of children in the country are in ECD centres. The Western Cape is best off, but only about 40% of children attend registered ECD centres. They're the ones who are least likely to have nutritional problems. A way has to be found to access and assess those very young children who aren't in these centres, and without some kind of outreach facility and community workers to go with it, these children are at risk. This problem is still not being dealt with. Unless and until a network of community workers exist who can identify those households, those households will continue to be at risk. They are the ones who will have stunted children who will grow up to be obese adults.

*There has been a lot of talk about upstream and demand side, but not much has been said about collective advocacy around how, at community level, this can be addressed. Most solutions seem to take some sort of intersectoral, high-level cooperation approach. There's also a certain amount of stigma attached to certain food types. Does the solution not maybe lie in collective advocacy efforts at community level?*

Social change only comes about when self-advocacy or, if you want, community mobilisation happens—when it's orchestrated, structured and directed. There is a lot of community mobilisation. South Africa has more service delivery protests than any other country. People are mobilising all the time, but these efforts are not very directed. So, a much better job should be done of raising awareness about nutrition and food, and what constrains good diet, because people don’t think what they eat is a problem. Maybe they do, but they think a lot of the fast foods and drinks are good for them. We do need to raise awareness, because that is a fundamental building block of self-advocacy.

Advocacy does need to be done on the basis of raising people's awareness and health workers are not very aware of the unhealthiness of certain foods.

***How did you arrive at your categories of food security?***

The research team worked with the General Household Survey (GHS), which had an existing model that included a set of questions on the occurrence and intensity of certain patterns. For example, we asked parents how many times they had gone without food. ‘Have you gone without food’ referred to occurrence, while the question of 'how many times' referred to intensity. ‘Have you skipped meals, and how many times did it happen?’ ‘Have you eaten sufficient food, and how many times did that happen?’ We arrived at our results on the basis of the responses to these questions, then computed the food security scale. Anyone who scored from 0—1, was considered having adequate food security. This is an established methodology.

***Why did you take bread out of the grain category? How can one capture the difference between these two foods?***

Grains are a large category. The issue of whether grains are healthy or not is subjective. There are whole grains, then there is processed bread, and so many people eat bread at different times and in different forms. Grain is also sometimes used in baby food. It is always important to know what kind of grain is eaten, especially in the case of bread. In the South African context, most bread comes from Sasko and the like, and as such is ultra-processed, so doesn't qualify as healthy grains. So, lumping the category of bread together with grains would make it virtually impossible for us to get the level of analytical results and detail we need.

*It's been said that we're exporting obesity, but we're also importing it. For example, there was the recent import of chicken to South Africa from the US, and there's the AGOA agreement. What are your thoughts on this? South Africa needs to develop a strong stance on importing food that is known to be unhealthy for the populace. How do we manoever around such problems? We could learn from India, which a few years back provided subsidies for its agricultural products to help local farmers produce and sell to the community. If we're to give policy advice in instances like the chicken import, can't we use health hazards as a bargaining chip against this type of agreement? Such unhealthy choices should not be available.*

With international agreements it's very, very difficult to go back and rescind them. South Africa has signed up to the World Trade Organisation and therefore cannot renege without incurring big penalties. However, if South Africa can show that certain products have an adverse impact on public health, then there is the possibility of restricting trade. The problem is, and this is another area for research, that the very limited research that has been done shows that the South African equivalent of processed and packaged foods is actually more unhealthy than the imports. They tend to contain more sugar and, until now, more salt, but now, with the new salt regulations, salt content will come down. The other way out is regulation. For example, there is nothing to stop local governments from restricting, say, the sale of fast foods within a certain perimeter of schools. Local authorities can act on by-laws and produce by-laws to regulate the environment. Provincial governments can do a lot around school feeding. There are many potential actions that governments could take.

*Prof Sanders from the University of the Western Cape raised a question about the quantitative results for children in the age group five to 11. The slide in question was shown again. The figures reported 86% of children to be underweight; 11,61% normal; 1,34% overweight; 0,15% Obese category 1; and 0,15% Obese category 2. It is unlikely that 86% of the children would have been underweight and it was suggested that figures were inadvertently switched and that, in fact, 86% of children were normal weight, and 11,61% were underweight. The team undertook to look into the anomaly.*

## 5. Session IV: Discussion on policy issues and group discussion/feedback

From the evidence it is clear that there is a weight crisis in South Africa. Participants at the symposium broke away into groups to brainstorm suggestions for possible policy solutions to the problem. These are grouped thematically below:

### 5.1. Regulatory interventions

- Institute stringent restrictions on harmful ingredients and processed foods.
- Reduce the quantity and size of sugar-sweetened and fast foods.
- Department of Health could commission an intervention targeted at the poor and at-risk.
- Supply only healthy food items for the public plate for all government tender and public facilities.
- Institute regulations on advertising foods that contain excessive sugar and saturated fats. Ban ads for sugar-sweetened beverages and chocolate.
- Institute a food control policy, for example to prevent the selling of unhealthy food in the community.
- Incorporate indigenous knowledge into policies on food, consumption and processing.

### 5.2. Subsidies and taxes

- Institute food subsidies for nutritious foods.
- Subsidise street vendors who sell healthy foods.
- Institute tax on sugar-sweetened foods and beverages. Use the income from this to subsidise healthy substitutes to make them affordable to poor people.
- Income from the sugar-sweetened beverages tax must be applied to the specific problem of obesity, health and food insecurity, and government should be held accountable for this.
- Choices are constrained, begging the question, how can they be expanded? Even if choices were expanded, there is no guarantee that people will make the right choices. One solution could be to incentivise people to buy certain foods through subsidies or by means of food transfers (direct and indirect).
- Reduce the price of foods that are healthy so that underprivileged people can afford healthy diets.

### 5.3. Schools and ECD

- Improve coordination in child nutrition and establish an overarching body to manage this.
- Institute an intersectoral policy to ensure the National School Nutrition Programme uses local small-scale farmers as suppliers, at least for a specified portion of food supply.
- Reimplement regular physical activity at schools, along with providing nutrition education and feeding programmes. School environments should promote health, e.g. no carbonated drinks should be allowed.

- Add fruit and vegetables to school nutrition menus.
- Sell fruit at school tuck shops instead of sweets.
- ECDs, especially those that are unregistered and catering to the most vulnerable children, should be given assistance and information on feeding children; guided in cooking; give informal education to children.
- Focus on the nutrition aspects in the ECD implementation plan.
- Develop a training package for ECD practitioners about healthy eating and healthy, economical food provisioning for children in ECD centres as well as out-of-centre programmes.
- Nutrition should form part of the school curriculum from Grade R to Grade 12, and physical training should be reinstituted at schools.
- Educate children from an early age about the benefits of eating healthy foods and exercise.
- Hold workshops for children who don't want to go to school anymore. Educate them by teaching them how to plant and grow green gardens.

**5..4 Food production**

- Increase access to agricultural land for subsistence farming.
- Reduce constraints on land, family farming and promote rooftop vegetable gardens.
- Expand RDP housing space with restrictions that allow people to plant only home gardens and no extentions to houses.

**5.5 Awareness**

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- Launch a media information dissemination campaign on healthy food choices.
- Create awareness of advertising motives and the reasons for businesses promoting unhealthy products.
- Media should stop advertising unhealthy foods on TV and radio and in newspapers. Promote healthy food choices and exercise.

**5.6. Community**

- Institute community-based physical activity as an expanded public works programme, employing out-of-work youth and matriculants.
- Introduce and promote a healthy workplace by banning refined sugar on the site and promoting healthy eating options, and engaging in more physical activity, i.e. stand and walk more.
- Provide gyms for old people.
- Establish community food markets where household food gardeners can sell their extra produce. Leftover crops should be donated to ECD centres or community kitchens.

**6. Conclusions and next steps**

All the objectives of the National Symposium were successfully met. The high quality of the scholarly presentations, encouraging discussions and the overwhelming positive response from the participants have inspired the organizers to plan another conference on Food Security and Obesity in South Africa in the future. The research team, CEO and PSPPD believe that the National Symposium clarified the recent trends and developments in the area of Food Security and Obesity in South Africa, Finally, the majority of the participants ensured their support and solidarity in working on issues related to Food Security and Obesity in South Africa.

## Appendices

### Appendix I: Symposium agenda

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***INSTITUTE FOR SOCIAL DEVELOPMENT***
**National Symposium: Food Choice and Obesity in South Africa.**

**19 January 2017, Protea Hotel Tyger Valley**

**Background**

The worldwide increase of obesity has been described as a global health epidemic that poses a serious threat to the health and well-being of populations (Kengne, et al., 2012; Wang and Beydoun, 2007). Low and middle income countries (LMICs) are not spared from the obesity pandemic and are continuing to reflect a rapid increase in body fat levels. Moreover, it is becoming increasingly apparent that many of the LMICs face the double burden of malnourishment and obesity occuring simultaneously amongst certain sectors of the population (Popkin and Slining, 2013; WHO, 2016).

The National Symposium on Food Choice and Obesity in South Africa aims to bring together leading academic scientists, scholars, researchers, postgraduate students, government departments and other participants to exchange and share their experiences and research results on all aspects of obesity. The Symposium is also expected to provide an interdisciplinary platform for participants to critically discuss the current situation and challenges related to Food Choices and Obesity in light of the project outputs.

The Symposium will be divided into substantive sessions providing participants the opportunity to focus on specific areas from their own perspective and national experiences. The main conclusions of the Symposium will be reflected and incorporated into a Policy Document and Policy Brief.

The aims of this event are to:

- To present and discuss the key research findings of the project (e.g. kinds of food consumed, factors determining consumption; self-perceived health status and actual BMI measurements, etc.);
- To understand and compare key results on similar research projects in South Africa;
- To identify important research gaps for future funding by the CoE and other agencies;
- To discuss the outline and content of the proposed policy document/brief and key points to include, and
- To facilitate evidence-based policy making for effective multi-level intervention approaches in health promotion practice across the South Africa.