

**AN EXPLORATION OF THE IMPENDING 2018 SUGAR-SWEETENED
BEVERAGE TAX ON THE PURCHASES OF BLACK AFRICAN
WOMEN, SHOPPING AT THE EDENDALE MALL IN
PIETERMARITZBURG**

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ABSTRACT

Introduction: The incidence of death from non-communication diseases (NCDs) is escalating steadily. Rapid urbanisation and changing diets in the developing countries are currently producing a “silent emergency” called overnutrition or obesity. Several studies conducted in South Africa have shown that obesity is more severe among females than males, particularly in the Black African race group. Recent literature suggested that the consumption of sugar-sweetened beverages (SSBs) could have contributed towards this problem. Fiscal interventions such as taxes are increasingly being recognised worldwide as an effective tool that can help to combat the obesity epidemic at a population level. The increased price of SSBs is an important factor that could influence the purchasing decisions of consumers. Increased negative health effects of SSBs have led to action to be taken in order to limit their consumption. In conjunction with this, on February 2016, the South African Government decided to consider the use of fiscal policies by introducing taxes on SSBs in order to improve the health standards of the public. At the time of this study the SSBs tax had not been implemented, however it was important to investigate what effect the impending tax would have on the current SSB purchasing practices of Black African women.

Aim: Investigating the impact of the impending 2018 sugar-sweetened beverage tax on the purchases of Black African women aged 19 and older, shopping at the Greater Edendale Mall in Pietermaritzburg.

Objectives: To determine the demographic characteristics of Black African women who purchase SSBs; to determine the types of SSB Black African women are purchasing; to assess the frequency of SSB purchases by Black African women; to investigate the factors that influence Black African women to purchase SSBs and to determine the effect of the impending 2018 SSB tax on respondent purchases of SSBs.

Methods: A cross sectional study with aim of investigating the impact of the impending 2018 sugar-sweetened beverage tax was conducted among 439 Black African women aged 19 and older, shopping at the Greater Edendale Mall in Pietermaritzburg. Non-probability sampling was used to recruit the respondents. A five-part questionnaire was used to gather demographic information; characteristics of respondents who purchase the SSBs; the types of SSBs

purchased; the frequency of purchases; what motivated the respondents to purchase SSBs; and what impact the impending SSBs tax would have on SSB purchases once implemented.

Results: The study population consisted of 439 Black African women. The mean age of the respondents was 33.69 years with minimum and maximum ages of 19 and 55 respectively. Around two thirds (n=328, 74.7%) had an education level of matric or up to Grade 12. Only one third (n=111, 25.4%) had a post matric qualification.

Among all SSBs purchased by respondents, carbonated fizzy drinks were the most frequently purchased beverage (n= 391, 89.0%), while sport drinks were purchased least frequently (0.9%, n=4) ahead of energy drinks (n=5, 1.1%). Squashes, concentrates and syrups (Juices) were the second most frequently purchased SSBs (n=25, 4.9%), followed by flavoured water drinks (n=15, 3.4%). Most respondents (n=396, 90.2%) indicated that they purchased SSBs between one and four times a month. Price and taste were rated as being significantly important factors that influenced respondents to purchase SSBs, whilst design and packaging, recommendation by friends/family and loyalty to the product were less important factors. Most respondents (n=359, 82.0%) reported that they were not aware of the impending SSB tax.

The main findings of the study revealed that nearly half of the respondents (n=213, 48.5%) indicated the intention to continue purchasing and consume their preferred beverages as usual despite the price increase due to the SSBs tax. Around one-third of respondents (n= 151, 35.1%) reported that they would reduce their SSB purchases and start consuming smaller amounts of SSBs. Few respondents (n=68, 15.5%) indicated that they would switch to cheaper drinks whilst very few (n=4, 1.0%) would opt to stop purchasing SSBs.

The results of sub-group analysis in relation to the impact of impending tax depending on education level and income status revealed the existence of a significant negative correlation for price with education. A significant number of respondents with matric and less (n=188, 62.8%) indicated that they will continue purchasing SSBs as usual after the implementation of SSBs tax while significantly more of those with a higher education level (n=73, 78.5%) confirmed their intention to reduce SSB purchases. Most respondents, who earned up to R5553 as their monthly total household income (n=96, 63.2% and n=29, 19.1%), indicated that they would either continue purchasing SSBs as usual or switch to cheaper drinks respectively.

Conversely, respondents with a higher income including those who earned R44949 per month and above (n=3, 0.7%), between R18545 – R44948 (n=35, 8.0%) as well as between R10010 – R 18544 (n=37, 8.4%) indicated that they will reduce their SSB purchases once the tax had been implemented.

Conclusion: The findings from this study highlight the need to further investigate the long term effect of SSB consumption contributing to overweight and obesity, particularly in Black African women and their family members. Since differences in SSB purchases were observed depending on education and income status of the respondents, the high frequency of consumption of added sugars from carbonated fizzy drinks by respondents and their family members entails more exploration. This would give direction for appropriate policies and initiatives, along with the SSB tax that could promote healthier dietary intake habits and reduce the burden of obesity related NCDs in Black African women and their family members.

PREFACE

This dissertation was carried out in the School of Agricultural, Earth and Environmental Sciences, University of KwaZulu-Natal, from February 2017 to December 2018, under the supervision of Dr Nicola Wiles and Dr Annette van Onselen.

Signed: _____ Date: _____

George Richard Ilangila

As supervisors of the candidate we agree to the submission of this dissertation.

Signed: _____ Date: _____

Dr Nicola Wiles (Supervisor)

Signed: _____ Date: _____

Dr Annette van Onselen (Co-supervisor)

DECLARATION OF ORIGINALITY

I, George Richard Ilangila, declare that:

- i. The research reported in this dissertation, except where otherwise indicated is my own original work.
- ii. This dissertation, or any part of it, has not been submitted for any degree or examination at any other university.
- iii. This dissertation does not contain other persons' data, pictures, graphs or other information, unless specifically acknowledged as being sourced from other persons.
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Signed: _____ Date: _____
George Richard Ilangila (candidate)

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CHAPTER 1: INTRODUCTION, THE PROBLEM AND ITS SETTINGS

1.1 Background to the importance of the study

Malnutrition, either from undernutrition (underweight, wasting and stunting) or overnutrition (overweight and obesity) is becoming a universal public health challenge (Tathiah, Moodley, Mubaiwa, Denny & Taylor 2013). Although the mortality rate due to infectious diseases including HIV/AIDS is alarming, in developing countries, the increased incidence of mortality from non-communicable diseases (NCDs) is escalating steadily. NCDs are currently responsible for over 70% of global deaths which is around 40 million people each year (WHO 2017). More than three quarters of these global deaths, nearly 31 million, occur in low- and middle-income countries (WHO 2017). Rapid urbanisation and dietary intake changes in the developing world are presently producing a 'silent emergency' namely overnutrition or obesity. Over nutrition was previously linked with rising incomes and industrialised societies; however this is no longer relevant (Crush, Frayne & McLachlan 2011). The recent South African National Health and Nutrition Examination Survey (SANHANES-1) found that the prevalence of both overweight and obesity was significantly higher in South African women with 64.1% compared to 30.7% in men (Shisana, Labadarios, Rehle, Simbayi, Zuma, Dhansay, Reddy, Parker, Hoosain, Naidoo, Hongoro, Mchiza, Steyn, Dwane, Makoae, Maluleke, Ramlagan, Zungu, Evans, Jacobs, Faber & SANHANES-1 Team 2013).

It is generally perceived that an increase in sugar intake is contributing to the rising prevalence of the obesity globally (Gulati & Misra 2014). In recent years, there has been a large increase in the consumption of sugar-sweetened beverages (SSBs) in both developed and developing countries. The increased intake of SSBs has been associated with increases in obesity as the calories from these beverages may provide a considerable source of daily calories (Blecher 2015). Convincing epidemiologic evidence is linking a higher consumption of SSBs with a significant elevated risk of weight gain as SSBs lead to a positive energy balance (Hu 2010).

In 2008, about 1.46 billion of the world's population were either overweight or obese (WHO 2013). The burden of obesity has reached epidemic proportions and it is predicted that in 2030 the world will have around 3.28 billion overweight and obese people (Manyema, Veerman, Chola, Tugendhalt, Sartorius, Labadorios & Hofman 2014). The World Health Organisation

(WHO)'s guideline restricts the intake of sugar to below 10% of the daily energy intake for adults and children, equivalent to around 50 g of sugar per day. In addition, the 2013 WHO's Global Action Plan encouraged all countries to consider implementing taxes on unhealthy foods with aim to decrease the excess intake of free sugars, including SSBs (WHO 2015a).

Considering the rising trend in nutrient-deficiency beverage consumption and the shifts in general beverage patterns, addressing beverage intake is a prominent concern for adults (Duffey & Popkin 2007). The South African Department of Health Department (DOH) initiated the Action Plan for the Prevention and Control of NCDs 2013-2017 as well as the National Strategy for the Prevention and Control of Obesity 2015-2020. Both strategies aimed to reduce obesity prevalence by 10% before 2020 (National Treasury of South Africa 2016). Unhealthy diets were identified by the DOH Action Plan as one of the major risk factors that contributed to weight gain, in adults and children, including high caloric energy dense foods and increased added sugar intake from sugar-sweetened beverages (National Department of Health 2013; Tugendhalf & Hofman 2014). SSBs have a high sugar content, do not have any nutritional value and are processed differently in the body after consumption, compared to healthy food (Lavin & Timpson 2013). The increased negative health effects of SSBs has led to action to be taken in order to limit their consumption. Many options can be considered as a form of action including the control of marketing of SSB products, limiting portion sizes as well as taxation.

Fiscal interventions such as taxes are progressively being recognised globally as an effective tool that can combat the obesity at a population level (Moodie, Sheppard, Sacks, Keating & Flego 2013). The increase of prices is an important factor that could influence the purchasing decision of consumers (Mytton, Clarke & Rayner 2012; Popkin 2012). A 2010 survey conducted in the United Kingdom (UK) among 5263 households (12196 people) aimed to estimate the effect of a 20% tax on the purchases and consumption of SSBs. The results showed an important reduction in purchasing of SSBs with a prediction to reduce by 1.3% the prevalence of obesity in UK (Briggs, Mytton, Kehlbacher, Tiffin, Rayner & Scarborough 2013). Furthermore, a systematic review conducted in United States of America (USA) between 2007 and 2012, indicated that a 20% tax on SSBs lead to 10 to 20% reduction in consumption (Powell, Chriqui, Khan, Wada & Chaloupka 2013).

Based on the recent evidence linking the increased consumption of SSBs with an increased incidence of obesity, the South African Government decided to consider the use of fiscal policies in order to improving the health standards of the public (Manyema, *et al* 2014). The National Treasury of South Africa announced in February 2016, a proposed tax on SSBs, planned to be implemented from 1 April 2017, but later postponed this to 2018 due to the necessity of further consultations. The initial suggestion was a tax rate of 2.29 cents per gram of sugar (National Treasury of South Africa 2016). However, this proposal was adjusted for the 2018 implementation and consisted of a threshold of 4 g sugar per 100 ml of beverage (equivalent to nearly a teaspoon of sugar per 100 ml of beverage), below which the sugar would not be taxed. The 2018 tax rate was planned to add 2.1 cents per gram for sugar contents exceeding 4g per 100 ml of beverage. This is equal to around 11% tax rate to carbonated fizzy drinks. The 2018 tax would be applied to all SSBs except milk and 100% fruit juice, however, 100% fruit juice will taxed in future (Republic of South Africa, Minister of Finance 2017). The tax rate for syrups and other concentrated juices would add 1.05 cents per gram of sugar content exceeding 4 g per 100 ml.

Unlike other countries, a very limited number of studies related to the impact of SSB taxes on consumer purchases as well as their potential associated health effects, have been conducted in South Africa. Research from the perspective of the consumers is required to understand the extent of the fiscal interventions and SSB purchases. South African women are reported to have the highest rates of obesity in the entire sub-Saharan African region (Ng, Fleming, Robinson, Thomson, Graetz *et al.* 2014). Among South African women, Black South Africans have a high prevalence of overweight and obesity (24.9% and 39.9% respectively) compared to Coloured/mixed ethnicity (24.4% and 34.9%) as well as Asian/Indian (22.8% and 32.4%) and are more affected by NCDs than other population groups (Shisana *et al* & the SANHANES- 1 Team 2013).

At the time of this study, the 2018 tax had not yet been implemented. Therefore, it was anticipated that the results of this study would assist in providing insight regarding the following questions:

- What are the demographic characteristics of Black African women who purchase SSBs?
- What are the types of SSBs that Black African women purchase?
- How often are the SSB, purchased by Black African women?
- What are the main factors that influence the purchases of SSBs by Black African women?
- What effect will the impending 2018 SSB tax have on future purchases of SSBs by Black African women?

1.2 Statement of the research problem

Increased rates of overweight, obesity and NCDs in Black African women due to poor dietary intake, particularly SSB consumption, is a major health concern in South Africa. In an attempt to decrease this, the Government proposed a sugar tax to be implemented in 2018. Prior to the implementation of this sugar tax, it was important to determine what SSBs Black African women were purchasing and whether these taxes would pose any change in their SSB purchasing habits and ultimately have a positive impact on their health as intended.

1.3 Research objectives

The following objectives were investigated in this study:

- 1.3.1 To determine the demographic characteristics of Black African women who purchase SSBs.
- 1.3.2 To determine the types of SSBs that Black African women are purchasing.
- 1.3.3 To assess the frequency of SSB purchases by Black African women.
- 1.3.4 To investigate the factors that influence Black African women to purchase SSBs.
- 1.3.5 To determine the effect of the impending 2018 SSB tax on the purchases of SSBs.

1.4 Hypotheses

The following hypotheses were proposed:

Null hypothesis 1: There would be no change in types of SSB purchases after tax implementation.

Hypothesis 2: There would be a change in frequency of SSB purchases after tax implementation.

Hypothesis 3: Price would be the most important factor influencing SSB purchases.

Hypothesis 4: The impending 2018 tax will have a positive effect on purchases of SSBs.

1.5 Study parameters

This study included Black African females, aged 19 years and older, who purchased SSBs at the Greater Edendale Mall, in Pietermaritzburg.

1.6 Definitions

Carbonated fizzy drink:	Are beverages that contain dissolved carbon dioxide, which becomes a gas when it warms to body temperature (Korab 2016).
Cardiovascular diseases:	A class of diseases that affect the heart or blood vessels (WHO 2017)
Consumers:	“Consumers are all the individuals and households who purchase or acquire goods and services for personal consumption” (Kotler & Armstrong 2009).
Non-communicable diseases:	Chronic diseases that usually have a slow progression and are not passed on through contact with another person (WHO 2016b).
Nutritional status:	It is a condition of health as related to the use of food by the body, for example well-nourished versus malnourished (WHO 2015b).

Nutrition transition:	The shift in dietary patterns (consumption and energy expenditure) due to economic, demographic and epidemiological changes (MacIntyre <i>et al</i> 2012).
Obesity:	A condition characterised by an excessive accumulation and storage of fat in the body (WHO 2016a).
Research instrument:	Any object that can be used to assess a specifically identified aspect in or of an individual. For example anthropometric measurement equipment and questionnaire (Jenn 2006).
Socio-economic:	It is the combination or interaction of social and factors or it is a ranking based on amount of money spent on food monthly (Temple, Steyn, Fourie & De Villiers 2011).
Sugar-sweetened beverage:	Are beverages that contains added caloric value of sucrose, high-fructose corn syrup (HFCS), or fruit-juice concentrates, and other sweeteners (Mantzari, Hollands, Pechey, Jebb & Marteau 2015).

1.7 Abbreviations

ANOVA:	Analysis of Variance
DOH:	Department of Health
FAO:	Food and Agricultural Organisation
LMICs:	Low-and middle-income countries
NCDs:	Non-Communicable Diseases
NFCS:	National Health Consumption Survey
NHANES:	National Health and Nutrition Examination Survey
SANHANES-1:	South African National Health and Nutrition Examination Survey

SPSS:	Statistical Package for Social Sciences
SSBs:	Sugar-sweetened beverages
UKZN:	University of KwaZulu-Natal
USA:	United States of America
WHO:	World Health Organisation

1.8 Assumptions

The following assumptions were made that:

- The respondents would be honest with their responses.
- The respondents would be able to understand the questions in the questionnaire.
- The respondents were purchasing on behalf of the household.

1.9 Summary

The incidence of overweight and obesity has significantly increased globally among numerous populations. Recent evidence has indicated that the consumption of SSBs may have contributed towards this problem. Several studies conducted in South Africa have shown that obesity was more severe among females than males, particularly in the Black African race group. This had motivated the interest to investigate Black African women in this study.

This study, conducted in 2017, focused on establishing the influence of the impending 2018 SSB sugar tax on the purchasing practices of Black African women. It was important to assess these objectives because few studies have been conducted in South Africa regarding this topic and it was anticipated that this study would provide useful insight regarding the impact that the impending tax would have on consumer purchases of SSBs.

1.10 Overview of the dissertation

This dissertation contains six chapters. The first chapter provides information on the background and importance for conducting this research. It states the objectives, hypotheses, parameters, definitions, abbreviations, and study assumptions. Chapter two reviews the current

literature in relation to the main problems and objectives of the study. The third chapter relates to the methods and procedures used to collect data. Chapter four presents a statistical analysis of the results. The fifth chapter discusses the findings of the research in relation to the literature

reviewed in chapter two. Chapter six consists of the conclusions as well as the recommendations for further investigations based on the findings of the study.

1.11 Referencing style

The referencing style compiled by the Discipline of Dietetics and Human Nutrition at UKZN, Pietermaritzburg Campus, was chosen by researcher as preferred style to write this dissertation.

CHAPTER 2: REVIEW OF THE LITERATURE

This chapter reviews studies that have been conducted on the impact of SSB taxes on consumer purchases. The literature review has been divided into three parts. The first section introduces the aetiology of overweight, obesity, NCDs and their link to SSB consumption. The second section covers SSB consumption patterns by focussing on the classification of SSBs, the consumer preference for SSBs, and the factors influencing SSBs purchasing and consumption. The third section examines the implementation of the impending 2018 SSB tax including the history behind the decision to introduce this tax in South Africa as well as a review of SSB taxes that have been implemented internationally. A conclusion of this chapter outlines the importance of this study.

2.1 Background to the aetiology of overweight, obesity and non-communicable diseases and sugar-sweetened beverage consumption

Overweight and obesity have several causes, but the main reported cause is when energy intake exceeds energy expenditure (WHO 2015a). The increased intake of foods and beverages that are high in added sugars and fat, combined with decreased physical activity levels, leads towards a positive energy balance resulting in weight gain (Hu & Malik 2010). Overweight and obesity is a main risk factor for NCDs including cardiovascular diseases, type-2 diabetes, respiratory diseases and cancers (WHO 2016a). Lack of physical activity, abuse of tobacco and alcohol, environmental factors and genetics, as well as poor or unbalanced diets are contributing towards the development of NCDs (WHO 2016b). The consumption of SSBs has been linked to increased risk of individuals developing NCDs such as type-2 diabetes, high blood pressure, cholesterol and cardiovascular diseases. Recent studies have revealed that the consumption of SSBs, known to be rich in empty calories, may contribute towards weight gain as these beverages have almost no any nutritional value (Temple & Steyn 2013).

A modelling study was conducted in South Africa to determine the impact that an increased intake of SSBs would have on obesity levels, without any governmental intervention, from 2012 to 2017. Results projected that the consumption of SSBs would have an annual increase of 2.4% for both males and females in all age groups. During the baseline year, it was revealed that adult South Africans aged 15 and above consumed on a daily basis, an average of 184 ml

of SSBs. The study also projected that by 2017 the average daily consumption of SSBs would reach 200 ml and over five years' time, there would be further increases in obesity rates by 5.2% and 3% among males and females respectively (Tugendhalf *et al* 2015). Based on these projected results, the consumption of SSBs will increase even further with a negative impact on the health of the population. As reported previously, the consumption of SSBs is associated with an increased energy intake, weight gain, overweight and obesity (WHO 2016c). In 2017, the South African Government responded to the contribution that SSBs make towards overweight, obesity and NCDs by proposing a tax on SSB purchases which will be covered in section 2.3. The next section will cover the literature surrounding SSB consumption patterns.

2.2 Sugar-sweetened beverage consumption patterns

The classification of SSBs, the consumer preference for SSBs as well as the factors influencing SSBs purchases and consumption are presented in this section.

2.2.1 Classification of sugar-sweetened beverages

2.2.1.1 History behind sugar-sweetened beverages

The history behind carbonated fizzy drinks has its origins in the 18th century, in natural mineral waters, commonly praised for their healing powers (Wolf, Bray & Popkin 2008). Natural mineral waters were believed to aid in healthy digestion due to their mineral content and natural carbonation (Petraccia, Liberati, Masciullo, Grassi & Fraioli 2006). In the 1760s, the first carbonated beverage (soda) was developed when pharmacists and chemists in the United States managed to re-create these carbonated waters in the laboratory. The resulting beverage was called soda water because they used bicarbonate of soda to create carbonation (Wolf *et al* 2008).

Around the 1830s, sugar as well as fruit and herb flavours were added to these carbonated drinks to enhance palatability (Wolf *et al* 2008; Petraccia *et al* 2006). In 1886, an American pharmacist combined two stimulants, “the coca leaf” containing cocaine and “the kola nut” containing caffeine, to create Coca-Cola, revolutionising the soft drink industry (Wolf *et al* 2008).

The first sports and energy drinks came into existence nearly 135 years after the invention of soda, when Gatorade, was developed in 1965 to replace water and electrolytes lost in sweat during exercises by university athletes (Galaz 2013, pp 205-206).

2.2.1.2 Types of sugar-sweetened beverages most commonly consumed

The SSB industry, also known as the non-alcoholic beverage industry can be subdivided under two main groups: i) soft drinks which include juice, bottled water, sport and energy drinks, and carbonated fizzy drinks; as well as ii) hot drinks consisting of tea and coffee. The terms ‘soda’, ‘pop’, ‘coke’, ‘fizzy drink’, all refer to the same very popular carbonated beverage made with a nutritive or non-nutritive sweetening agent, natural and artificial flavours, caffeine, and carbonated water (Korab 2016). For the purpose of this study the term carbonated fizzy drinks will be used in reference to these beverages.

The consumption of SSBs increased by 135% between 1977 and 2001 (Bray, Nielsen & Popkin 2004) due to their increased affordability, accessibility and heavy marketing (Bray 2008). In recent decades, beverage companies have been taking advantage of advertising on social media websites capitalising on increasing the use of computer and mobile technologies. They have also shifted their marketing strategies towards the promotion of fruit flavoured vitamin water, sports drinks and caffeinated energy drinks encouraging people to perceive these products as healthier beverage options (Welsh, Lundeen & Stein 2013).

Worldwide, the soft drink market is dominated by carbonated fizzy drinks, earning revenue of \$337.8 billion in 2013. The two leading carbonated fizzy drink manufacturers are the Coca-Cola Company with more than 500 brands, where 17 brands are reported to generate revenue of over billions of dollars each; and PepsiCo, Inc. who has 22 brands generating more than a billion dollars each in revenue (Bailey 2014). Both have headquarters in the United States of America (USA). In terms of sales, Coca-Cola is ranked in third position worldwide with a brand value of \$81.6 billion, while PepsiCo, Inc. occupied the 24th position with a brand value of \$19.1 billion (Bailey 2014). December 2017 figures still place the Coca-Cola brand ahead globally with of \$87.9 billion (Coca-Cola 2017) of sales while PepsiCo, Inc made \$22.9 billion dollars (PepsiCo, Inc 2017). The consumption of SSBs, predominantly carbonated fizzy drinks has significantly increased globally.

An analysis using data from the Euromonitor Global Market Information Database, the International Diabetes Federation and the WHO was conducted between 1997 and 2010 among adult females and males, aged 20-79 years, from 75 countries worldwide. It was found that the consumption of the carbonated fizzy drinks had steadily increased from 35.96 litres per person per year during 1997 to 43.15 litres per person per year during 2010. Lower to middle income countries were most affected compared to higher income countries where the consumption increased from 54.5 litres to 56.0 litres per person over same period of time (Basu, McKee, Galea & Stuckler 2013). The findings of the same study indicated that Mexico had the highest consumption rate of fizzy drinks in 2010 at 119.24 litres per person (Basu, McKee, Galea & Stuckler 2013).

A systematic analysis which aimed to determine the global, regional and national intake of SSBs among adults above the age of 20 was conducted in 2010 from 187 countries. The study revealed that carbonated fizzy drinks were the most commonly consumed beverage worldwide in comparison to milk and dairy products as well as fruit juices. The consumption of carbonated fizzy drinks was higher in developing countries than in developed countries. The same study also found that fruit juices were more likely to be consumed in developed countries than in developing countries (Singh, Micha, Khatibzadeh, Shi, Lim, Andrews, Engell, Ezzati & Mozaffarian 2015).

Ronquest-Ross, Vink & Sigge (2015) conducted a study between 1994 and 2012 on the variation in dietary intake of foods and beverages among South Africans. It was found that the consumption of SSBs increased by 68.9% between 1994 and 2012. The most commonly consumed SSBs were carbonated fizzy drinks followed by fruit juices, particularly 100% fruit juices. The study also revealed that juice concentrates and energy drink consumption increased considerably during 1994-2012. Vorster, Kruger, Wentzel-Viljoen & Margetts (2014) conducted a study on added sugar intake among South African adults from 2005 to 2010, in North West province. A significant increase in the consumption of SSBs was revealed among individuals from rural areas associated with higher SSBs consumption.

The SANHANES-1 data (Table 2.1) showed that the consumption of SSBs declined as subject age increased. On average, South African adults consumed 184 ml of SSBs, 200 ml of unsweetened fruit juice and 204 ml of milk a day (Shisana *et al* 2013).

Table 2.1: Daily consumption of different drinks from SANHANES-1 study

Age	SSB			Fruit juice			Milk			Diet drinks		
	Average	Min	Max	Average	Min	Max	Average	Min	Max	Average	Min	Max
	ml	ml	ml	ml	ml	ml	ml	ml	ml	ml	ml	ml
15-24	209	183	238	211	189	236	205	182	232	8	7	10
25-34	199	171	231	205	179	233	199	197	227	8	7	9
35-44	181	154	212	210	182	241	205	179	235	7	6	9
45-54	171	144	188	193	159	233	211	180	246	7	6	9
55-64	149	119	200	171	142	207	195	161	235	6	5	8
65+	120	92	158	166	132	208	217	174	270	5	4	6

The increased consumption of SSBs worldwide has raised concern with regards to preference for SSBs over other beverages. Studies that have probed this phenomenon have come to different findings. This aspect will be further investigated in the next section addressing the consumer preference for SSBs.

2.2.2 Consumer preference for sugar-sweetened beverages

The word “sugar” is derived from the Greek word “sakcharon,” but the root of the word for “sweet” was derived from the Latin word “suavis” meaning “to persuade or make pleasing to,” emphasising its importance (Mecher 2005). Infants are born with a preference for sweetness creating a natural affinity with sweet-tasting breastmilk from their mother. The sweet preference increases during childhood resulting in an intense preference of sweet foods and beverages (Mennella, Finkbeiner, Lipchock, Hwang & Reed 2014).

This was confirmed by a cross sectional study conducted in USA by Nickelson, Lawrence, Parton, Knowlden & McDermott (2014). Nickelson *et al* (2014) used data from parents of 71 children ≤ 5 years old to examine SSB consumption and associated factors and found that 94% of children aged 3-5 years consumed sweetened milk products, 88% consumed fruity drinks, and 56% consumed sport drinks and sweet tea.

Children’s inherent sweet taste preferences evolve over time (Mennella *et al* 2014). Frequent exposure to intensely sweet processed foods and beverages, may solidify and enhance children's

preference for sweet taste, particularly SSBs, which contain large amounts of sugar (Mennella *et al* 2014). Once a child's taste preference for sugar-sweetened foods has developed, their consumption behaviour is affected, and less flavourful foods become undesirable (Cornwell & McAlister 2011). This can be further shaped by the degree to which environmental influences and behaviours promote or limit access to intensely sweet processed foods and beverages (Mennella *et al* 2014).

Sweet-tasting foods have comforting properties and have been reported to mediate stress and reduce depression (Drewnowski, Mennella, Johnson & Bellisle 2012). Teenagers who are repeatedly exposed to extremely sweetened beverages will experience difficulties changing their behaviour due to the perceived rewarding and soothing properties of sugar. Freeman & Sheiham (1997) conducted a study on the decision-making process for sugar consumption in 200 adolescents from 16 schools based in London, England. The researchers reported that “the immediate pleasurable taste of sugar outweighed and deferred the recognition of dangers associated with its consumption” (Freeman & Sheiham 1997).

Although taste preference is considered the most important determinant of food choices (Kourouniotis, Keast, Riddell, Lacy, Thorpe & Cicerale 2016), it may lead to poor dietary choices. Repeated exposure and experience to sweet tasting foods early in life may lead to preference and increase consumption of SSBs in adulthood (Freeland-Graves & Nitzke).

2.2.3 Factors influencing sugar-sweetened beverages purchasing and consumption

It is important to identify different factors that influence the consumers' decision to purchase beverages before attempting to develop policies and strategies to reduce the consumption of these products (Kit, Fakhouri, Park, Nielsen & Ogden 2013).

Numerous social and environmental factors are linked to the purchase and consumption of SSBs. These include demographic profiles, marketing and promotion, price, taste, design and packaging, loyalty to the product, recommendation by friends and family members as well as impact on the health. These will now be discussed in more detail.

2.2.3.1 Demographic profiles

For the purpose of this section, demographic profiles include race, age, income level, education level, country of origin/place of residence, rural versus urban living area.

Race

Various findings from the literature show evidence of the Black population consuming more kilojoules from added sugar foods and beverages sugar worldwide than other ethnicities. In a cross sectional analysis that was conducted using data from the National Health and Nutrition Examination Survey (NHANES) on the consumption of added sugars among Americans adults for 2005–2010, it was found that a higher amount of kilojoules from added sugars was consumed by African American men (14.5%) and women (15.2%) compared to Caucasian men (12.9%) and women (12.6%) (Ervin & Ogden 2013). Similar findings were also revealed by another cross sectional study conducted by West, Bursac, Quimby, Prewitt, Spatz, Nash, Mays & Eddings (2006) involving 265 American undergraduate students where more African American students (91%) consumed SSBs daily compared to Caucasian students (50%).

Age

A longitudinal study conducted between 1999 and 2010 among children and adults, found that the consumption of SSBs declined with age (Kit *et al* 2013). The observed SSB consumption decline with was noted for both home and away energy intake from SSBs by participants. Although the total SSB consumption declined with age, on average youth and adults American consumed around 649 and 632 kilojoules energy per day from SSBs in 2009-2010 (Kit *et al* 2013).

Income level

American researchers Han & Powell (2013) found that a higher income was associated with a lower consumption of SSBs. Ervin & Ogden (2013) conducted a five-year cross sectional study on Americans aged 20 and older. Their study revealed that the socioeconomic status influenced the intake of added sugars and the consumption of SSBs was higher among individuals from a lower socio-economic status.

Education level

In an American study aimed to examine the risk factors for SSB consumption among 823 children (9-11 years), 1225 teens (12-17 years), and adults 1468 (18 years and older), conducted between 2006 and 2007, initiated by the California Department of Public Health's Network for a Healthy California, it was found that the education level of parents played a considerable role in SSB consumption of their children; low education status was seen as risk factor for higher SSB intake. The effectiveness of nutrition education campaigns was maximal for parents with higher levels of education (Keihner, Linares, Rider, Sugerman, Mitchell & Hudes 2015).

A cross sectional observational study conducted by Gase, Robles, Barragan & Kuo (2014) confirmed that a greater nutritional knowledge was negatively associated with SSB consumption. Among 1041 respondents, less than one third reported the correct value when asked about the daily kilojoule recommendations for a typical adult, 40% gave an incorrect value and 20% said that they did not know the answer. After controlling for socio-demographics and weight status, respondents with higher education levels, who correctly identified recommended daily kilojoules needs, were on average drinking nine fewer SSBs per month than the respondents who gave the incorrect value, where the majority of whom were less educated (Gase *et al* 2014). The literature further suggests that less educated women and their children consumed more SSBs than women who had higher levels of education (Wijtzes, Jansen, Jansen, Jaddoe, Hofman & Raat 2013; Totland, Gebremariam, Lien, Bjelland, Grydeland, Bergh, Klepp & Andersen 2012).

Country of origin / place of residence

The consumption of SSBs has been found to be higher in developing countries than in developed countries as an estimated 54% of carbonated fizzy drink consumption occurred in low-and middle-income countries from 1997 to 2010 (Basu *et al* 2013). Ervin & Ogden (2013) found that the consumption of added sugars differed according to the consumers' place of residence. It is important to note that the added sugars contained in the SSBs contributed a greater amount of kilojoules towards the total energy intake from foods that were consumed by people that lived at home compared to "socially" eating out.

Rural versus urban living area

A South African study conducted in the North West province between 2005 and 2010 revealed an increase in the number of individuals from rural areas that were consuming SSBs (Vorster *et al* 2014).

2.2.3.2 Marketing/ Promotion of sugar-sweetened beverages

It has been found that beverage companies use promotions and marketing as the best platforms to persuade consumers to purchase their products. SSBs are purposely placed at eye level, on the shelves of supermarkets, so that they can be easily seen and purchased by customers (Tugendhalf, Manyema, Veerman, Chola, Labadarios & Hofman 2015). Large amounts of money are spent promoting beverages with the aim to meet consumers' preferences and generate a profit. A great percentage of this money is used to market beverages with little nutritional value (Nestle 2013, pp 22-23); and this would increase the intake of added sugars, contributing towards the promotion of the overweight and obesity pandemic. Media such as internet, radio, magazines, newspapers and television were often used to promote and market various brands of beverages by informing the consumers about price of the products and where to find them (Chandon & Wansink 2012).

The purchases of beverages with a low nutrient content are also influenced by various practices such as adverts containing unconfirmed health claim, end of aisle displays, 'buy-one-get-one-free promotions', sponsorships and celebrity endorsement of beverages (Tedstone, Targett & Allen 2015). The promotion and marketing of beverages are not the only element that contributes towards unhealthy food choices, factors such as price, taste, brand and social influences are interlinked (Chandon & Wansink 2012; Sawant 2012). Consequently, a holistic approach is required in order to direct consumer purchases into a more positive path.

2.2.3.3 Price

A cross sectional study conducted on 159 Dutch subjects aged 18 and older, found that the price was the most influential factor with regards to purchases of food and beverages among consumers from low socioeconomic status. Subjective sampling was used in this study as participants were recruited straight at the purchasing place. The pricing strategies greatly determined the type and quantity of products to be purchased as consumers greatly take the price into consideration when doing shopping (Steenhuis, Waterlander & De Mul 2011).

A focus group in Belgium related to the determinants of eating behaviour in 35 European university students, found that price influenced food and beverage purchase decisions (Deliens, Clarys, De Bourdeaudhuij & Deforche 2014). Similar findings were also supported by SANHANES-1 where price was reported to be a major determinant (64.5%) of food purchasing among the South African population (Shisana *et al* 2013).

According to Waterlander, Scarpa, Lentz & Steenhuis (2011), high sugar content foods and beverages are generally sold at lower prices compared to healthier food products. This results in considerable rise in purchases and consumption of unhealthier beverages and could further increase the total energy intake and contribute to weight gain, leading to overweight and obesity. Healthier foods and beverages cost nearly 69% more, in South Africa, than food products with lower nutritional values (Waterlander *et al* 2011). Many people from low socioeconomic status purchase cheaper products due to financial difficulties (Temple, Steyn, Fourie & De Villiers 2011).

In Steenhuis *et al's* (2011) study using 159 Dutch adults, numerous pricing strategies were tested, and it was found that offering price discounts on healthy food products and applying a lower Value Added Tax (VAT) rate to healthy food products were the best strategies that would have the greatest influence on the purchase habits of individuals from low and high socioeconomic levels. The participants in the study indicated that these best pricing strategies may have increased the purchases of healthy food and beverages but would not have a strong influence on the consumption of unhealthy products. Consequently, positive pricing strategies could still contribute to weight gain as the total energy intake will not totally decrease. It is important to note that this study had some limitations linked to the sampling method and type of subjects recruited; therefore, there is need for conducting more studies over a long period of time and with a large sample population in order to accurately assess the long term impact of pricing strategies on consumer purchases (Waterlander *et al* 2010).

2.2.3.4 Taste

Taste has been reported as one of the main factors that has an important influence on the consumers' choice of most food and beverages consumed. The development of food habits generally commences in early childhood, progresses through adolescence into adulthood. Sweetness has a great sensory appeal and has been identified as being the most preferred characteristic of beverages (Drewnowski *et al* 2012). Beverage companies subsequently produce more tasty, appealing and appetising food products in order to attract people and increase consumer purchases (Chandon & Wansink 2012). The type of SSB preferred differs from one individual to another. Taste preferences will influence the choice of the type of beverages purchased by people depending on their culture, race and age groups. This will also have an impact on the dietary habits, energy intake as well as overall health status of the beverage purchasers (Drewnowski *et al* 2012). Sweet taste perception of food including SSBs has a serious influence on SSBs selection (Sartor, Donaldson, Markland, Loveday, Jackson & Kubis 2011). Sweetness intensity decreases with age and varies among different races, age groups and gender. The Black South African population were reported to have a higher consumption of added sugars than other race groups (Temple & Steyn 2013). Increased consumption of added sugars contributes towards increased rates of overweight and obesity (Drewnowski *et al* 2012).

2.2.3.5 Design & packaging

Food and beverage companies spend a substantial amount of time and money in order to design products that will be most appealing to consumers and increase purchases (Chandon & Wansink 2012). This has a great impact on consumer purchases as it attracts the attention of people who will be tempted to try the product due to this new design and appealing packaging (Ampuero & Vila 2006).

2.2.3.6 Product loyalty

The choice of beverages that customers purchase or consume is mostly based on the label or brand of the products (Chandon & Wansink 2012). Coca-Cola's products were sent to the U.S. Armed Forces during the Second World War from 1942-1948. According to Ron-Antonio (1983, p5), this was not only in support of American soldiers as an energy and morale booster during the war, but more importantly, an exceptional plan for increased global expansion. In South Africa, the 2010 Coca-Cola annual reviews reported a significant increase of around 50%

in consumption of highly branded and advertised Coca-Cola products, between the years 1992 and 2010, in South Africa (Coca-Cola Company 2010). Most people associate and refer to carbonated fizzy drinks in general as “Coca-Cola” due to the strong product loyalty of this brand. A brand name has the potential to attract consumers towards their product as it may occupy a very important place in the mind of most people (Kotler & Armstrong 2009).

2.2.3.7 Recommendation by friends/family

Food and beverage choices can also be considered as an important social activity that may effortlessly be influenced by inner circles such as family, friends and the environment (Higgs & Thomas 2016). The SSB purchasing preferences of parents can influence the beverage consumption of the entire household. Food choices are directly influenced by the type of environment that people are exposed to. It was found in a review conducted, on 69 eligible experiments with over 5800 participants, between 1974 and 2014, that social factors may have a huge impact on quality of food and beverage products consumed by people. They often adjusted the amount of food and beverages consumed according to the choices of their family members, friends and social group members. A high frequency of consumption of food items that contained added sugar was observed among the participants of this study (Cruwys, Bevelander & Hermans 2015). This supports the evidence stating that social norms have the capacity to influence the development of overweight and obesity (Higgs & Thomas 2016).

2.3 Implementation of sugar-sweetened beverage tax

Based on the evidence suggesting the link between the increased consumption of SSBs with an increase in the incidence of obesity, the South African Department of Health (DOH) decided to consider the use of fiscal policies in improving the health standards of the public (Manyema, Veerman, Chola, Tugendhalf, Satorious, Labadarios & Hofman 2014).

A 2012 American systematic review of past studies, on the price elasticity of demand for SSBs and the direct associations of prices/taxes with body weight outcomes, showed that a tax of 20% on SSBs could lead to a reduction in the consumption of SSBs by around 20% (Powell, Chriqui, Khan, Wada & Chaloupka 2013). Evidence from previous studies also shows that the introduction of a sufficiently high-level tax could have a large impact on the purchasing of SSBs (Figure 2.1).

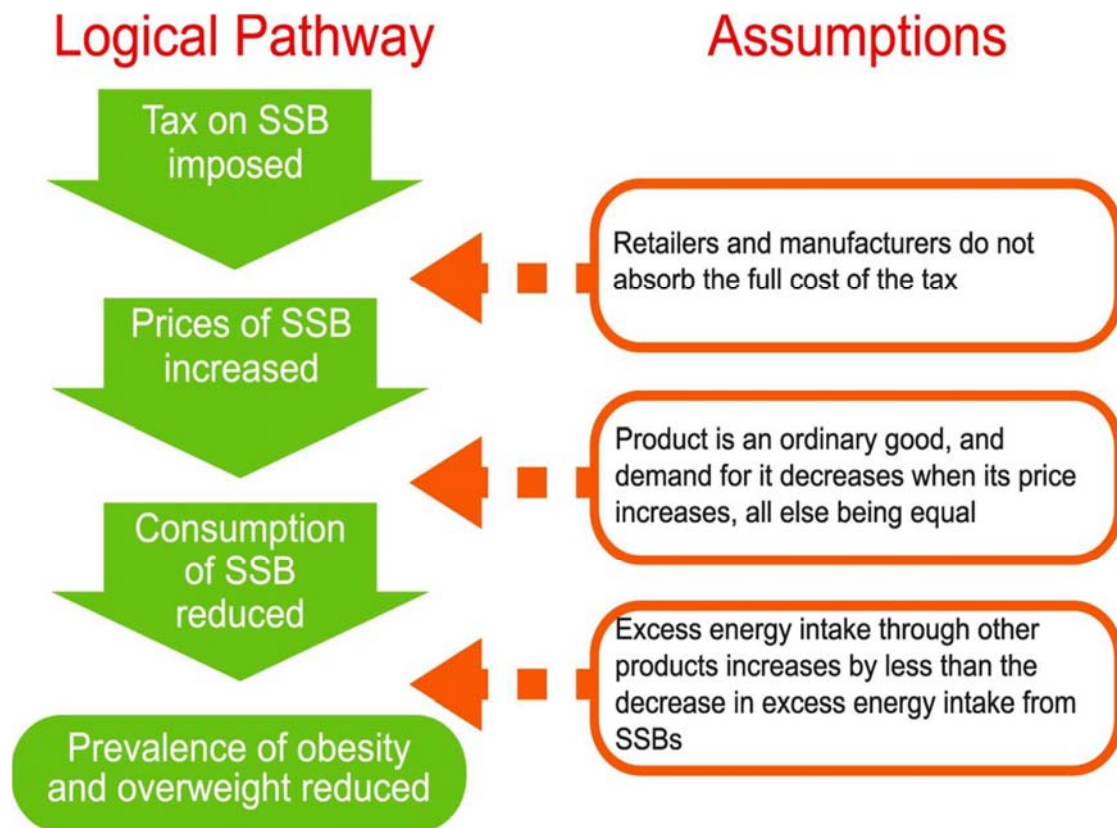


Figure 2.1: Logical Pathway from taxing SSBs to public health impact (Chaloupka, Powell & Chriqui 2011)

2.3.1 History behind the decision to implement sugar-sweetened beverage tax in South Africa

In May 2012, the DOH initiated plans called Strategic Plan for the Prevention and Control of NCDs 2013-2017 as well as in December 2015, the National Strategy for the Prevention and Control of Obesity 2015-2020. Both strategies aimed to reduce obesity prevalence by 10% before 2020. The increased negative health effects of SSBs had led to action to be taken in order to limit their consumption. Many options can be considered including the control of marketing of SSB products, limiting portion sizes and taxation.

In February 2016, the National Treasury of the South Africa Government announced a proposed tax on sugar-sweetened drinks that would come into effect in later 2017. In response to the proposed SSB tax by the Treasury, in 2016 Coca-Cola South Africa responded that the proposed SSB tax would not have a significant positive impact on reducing the prevalence of obesity. They argued that that SSBs tax would lower average kilojoule consumption by only 36 kJ per day (0.3%) and the obesity rates would fall from 13.5% to 13.0% for males and from 42.0% to 41.2% for females. They also added that the economic impact of the tax would be devastating with possible GDP growth falling by 0.4 per cent and South Africa would be hit by a huge scale of potential job losses among the most vulnerable communities. Coca-Cola South Africa, however, proposed plans of reducing kilojoule intake, with a decrease of daily per capita calories, increasing share of low or no calorie drinks and reducing pack sizes. They were confident that these interventions would double the impact of the proposed SSB tax. Coca-Cola South Africa also proposed to invest in health programmes over five years using education and awareness programmes including the Department of Health's Television channel and accelerating the Healthy Food Option forum actions (Coca-Cola South Africa 2016).

2.3.2 A review of international sugar-sweetened beverage tax implementation

Various countries have introduced a tax on SSBs in reaction to growing concern that SSBs have an adverse effect on the public's health. Taxes on SSBs have been implemented in many countries worldwide. These taxes had different bases, structures and impacts according to the patterns of each country. Table 2.2 presents findings of SSB taxes implemented in France, Mauritius, Mexico and Hungary.

Table 2.2: International experience of sugar-sweetened beverage tax implementation (National Treasury of SA-2016)

Country	Year	Tax base	Impact
France	2012	<ul style="list-style-type: none"> ➤ Levy tax. ➤ Beverage and liquid preparations for beverages for human consumption containing added sugar or artificial sweeteners were taxed. 	<ul style="list-style-type: none"> ➤ Price of taxed products increased by: <ul style="list-style-type: none"> • 5% in 2012 • 3.1% in 2013 <p>This led to the reduction of the demand for taxed products by 3.3% and 3.4% (Cornelsen & Carreido 2015).</p>
Mauritius	2013	<ul style="list-style-type: none"> ➤ Excise tax on Soft drinks. ➤ The rate was firstly set at 2 cents per gram, and then increased to 3 cents per gram from 1 January 2014. ➤ Sugar in the Mauritius' legislation includes sucrose, lactose, maltose, fructose and glucose. ➤ The tax which qualified was an excise duty covered the following types of drinks: any aerated beverage (including colas, soda, water, etc.); any syrup for dilution; any fruit squash, cordial or fruit drink (including blends and juice with added sugar). <p>The following products were not taxed: bottled water, pure fruit juice and blends, pure vegetable juice and blends, and dairy milk products.</p>	<ul style="list-style-type: none"> ➤ No figures were available to determine the impact of this tax (Mauritius Revenue Authority 2016). ➤ No figures were available to determine the impact of this tax (Mauritius Revenue Authority 2016).

Table 2.2: Continued...

Country	Year	Tax base	Impact
Mexico	2014	<ul style="list-style-type: none"> ➤ Tax on SSBs and kilojoule rich foods used to decrease obesity and effects of NCDs. 	<ul style="list-style-type: none"> ➤ Purchases of taxed beverages decreased initially by an average of 6% after tax implementation, thereafter declined further up to a 12% decrease by December 2014. ➤ Although the purchases of taxed SSBs were noticed among all three socioeconomic groups, reductions were higher among the households of low socioeconomic status, at a rate of 9% decrease during 2014 and up to a 17% decline by December 2014 compared with pre-tax trends. ➤ Purchases of untaxed beverages were 4% higher mainly driven by an increase in purchases of bottled plain water (Colchero, Popkin, Rivera & Ng 2016).
Hungary	2011	<ul style="list-style-type: none"> ➤ Energy and carbonated fizzy drinks ➤ Carbonated fizzy drinks: with more than 8g/100ml taxed at \$0.02 per litre ➤ Energy Drinks (taxed at 250 HUF per Litre ➤ Drinks with both Methylanthines more than 1mg/100ml and Taurine more than 100mg/100ml ➤ Drinks with Methylanthines content more than 15mg/100ml 	<ul style="list-style-type: none"> ➤ Price increased by 3.4% in 2011, 1.2% in 2012 and 0.7% in 2013 while tax alone was expected to raise price by 3.1% in 2011. ➤ Demand reduced by: <ul style="list-style-type: none"> • 2.7% in 2011 • 7.5% in 2012 • 6% in 2013. ➤ Some evidence of substitution towards non-branded products. (http://www.taxpolicycenter.org/UploadedPDF/2000553-should-we-tax-unhealthy-foods-and-drinks.pdf)

2.3.2.4 United Kingdom (projected from April 2018)

In the 2016 Budget, The UK government proposed the introduction of a new soft drinks industry levy from April 2018. The proposed tax would be on soft drinks that contained added sugar but would exclude milk-based drinks and pure fruit juices with no added sugar. The levy was intended to target the producers and importers of added sugar soft drinks but would exclude small operators. The levy would be taxed on volumes according to total sugar content. A main rate charge for drink above 5 grams of sugar per 100 millilitres and a higher rate for drinks with more than 8 grams of sugar per 100 millilitres. The aim of this was to encourage producers to reformulate their overall product mixes by: reducing added sugar content; helping their customers to choose low sugar and sugar-free brands; and reducing the portion sizes for high sugar drinks (Government-UK 2016).

2.3.3 Study of some projected sugar-sweetened beverage tax implementations

2.3.3.1 United Kingdom

A modelling study conducted in the United Kingdom showed that a 20% tax rate on SSBs would decrease the incidence of overweight and obesity by 0.9% and 1.3% respectively. However, a 10% tax rate would have half of the effect of a 20% tax rate (Briggs, Mytton, Kehlbacher, Tiffin, Rayner & Scarborough 2013). This means that decreasing the tax rate could lead to decreasing goal of reducing the rate of NCDs.

2.3.3.2 South Africa

A modelling study was planned to determine the effect that a 20% tax rate on SSBs would have on the incidence of obesity among adults in South Africa. Three types of data were used: data from the SANHANES-1 which examined consumption patterns; prior meta analyses data that studied the impact of price of SSBs on energy intake; and BMI estimates of adults aged 15 and older, resulting from the National Income Dynamic Study. The results predicted that a 20% tax rate on SSBs implementation could reduce the incidence of obesity by 3.8% and 2.4% respectively among adult males and females as well as decrease of the daily energy intake by an average of 30 kilojoules per person (Manyema *et al* 2014). Figure 2.2 presents the pathway effect of a 20% SSB tax on SSB consumption, daily energy balance, body weight change, and obesity prevalence. The results from this study were comparable with the findings of Powell *et*

al (2013) and Chaloupka *et al* (2011) studies that examined the influence that taxation of SSBs would have on obesity.

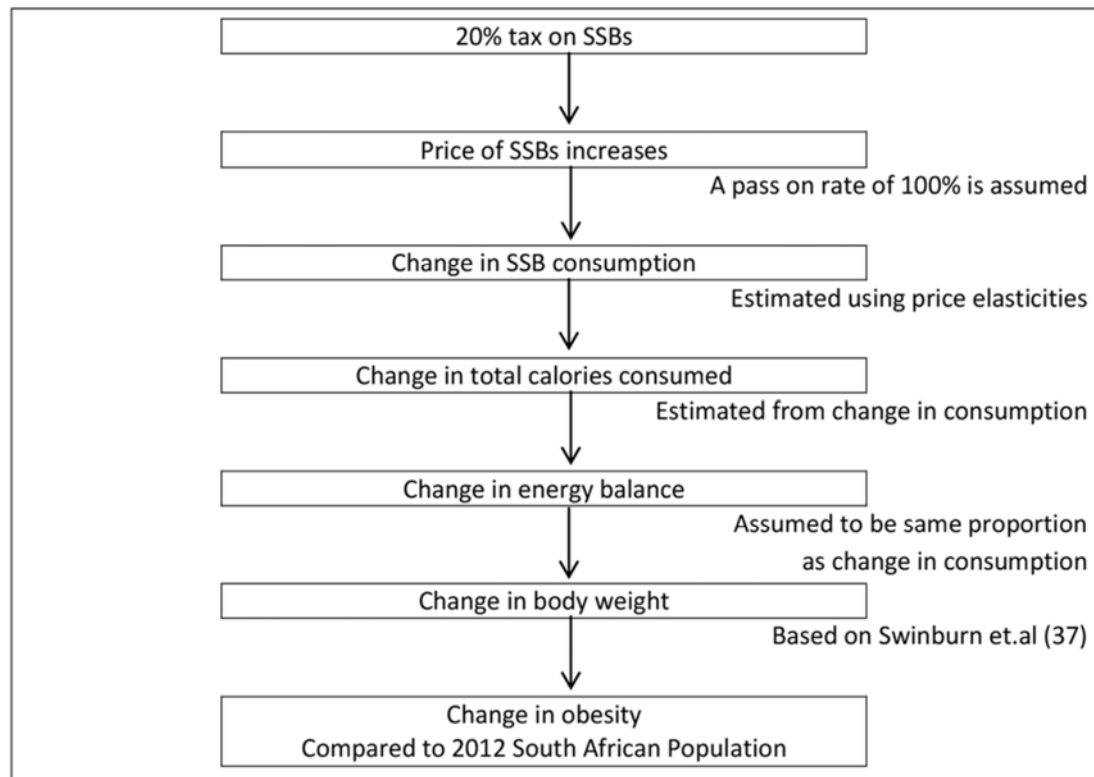


Figure 2.2: Analytical framework for the effect of a 20% tax on obesity in South Africa (Manyema *et al* 2014)

2.4 Conclusion

The increased prevalence of overweight and obesity among various populations has raised much concern due to the negative implications that it has on human health. In light of the problem, much attention has been focused on the association between the consumption of SSBs and weight gain. Evidence suggests that increasing the prices of high sugar foods and non-alcoholic drinks, potentially through taxation, may reduce the purchases of these products proportionately to the level of the price increase imposed. The literature reviewed in this chapter indicates a gap in South African knowledge surrounding the impact that a SSB tax will have on the purchasing of these products. Therefore, it is important to investigate the types of SSBs purchases, the factors motivating consumers to purchase SSBs and the impact of a SSBs tax on consumer purchases before the tax was implemented.

CHAPTER 3: METHODOLOGY

This chapter focuses on the methodology that was used in this study. The following sections will be outlined: the survey design, the study population and sample selection, the survey methods and materials, the variables included in the study, the pilot study, data analysis, and the ethical considerations in this study.

3.1 Type of the study

A cross sectional study design was used in this study to determine the impact of the impending 2018 SSB tax was conducted among 442 Black African women aged 19 and older, shopping at the Greater Edendale Mall in Pietermaritzburg, KwaZulu-Natal.

3.2 Background on location of the study

The study was conducted at the Greater Edendale Mall which is popular shopping centre located at the corners of Moses Mabhida and Mount Partridge Roads, in the urban township of Edendale, Pietermaritzburg. The mall has over 100 shops including well known food and clothing retail shops as well as many banking facilities, medical services, hair and beauty salons, jewellery stores, pharmacies and restaurants. The undercover taxi rank can house up to 288 taxis at any one time, ensuring that the mall is easily accessible (Travel Ground – Greater Edendale Mall 2017).

There are also informal trading facilities within the Greater Edendale Mall. The map presented in Figure 3.1 shows the uMsunduzi local Municipality of the uMgungundlovu District in KwaZulu-Natal province of South Africa where the Greater Edendale Mall is located.

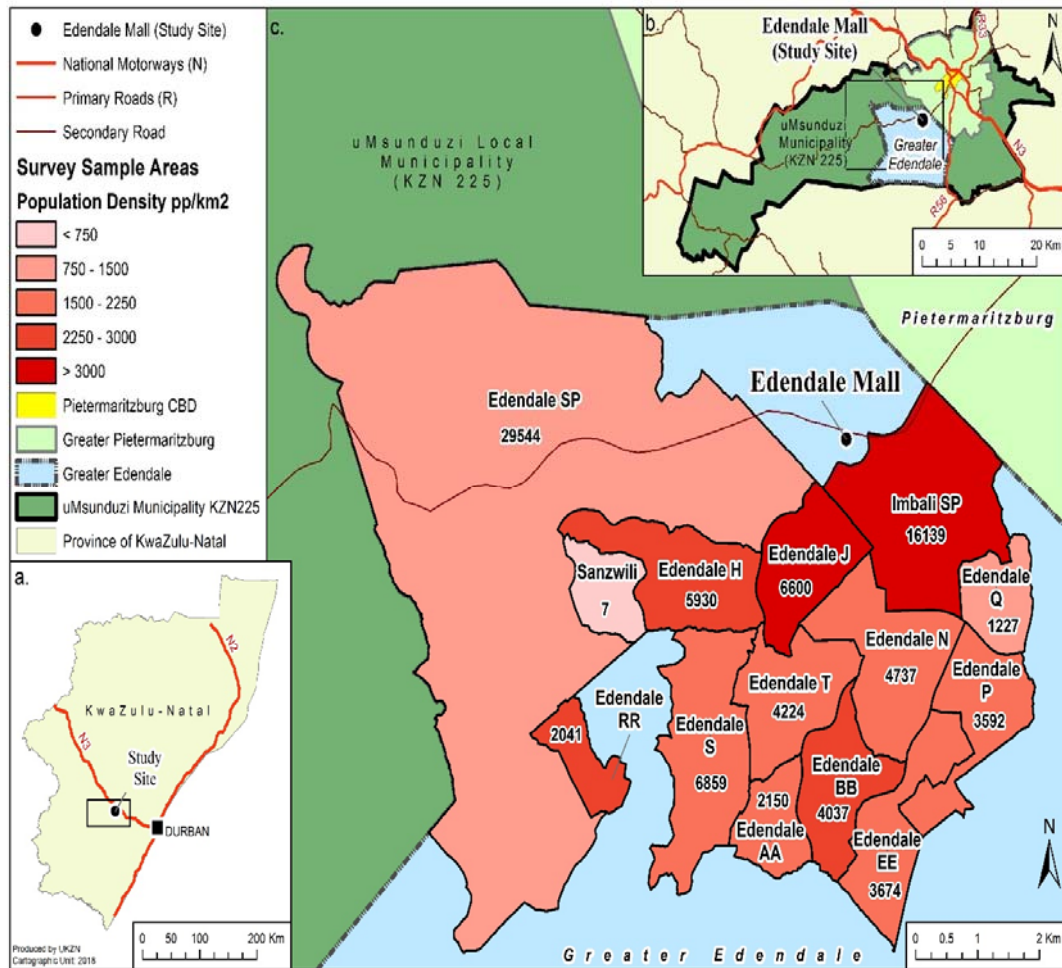


Figure 3.1: uMgungundlovu Municipality, Edendale and surrounding areas map.
(Source: Gijsbertsen 2018)

According to the latest census data, Black Africans (99.49%) formed the majority of the population of Edendale (Statistics South Africa 2011). The race distribution of the Edendale Township, Msunduzi Municipality, uMgungundlovu District, KwaZulu-Natal province as well as South Africa is presented in Table 3.1.

Table 3.1: Percentage distribution of the KwaZulu-Natal province vs South Africa population during the year 2011(Statistics of South Africa 2011).

Location	Total Population	Race group				
		Black African	Coloured	Indian/Asian	White	Other
Edendale	140891	99.5%	0.3%	0.1%	0.1%	0.1%
Msunduzi Municipality	618536	81.1%	2.9%	9.8%	6.0%	0.3%
uMgungundlovu District	1017763	84.8%	2.0%	6.7%	6.9%	0.3%
KwaZulu-Natal province	10267300	86.8%	1.4%	7.4%	4.2%	0.3%
South Africa	51770560	79.2%	8.9%	2.5%	8.9%	0.5%

The Greater Edendale Mall was considered as the most suitable site to conduct this study as it was the only shopping mall in the area with more than 100 stores, shops, restaurants, banking and entertainment facilities. It was anticipated that this would attract a greater diversity of respondents from different backgrounds who lived in Edendale, making the sample population representative.

3.3 Study design

According to Bless, Higson-Smith & Kagee (2006, pp79-90), the term ‘research design’ is defined as procedures followed to test a hypothesis under specific conditions. A study should be designed in such a way as to provide answers to the main objectives of the study.

3.3.1 Cross sectional study

This study made use of a cross sectional descriptive quantitative study design aimed at investigating the impact of the impending SSB tax on the purchases of Black African women aged 19 and older, shopping at the Edendale Mall in Pietermaritzburg.

The cross sectional design was chosen as the most appropriate in this study as the prevalence of SSB consumer purchases was investigated. This type of study is often conducted over a short period of time and does not need any further follow up assessments (Merrill 2012, pp 92-93). More valuable advantages are stated below:

Advantages of cross sectional studies:

A cross sectional study can be used to approximate the prevalence of a condition or behaviour in a population. The cross sectional study is easy to conduct, can be done within a short period of time and also inexpensive to conduct (Sedgwick 2014; Silman & MacFarlane 2002). Participants are only seen once, therefore there is no loss of subjects nor any future follow up meetings that are required. A cross sectional study generally uses questionnaire type surveys to collect information and can be used to target a large study population (Sedgwick 2014).

Disadvantage of cross sectional studies:

A cross sectional study is not effective when trying to analyse behaviour over a certain period of time. It is difficult to determine cause and effect using a cross sectional study. This may result in a sample that will not be representative of the study population (Sedgwick 2014). However, in this study, it was ensured that Black African women from all different socio-economic backgrounds, age groups and educational levels were included during the data collection process in order to obtain a more representative sample. Cross sectional studies can only give an account for associations between variables and not ascertain causes of outcomes. Results from cross sectional studies generally call for a more detailed study such as a longitudinal or cohort study to gain more knowledge on the hypotheses (Sedgwick 2014). All research instruments were administered by the researcher, and some of the disadvantages associated with a cross sectional study were addressed.

3.3.2 The use of a questionnaire

In this study, a five-part questionnaire (Appendix A, p83) was used. The first part included information on demographic characteristics of respondents who purchase the SSBs; the second part covered the types of SSBs purchased; the third part of the questionnaire comprised of what factors influenced the respondents to purchase SSBs and the fourth part included the frequency of SSB purchases, and how often consumers purchased the SSBs. The fifth part of the questionnaire comprised of what impact the impending 2018 SSB taxes would have on SSB

purchases once implemented. Considering that this study was conducted on a very large sample of SSB consumer purchasers, the use of a questionnaire was the most appropriate tool for reliable data collection.

A questionnaire is a very expedient tool that can be used to collect information from a large number of respondents within a short period of the time (Jean 2006). It is very important to design the questionnaire properly to make sure that data collected are accurate and results are easily interpreted. A questionnaire consists of printed questions that respondents have to answer (Jean 2006).

A good questionnaire should be valid, reliable, clear, interesting and succinct. A valid questionnaire should be phrased in such a way that the respondent understands the objective of the question (Ng 2006). A reliable questionnaire should yield the same answer if the same question is posed to the respondent repeatedly in a short period of time. An interesting questionnaire is more likely to be completed by the respondent and yield a better response rate. A succinct questionnaire is referred to where questions are asked with the aim to answer only the research objectives (Jenn 2006). According to Jenn (2006), it is important to consider the following factors when developing a successful questionnaire:

- The first step of designing a good questionnaire is to construct a conceptual framework where the researcher outlines the aim of the study.
- The independent variables include gender, age as well as socio-economic status should be determined for analysis.
- Only necessary and relevant questions are to be included by designing the questions in such a way that they are valid, reliable and easy to use.
- The study population as well as sample characteristics must be considered when the questionnaire is designed.
- When designing a questionnaire, it is crucial to consider the type of methodology that will be used to collect and analyse data.
- Questions should be set out in a logical sequence with clear instructions, addressing only one concept, and must be clear enough to avoid ambiguity.

- A pilot study be considered before conducting the main study with the questionnaire being pilot tested on respondents with the similar characteristics as those who will be selected for the main survey.

According to Gillham (2008, p6), it is more effective to use questionnaires for studies involving a large population over a short period of time. Questionnaires may also be restrictive depending on the ability of the respondents to read and understand the questions properly (Gillham 2008, p8). In order to overcome this, one trained field worker conducted all surveys and an isiZulu option was offered to respondents who would be more comfortable answering the questions in isiZulu, their mother tongue.

Questionnaires can be in the form of closed-ended or open-ended questions (Jenn 2006). Closed-ended questions provide options to the respondents and require them to choose the most appropriate answer from the list of options, therefore less time consuming and easy to administer. However, the limitation of closed-ended questions consists on restricting the respondents to a list of options. Open-ended questions allow the respondents to express their opinions freely and they are not restricted by the options. Sufficient space should be provided to record answers. However, the disadvantages of open-ended questions consist of answers being difficult to analyse, requirement of answers to be grouped, it is time consuming for respondents to answer properly, and the possibility of respondents not writing neatly and legibly (Jean 2006).

Closed-ended questions are divided into a list of options include multiple choice questions, “yes” or “no” questions or a Likert scale (often with 5-or 7-point scales). It is advisable that multiple choice questions have options that are extensive in order to help the respondents to select the most suitable answer. Likert scales are frequently used to assess the attitude or belief of the respondent towards a particular aspect (Jean 2006). A five-point Likert scale was used in this study to access the factors that had motivated the respondents to purchase the SSBs. An open-ended response structure was used to gather information on the second question regarding the respondent’s opinion of the impact the SSB taxes would have on future SSB purchases.

In this study both closed-ended and open-ended questions were used. Multiple choice closed-ended questions were used: to gather information on demographic characteristics of respondents who purchase the SSBs, to assess the frequency of consumer purchases, and to determine the impact of SSB taxes on consumer purchases. “Yes” or “no” closed questions were used to test the knowledge of the respondent about their awareness of the 2018 implementation of SSB taxes in South Africa.

3.4 Study population and sample selection

3.4.1 Study population

The study population included Black African women aged 19 and older, shopping at the Edendale Mall in Pietermaritzburg, South Africa. 2011 Census SubPlace Msunduzi Income data from STATS SA were used to obtain the sample size of the female population from the suburbs surrounding the Greater Edendale Mall. This totalled 90761 (Table 3.2).

Table 3.2: Female population from suburbs surrounding the Greater Edendale Mall according to 2011 Census SubPlace Msunduzi Income (Statistics South Africa 2011)

Main Location	Sub Place	Census 2011 Code	Female population
Edendale Main Place	Edendale AA SP	566016009	2150
	Edendale BB SP	566016010	4037
	Edendale EE SP	566016011	3674
	Edendale H SP	566016003	5930
	Edendale J SP	566016002	6600
	Edendale N SP	566016006	4737
	Edendale P SP	566016012	3592
	Edendale Q SP	566016005	1227
	Edendale RR SP	566016013	2041
	Edendale SP	566016001	29544
	Edendale S SP	566016008	6859
	Edendale T SP	566016007	4224
	Sanzwili	566016004	07
Total Edendale Main place			74622
Imbali Main place	Imbali SP	566037001	16139
	Total Imbali Main place		16139
Total Edendale Main Place + Total Imbali Main Place (study population)			90761

Since the number in the target population, 90761, was large; consultation with a professional Statistician, determined that this study would need to survey 384 female consumers in order to make the study sample more representative of the population. The Statistician also advised that

an additional 15% of the population be sampled to allow for incorrectly completed questionnaires and drop outs (Hendry 2017).

Black African women were targeted for the purpose of this study due to the significant increase of obesity prevalence among this population group (39.9%), revealed by 2013 SANHANES-1 (Shisana *et al* 2013). The inclusion of only female subjects in this study can be justified as women were most likely to be responsible for purchasing food and beverages for their family and therefore would have a large influence on what their family members consumed (Sharma 2002, p61).

3.4.2 Sample selection

The subjects were selected using non-probability sampling which involved convenience sampling. This method of sampling involved selecting participants present inside the mall where the study was conducted. Many advantages can be derived from this form of sampling method including that it is not expensive, it can be conducted in a short period of time and it is very convenient. The Greater Edendale Mall was a suitable choice for the researcher to recruit Black African women purchasing SSBs.

3.4.3 Data collection process

The following process was used during the data collection:

1. The total number of Black African women population living in the suburbs around the Great Edendale Mall was obtained from Stats SA Census SubPlace Msunduzi Income (Table 3.2) in April 2017, and a professional Statistician determined the sample size required for the study to be representative.
2. Data collection tool in English was evaluated and validated by the Statistician (Appendix A, p83).
3. The English questionnaire was translated into isiZulu for respondents who would be more comfortable answering the questions in their mother tongue (Appendix B, p92).
4. Gatekeeper's permission was obtained from the manager of the Greater Edendale Mall in order to conduct the survey within Greater Edendale Mall premises (Appendix C, p100).
5. Ethical clearance was applied for and obtained from BREC (Appendix D, p102).
6. Information sheet and consent form to participate in research were formulated in English (Appendix E, p103) and isiZulu for respondents who were more comfortable with the isiZulu language (Appendix F, p105).

7. A pilot study was conducted in July 2017.
8. Based on the outcomes of the pilot study, the study design and research methods were adjusted accordingly. The data collection tool was forwarded again to the Statistician for validation.
9. The isiZulu data collection tool was translated using the newly validated English version.
10. Data was collected from 05 to 20 August 2017. The researcher ensured that the survey was conducted at random times during week days as well as weekends to give equal opportunity to working women to be able to participate in the study.
11. A random selection of Black African women, aged 19 and older, were approached, outside various supermarkets. After determining that they consumed and purchased SSBs regularly, they were asked to participate in the study. If they agreed, an information sheet and consent form were given to them. They were asked to sign the consent form prior to the survey.
12. The 442 participants were surveyed and the questionnaire took around 15 minutes to complete.

3.5 Study method and materials

In this section, the methods and materials that were used in collecting the data for the study will be highlighted.

3.5.1 Measuring instruments

A five-part questionnaire was used to conduct this study (Appendix A: Data collection tool - English, p83). All the data collection tools used in this study were designed based on tools used in previous studies assessing the demographic characteristics, the consumer purchase patterns and impact of price increase on future consumer purchases (Crosby 2017; Nakhimousky, Feigl, Avila, O'Sullivan, Macgregor-Skinner & Spranca 2016; Veerman, Sacks, Antonopoulos & Martin 2016; Rajan 2012). The researcher chose to use the interview approach as this would encourage a higher response rate and ensure that all questions would be answered (Silman & MacFarlane 2002). The questionnaires were designed in both isiZulu.

Section A: Demographic characteristics (Appendix A, p83)

In this first section of the questionnaire, demographic characteristics were assessed using closed-ended questions. Respondents' age, home, language, education level, number of household members including themselves was asked in the first part of this section. In the second part of this section, questions regarding the subjects' total monthly household income as well as estimated monthly household money available for food and beverage purchases were asked in order to define the socio-economic characteristics of the sample population. Measuring values used to assess total monthly household income of respondents (in Section A, questions 4) were also used by the STATS SA Income and Expenditure of Households 2011/2012 survey (Statistics South Africa 2012); unfortunately, at the time of questionnaire development, these were the most recent figures. Similarly, the monthly household money available for food and beverage purchases measuring values used (in Section A, question 5) derived from STATS SA's report 03-10-06 on Poverty Trends in South Africa – An examination of Absolute poverty between 2006 and 2016 (pp 104-111) based on data collecting during Income and Expenditure of Households survey and Living Conditions surveys (Statistics South Africa 2017).

Section B: Types of SSB purchased by consumers (Appendix A, p84)

The second section covered the types of SSB purchased including: fizzy drinks, sport drinks, energy drinks, flavoured waters, sweetened ice drinks, and squashes– concentrated- syrups juices. The SSBs listed in the questions of this section were based on the beverages sold at the greater Edendale Mall, and commonly used beverages included in previous study that assessed the dietary intake of South African adults (Mchiza, Steyn, Hill, Kruger, Schonfeldt, Nel & Wentzel-Viljoen 2015). In the first part of this section, six brands of fizzy drinks (Coo-ee, Sparletta/Coca-Cola, Coca-Cola, Pepsi, Miranda and 7UP) and a total of 33 flavours (Apple, Blackcurrant, Cherry Plum, Coco-pine, Cola, Cranberry, Grape, Granadilla, Granadilla Twist, Ginger Brew, Crème Soda, Fanta Orange, Iron Brew, Lemon, Litchi, Mango, Orange, Pineapple, Stoney Ginger Beer, Pineapple, Pine Nut, Sprite, Schweppes, Raspberry, Twist Lemon) were included in the questionnaire.

Section C: Factors that influence consumers to purchase SSBs (Appendix A, p87)

The third section of the questionnaire comprised the questions related to motivating factors behind SSB purchases: price, design & packaging, product advertising, brand, taste, impact on

health, loyalty to the product, and recommendation by friends & family. The factors selected in this study were adjusted from previous studies that assessed the factors that influenced consumers' consumption of SSBs (Deliens *et al* 2014; Boek, Bianco-Simeral, Chan & Goto 2012).

Section D: Frequency of SSB purchases by consumers (Appendix A, p88)

The main question included in this section was “how often do consumers purchase the SSBs” and measurements used to assess the frequency of SSB purchases were: “less often than once a month”, “at least once a month”, “once a month”, “2/3 times a week”, “4/5 times a week”, “6 times a week”, and “every day”.

Section E: Impact the impending 2018 SSB tax will have on future SSB purchases (Appendix A, p88)

Three types of questions were included in this section to assess the impact of SSB taxes on future consumer purchases. In the first part, dichotomous questions (“yes” or “no”) were used as a tool to assess the awareness of the respondents on the government intention of implementing the SSB taxes in South Africa.

3.6 Pilot study

A pilot study can be defined as a small study done before a larger study with aim of testing whether the procedure to be followed, recruitment of the study sample and research instruments used are appropriate and serve their intended purpose (Bless *et al* 2006). The pilot study was conducted by the researcher at the Greater Edendale Mall in July 2017 on twenty women who met the study inclusion criteria. The pilot study participants were randomly selected from the same study population that was going to be used in the main study, however, respondents that took part in the pilot study were not surveyed in the main study. All respondents were informed about the study and given a consent form to sign before participating in the study.

The purpose of the pilot study was: to test if the study methodology was appropriate, to determine whether participants understood the questions well, to identify errors in the questionnaires, to find out if all questions were in a logical order or rephrasing was required

due to certain ambiguity, and get a feedback on the flow of the survey as well as to determine the average time taken to complete the questionnaire.

All the weaknesses observed in the method used to collect data during the pilot study were noted and appropriate remedies were done in order to improve the main study design.

The following modifications were made after the pilot study:

- The questionnaire design of the study was reviewed by rephrasing some questions where respondents struggled to answer easily. This helped to make sure that all the questions included in the survey questionnaire were understood by the respondents.
- The researcher found that a large number of respondents were carrying Shoprite plastic bags. This was later understood as being a result of the position of the researcher being closer the Shoprite and away from Pick'n Pay in a different mall corridor. The researcher moved to a central position near the entertainment area where Pick' n Pay and Shoprite corridors merged. This was done because the two supermarkets were not selling exactly the same SSBs.

The researcher made sure that all the questions were answered by the respondents before leaving the study site. The respondents took around 15 minutes the complete the survey.

3.7 Variables included in the study, data capturing and statistical analysis

After data collection, the IBM statistical package Statistical Package for the Social Sciences (SPSS) version 24 was used to collate and analyse the data.

Table 3.3 summarises the objectives, the variables associated with each object as well as the statistical test used for analysing of the results. Significance was measured at $p < 0.05$.

Table 3.3: Data analysis of the objectives

Objectives	Variables required for analysis	Statistical analysis
<ul style="list-style-type: none"> To determine the demographic characteristics of Black Africa women who purchase SSBs. 	<ul style="list-style-type: none"> Age Place of residence Language Education level Number of household Total monthly household income Monthly household money available for food and beverage purchases 	<ul style="list-style-type: none"> Descriptive statistics Chi-square goodness of fit test
<ul style="list-style-type: none"> To determine the types of SSBs that Black African women are purchasing. 	<ul style="list-style-type: none"> Carbonated fizzy drinks Sport drinks Energy drinks Flavoured water drinks Sweetened ice tea Squashes-Concentrates-Syrups (Juices) 	<ul style="list-style-type: none"> Binomial test
<ul style="list-style-type: none"> To assess the frequency of SSBs purchased by Black African women. 	<ul style="list-style-type: none"> Less often than once a month At least once a month Once a month 2/3 times a week 4/5 times a week 2 times a week Every day 	<ul style="list-style-type: none"> Chi-square goodness of fit test
<ul style="list-style-type: none"> To investigate the factors that influence Black African women to purchase SSBs. 	<ul style="list-style-type: none"> Price Design & packaging Product advertising Brand Taste Impact on health Loyalty to the product Recommendation by friends & family 	<ul style="list-style-type: none"> One sample t-test Chi-square goodness of fit test Central value of 3
<ul style="list-style-type: none"> To determine the effect of impending 2018 tax on the purchases of SSBs. 	<ul style="list-style-type: none"> Awareness of the respondents on the government intention of implementing the SSB taxes. Own opinion about the proposed SSB taxes. The impact the SSB taxes will have on the future SSB purchases. Continue purchasing SSBs as usual. Reduce amount of SSBs purchased. Switch to a cheaper brand. Stop purchasing SSBs. 	<ul style="list-style-type: none"> Binomial test Chi-square goodness of fit test

3.8 Data quality control

3.8.1 Reliability and validity of data

Reliability is referred to as the degree to which research data is void of measurement error (Babbie 2007 p314). Validity refers to the extent which research instruments measure what was intended to be measured as well as if these instruments accurately reflect the theory being explored (Babbie & Mouton 2008 p313).

In order to ensure the reliability of the study, the following precautionary measures were taken:

- The interview schedule was administered in the same sequence and using the same questionnaire for all the participants.
- An isiZulu version of the questionnaire was available for participants who did not understand English.
- The researcher conducted the survey on his own to ensure that all 442 questionnaires were administered in a standardised method.

The validity of the study was ensured by taking steps below:

- A pilot study was conducted before the main study. Feedback from the pilot study helped to restructure some questions and the Statistician was consulted again in order to validate the questionnaire once more before the main study.
- The tools used in data collection of this research were adapted from studies conducted previously assessing similar objectives.

3.8.2 Reduction of bias

Bias is defined as a “form of systematic error that can occur in sampling or testing by selecting or favouring a particular result or response over others” (Kaplan & McCune 2018, p227).

Potential forms of bias introduced during the data collection process of this study included:

- Selection bias that may arise when participants were selected as the study used convenience sampling method and only subjects that agreed to participate in the study were selected.
- Recall bias can occur when respondents over/or under estimate monthly household income or monthly household food and beverages expenditure for example.

In order to reduce any forms of bias, the following aspects were considered:

- Bias was reduced by ensuring that a variety of subjects who met the inclusion criteria were approached by the researcher, informed about the purpose of the study and asked to participate.
- The respondents were interviewed in a standardised manner.

3.9 Ethical clearance

Gatekeeper's permission letter (Appendix D, p100) was obtained from the manager of the Great Edendale Mall in order to conduct the survey within the mall premises. Ethical approval was obtained from the University of KwaZulu-Natal's Biomedical Research Ethics Committee (BREC). A copy of the ethics clearance letter can be found in Appendix E (p 102) (BREC Ref: BE287/17). The Informed sheet and consent form for English (Appendix F, p103) and isiZulu version (Appendix G, p105) outlining the title, objectives and methodology used in the study was designed. The respondents were requested to sign a consent form prior to participating in the study, after being told that the participation in the study was entirely on a voluntary, anonymous and confidential basis.

3.10 Summary

This chapter provided a brief background of the setting. The methodology used to investigate the study's objectives based on the assigned objectives was outlined. The data collection tools, precautionary measures taken to maximise the reliability and validity of the study results as well as bias avoidance in order to have accurate findings were also explored. In the next chapter, the results of the study were analysed in relation to the previously set objectives.

CHAPTER 4: RESULTS

This chapter presents the findings of the study. The results of the statistical analyses of the data are presented according to the objectives specified in chapter one related to the demographic characteristics of the respondents, the types of SSBs purchased, the frequency of SSB purchases, the factors that influenced the purchases of SSBs as well as the change that the impending 2018 tax would have on SSB purchases.

4.1 The demographic characteristics of the respondents

A total of 442 Black African women aged 19 and older, shopping at the Greater Edendale mall in Pietermaritzburg, participated in the survey. Three respondents did not fully complete the questionnaire and were excluded from the study, therefore the response rate to this study was 99.3%. The final number of respondents included in this investigation was 439. The mean age of the respondents was 33.69 years with a standard deviation (SD) of 8.163, while the minimum and maximum ages were 19 and 55 respectively. Table 4.1 presents the demographic characteristics of the respondents according to their level of education, size of household, monthly income as well as food budget.

Table 4.1: Demographic characteristics of the respondents (n=439)

		n	%
Education level	Up to Grade 11	156	35.5
	Matric	172	39.2
	Certificate	55	12.5
	Diploma	28	6.4
	Degree	28	6.4
Size of household	Live alone	1	0.2
	Two	27	6.2
	Three	116	26.4
	Four	172	39.2
	Five	88	20.0
	Six or more	35	8.0
Income per month	Up to R5553	172	39.2
	R5553 – R10009	111	25.3
	R10010 – R18544	91	20.7
	R18545 – R44948	60	13.7
	R44949 and above	5	1.1
Food budget per month	Up to R791	21	4.8
	R791 – R1319	49	11.2
	R1320 – R2639	165	37.6
	R2640 – R12591	201	45.8
	R12592 and above	3	0.7

4.2 Types of sugar-sweetened beverages purchased

Carbonated fizzy drinks were the most commonly purchased beverage (n=391, 89.0%) while sport drinks were purchased least frequently (n=4, 0.9%). Table 4.2 presents the types of SSBs purchased by the respondents. Considering all the SSBs available for purchase, a significant number of respondents did not purchase beverages in the following categories: sport drinks, energy drinks, flavoured water drinks as well as squashes, concentrates and syrups (juices) (Binomial test: $p < 0.05$).

Table 4.2: Type of sugar-sweetened beverages purchased by the respondents (n=439)

Types of sugar-sweetened beverage		Packaging size	n	%
Fizzy drinks	Coca-Cola	2 litre	160	36.4
	Sparletta	2 litre	79	18.0
	Coo-ee	2 litre	152	34.6
	Total		391	89.0
Sport drinks	Energade	1 litre	2	0.5
	Powerade	500 ml	1	0.2
	Powerade	750 ml	1	0.2
	Total		4	0.9
Energy drinks	Red Bull	250 ml	3	0.7
	Red Bull	473 ml	1	0.2
	Play	330 ml	1	0.2
	Total		5	1.1
Flavoured water drinks	Aquelle	1.5 litre	15	3.4
	Total		15	3.4
Squashes, Concentrates and Syrups (Juices)	Brookes Oros	2 litre	1	0.2
	Brookes Oros	5 litre	2	0.5
	Ceres Fruit Squash or Nectar	1 litre	1	0.2
	Ceres Fruit Squash or Nectar	1.75 litre	1	0.2
	Fruitree Concentrate Squash	2 litre	2	0.5
	Fruitree Concentrate Squash	5 litre	8	2.1
	Wild Island Smoothies	1 litre	2	0.5
	Fusion Dairy Blend Concentrate	750 ml	5	1.1
	Fusion Dairy Blend Concentrate	5 litre	2	0.5
	Total		24	4.9

4.2.1 Carbonated fizzy drinks

Table 4.2 shows that among all fizzy drinks available for purchase, three major brands of 2 litre fizzy drinks dominated the list. The respondents were requested to indicate the package size and quantity that they normally purchased on a monthly basis and asked to select only one quantity per brand. The respondents most commonly purchased eight 2 litre bottles per month of either Coo-ee 9.6%, Sparletta 7.5% or Coca-Cola 7.3%.

4.2.2 Influence of demographic characteristics on types of fizzy drinks purchases

A chi-square test of independence was conducted to analyse whether the purchase of a particular brand of carbonated fizzy drink was influenced by the level of education of the respondents (Table 4.3). A significant relationship was found between level of education and the purchasing of Coo-ee 2 litre beverages ($\chi^2(4) = 58.056, p < 0.05$). Respondents with an education level up

to Grade 11 were significantly more likely to purchase the Coo-ee brand (n=82, 52.6%). In contrast, respondents with an education level higher than matric, were more likely to purchase Coca-Cola (Certificate n=37, 67.3; Diploma n=16, 57.1 and Degree n=10, 35%).

Table 4.3: The influence of education level on types of carbonated fizzy drink purchased

Education level	Coo-ee 2 litre				Sparletta 2 litre				Coca-Cola 2 litre			
	No		Yes		No		Yes		No		Yes	
	n	%	n	%	n	%	n	%	n	%	n	%
Up to Grade 11	74	47.4%	82	52.6%	136	87.2%	20	12.8%	119	76.3%	37	23.7%
Matric	111	64.5%	61	35.5%	134	77.9%	38	22.1%	112	65.1%	60	34.9%
Certificate	48	87.3%	7	12.7%	49	89.1%	6	10.9%	18	32.7%	37	67.3%
Diploma	28	100.0%	0	0.0%	21	75.0%	7	25.0%	12.0	42.9%	16	57.1%
Degree	26	92.9%	2	7.1%	20	71.4%	8	28.6%	18	64.3%	10	35.7%

4.3 Frequency of sugar-sweetened beverage purchases

The most common frequency of the purchasing SSBs was “At least once a month” (n=202, 46.0%) followed by “Once a week” (n=194, 44.2%). The lowest frequency was observed among respondents who purchased SSBs on “4-5 times a week” basis (n=1, 0.2%). The frequency of SSB purchases of all respondents is presented in Table 4.4.

Table 4.4: The frequency of sugar-sweetened beverage purchases

Frequency	n	%
Less than once a month	20	4.6
At least once a month	202	46.0
Once a week	194	44.2
2-3 times a week	22	5.0
4-5 times a week	1	0.2
6 times a week	-	-
Everyday	-	-

When looking at all the responses from Table 4.4, it was found that a significant number of respondents (n=396, 90.2%) indicated that they purchased SSBs between one and four times a month ($\chi^2(4) = 464.474, p < 0.05$).

4.4 Factors that influenced the purchases of sugar-sweetened beverages

Respondents were asked to rate the importance of the factors from a scale of 1 which represented “Not at all important” to 5 which represented to “Extremely important”. A one sample t-test was applied to test if the average importance rating was significantly different from a centre score of “3”. If the mean score was greater than “3” the factor was interpreted as significant. A mean score less than “3” was considered as significantly not important. Table 4.5 contains potential factors influencing the purchase of SSBs that were presented to the respondents as well as the mean scores for each factor. It can be seen that two factors were significantly important: the price and the taste of the SSBs ($p < 0.05$). The factors that were significantly not important in order of the mean score included the brand; advertising; impact on health; design and packaging; recommendation by friends/ family; and loyalty to product ($p > 0.05$).

Table 4.5: The factors influencing the purchase of sugar-sweetened beverages

Level of importance	Factors	Mean	Standard Deviation
Significantly important	The price	4.62	0.503
	The taste	4.00	0.512
Significantly not important	The brand	2.86	0.481
	Product advertising	2.70	0.556
	Impact on health	2.13	0.645
	Design and packaging	1.90	0.532
	Recommendation by friends/family	1.78	0.502
	Loyalty to the product	1.76	0.532

4.5 Impact of impending 2018 sugar-sweetened beverage tax

4.5.1 Consumer awareness of impending 2018 sugar-sweetened beverage tax

A significant number of respondents (n=359, 81.8%) indicated that they were not aware of the SSB tax (p<0.05). Interestingly, among the few respondents who were aware (n=80, 18.2%), around two-thirds (n=56, 70.0%) had either a diploma (n=18, 32.1%) or degree (n=38, 67.9%).

4.5.2 Impact of tax on impending 2018 sugar-sweetened beverage purchases

Table 4.6 presents the impact that a potential price increase would have on the respondents' future purchases of SSBs. It was found that a significant number of respondents (n=213, 48.5%) (p<0.5) indicated that if the price of the beverage increased, they would continue to purchase and consume the beverage as usual. Conversely, nearly one-third of respondents (n=154, 35.1%) (p<0.05) reported that they would reduce their SSB purchases and consume smaller amounts of SSBs. Fewer respondents (n=68, 15.5%) (p<0.05) indicated that they would switch to cheaper drinks, and very few (n=4, 1.0%) (p<0.05) confirmed that they would stop purchasing SSBs.

Table 4.6: The impact of impending 2018 sugar-sweetened beverage tax on future purchases

	Continue purchasing		Reduce amount		Switch to cheaper SSB		Stop purchasing	
	n	%	n	%	n	%	n	%
Carbonated fizzy drinks	203	46.2	131	29.8	56	12.8	2	0.5
Energy drinks	1	0.2	3	0.7	-	-	-	-
Sport drinks	1	0.2	3	0.7	-	-	-	-
Flavoured water drinks	1	0.2	13	3.0	-	-	2	0.5
Squashes, Concentrates & Syrups (Juices)	7	1.6	4	0.9	12	2.7	-	-
Total	213	48.5	154	35.1	68	15.5	4	1.0

Based on the analysis of the results from each type of SSB, a significant number of respondents who regularly bought carbonated fizzy drinks (n=203, 46.2%) indicated that they would continue purchasing beverages after the 2018 SSB tax implementation ($\chi^2 (3) = 235.653$, $p < 0.05$). Interestingly, most respondents who purchased flavoured water drinks (n=13, 3%) reported that they would reduce these purchases after a price increase ($\chi^2 (2) = 16.625$ $p < 0.05$).

4.6 Influence of demographic characteristics on the sugar-sweetened beverage purchases after 2018 tax implementation

In this section the influence of education and income levels of respondents on the decision to purchase carbonated fizzy drinks after the 2018 tax implementation will be presented. Only the purchases of carbonated fizzy drinks were analysed in this section because they were the most commonly purchased type of beverage (n=392, 89.3%) by the respondents (Table 4.7).

4.6.1 Education level

Chi-square tests of independence were conducted to determine whether the demographic characteristics of the respondents would influence the SSB purchases after the impending 2018 SSB tax. A significant relationship was noted between level of education of respondents and the purchase of fizzy drinks after the implementation of SSB tax, $\chi^2 (12) = 143.694$, $p < 0.05$.

Most respondents with matric and less ($n=188$, 62.8%) reported that they would continue purchasing SSBs even when the prices increased. Conversely, significantly more respondents with a higher level of education ($n=73$, 78.5%) indicated that they would reduce the frequency of SSB purchases. These results are presented in Table 4.7.

4.6.2 Income level

A similar noteworthy relationship was revealed between the income status of the respondents and the purchasing of carbonated fizzy drinks after the 2018 tax implementation ($\chi^2 (12) = 69.729$, $p < 0.05$). Most respondents ($n=156$, 60.2%) with an income of up to R5553 and between R5554 – R10009 indicated that they would continue purchasing carbonated fizzy drinks as usual even after the implementation of tax. In contrast, significantly more respondents with a higher income ($n=75$, 56.4%) reported that they would reduce carbonated fizzy drink purchases if prices increased (Table 4.7).

Table 4.7: The influence of education and income on the decision to purchase fizzy drinks once the 2018 SSB tax has been implemented

	Carbonated fizzy drinks								
		Continue purchasing		Reduce amount purchased		Switch to cheaper drinks		Stop purchasing	
		n	%	n	%	n	%	n	%
Education level	Up to Grade 11	79	56.8	21	15.1	38	27.3	1	0.7
	Matric	109	68.1	37	23.1	14	8.8	0	0
	Certificate	12	24.0	34	68.0	3	6.0	1	2.0
	Diploma	3	13.0	19	82.6	1	4.3	0	0
	Degree	0	0	20	100	0	0	0	0
Income level	Up to R5553	96	63.2	27	17.8	29	19.1	0	0.0
	R5554 - R10009	60	56.1	29	27.1	17	15.9	1	0.9
	R10010 - R18544	37	44.0	37	44.0	9	10.7	1	1.2
	R18545 - R44948	10	21.7	35	76.1	1	2.2	0	0.0
	R44949 and above	0	0.0	3	100	0	0.0	0	0.0

4.7 Summary of results

This chapter has reported on the statistical findings of the questionnaire which was used to investigate the impact of the 2018 tax on the SSB purchases of Black African women. The following noteworthy results were found:

The study population consisted of 439 respondents with a mean age of 33.69 years and standard deviation (SD) of 8.163. Among all SSBs purchased by respondents, the results indicated that carbonated fizzy drinks were the most commonly purchased beverage (89.0%, n= 391) while sport drinks were purchased least frequently (0.9%, n=4).

The most important factors that influenced consumers to purchase SSBs included: price and taste, while design and packaging, recommendation by friends/family and loyalty to the product

were less important factors. A significant number of respondents indicated that they purchased SSBs between one and four times a month. More than three quarters of respondents reported that they were not aware of the SSBs tax.

The main findings of the study revealed that nearly half of the respondents (n=213, 48.5%) indicated their intention to continue purchasing their preferred SSBs as usual when the prices increased due to the SSB tax. Slightly over one-third of respondents (n=151, 35.1%) reported that they would reduce their SSB purchases and start consuming smaller amounts of SSBs. Few respondents (n=68, 15.5%) indicated that they would switch to cheaper drinks. Very few (n=4, 1.0%) opted to stop purchasing SSBs.

The results of sub-group analysis in relation to the impact of tax depending on education level and income status revealed the existence of a significant negative correlation for “price” with education and income. A significant number of respondents with matric and less indicated that they would continue purchasing SSBs as usual after the implementation of SSBs tax while significantly more of those with higher education indicated an intention to reduce SSB purchases.

More than half of respondents with low income who earned up to R5553 as their monthly total household income, indicated that they would continue purchasing SSBs as usual. Conversely, respondents with higher income who earned R10 010 and above indicated that they would reduce their SSB purchases.

Chapter 5 will discuss these findings, elaborate on the results as well as major outcomes in relation to the findings of previous studies conducted on this topic.

CHAPTER 5: DISCUSSION

The purpose of this study was to investigate the impact of the impending 2018 SSB tax on the purchases of Black African women aged 19 and older, shopping at the Greater Edendale mall in Pietermaritzburg. This chapter will focus on discussing the results of each objective that were presented in Chapter 4, by comparing them to what was found in the literature surrounding previous studies conducted on this topic.

5.1 The demographic characteristics of the respondents

The literature indicates that demographic characteristics such as gender, age, level of education, size of household, income level as well as food budget are fundamental determinants of nutrition and dietary habits (Saaka 2012).

5.1.1 Age

The respondents' age ranged between 19 and 55 years with a mean age of 33.69 years. The age range of respondents to this study was similar to the age range of participants in a cross sectional Greek study, on "Tax as public health policy: a questionnaire analysis for soft drinks", conducted in 2014 among 407 people. The minimal age was 18 and maximal age >65 years (Konstantina 2014).

5.1.2 Education level

With regards to the education level of the respondents, around two thirds (n=328, 74.7%) had either a matric or up to Grade 12 level. Only one third (n=111, 25.4%) had a tertiary qualification. Such findings were not expected considering the location where the study was conducted and the findings of 2011 STATS SA census data indicating that only 9.1% of people aged 20 years and above had higher education qualification in KwaZulu-Natal. (STATS SA 2011).

5.1.3 Size of household

According to United Nations' 2017 database of household size and composition, the average household sizes in Africa and Middle East (five or more persons per household) were larger, while the household sizes in Europe and Northern America were smaller (fewer than three

persons per household) (United Nation 2017). In line with this database, this study found that most respondents were from households with at least four members (n=295, 67.2%).

5.1.4 Income level

Although the sources of respondents' income were not investigated, many people who live in South African townships only have Government grants as their main household source of income. The SANHANES-1 found that 32% of respondents from KwaZulu-Natal reported pensions, grants and Unemployment Insurance Fund (UIF) being main sources of their earnings (Shisana *et al* 2013). In 2016, more than one-third of individuals (36.0%) living in KwaZulu-Natal were grant beneficiaries (STATS SA 2016). This is consistent with the findings of this study as more than one-third of respondents (n=172, 39.2%) indicated that their total monthly household income was up to R5553 (STATS SA 2012). The provision of social grants however, has helped many incomeless households to have at least food for few days (Altman & Jacobs 2010). This could have limitation on the types of SSBs purchases by respondents.

5.1.5 Food budget

In urban areas, food access is dependent on income availability as people need to have money first in order to purchase food. Commonly, people with a low income have no choice other than to purchase smaller amounts of food affecting both quantity and quality due to a restricted food budget (Kennedy 2003). A recent market report indicated that the median wage for Black South Africans was recorded as being R3 000 a month in 2016 (an increase of R100 from the 2015 level of R2 900) (STATS SA 2018). According to the Pietermaritzburg Agency for Community Social Action (PASCA)'s May 2018 food barometer publication, Black African households usually rely only on one wage earner who must support an average of 3.7 persons. It further indicated that out of ten Black Africans of working age, only four have a job (PASCA 2018). Based on the results of the study, more than one-third (n=165, 37.6%) confirmed having a food budget of between R1320 to R2639 per month, while less than half of the respondents (n=205, 46.5%) indicated that they had a monthly food budget of R2640. This could be the reason why the cheapest brand available, Coo-ee carbonated fizzy drinks, was purchased by so many respondents. The findings of this study are consistent with the PASCA monthly food basket estimated at R3 088 in May 2018 (PASCA 2018).

5.2 Types of sugar-sweetened beverages purchased

According to the results of this study, carbonated fizzy drinks were the most frequently purchased beverage (n=391, 89.0%) followed by flavoured water drinks (n=15, 3.4%), while sport drinks were purchased least frequently (n=4, 0.9%). Similarly, the study that was conducted by Ronquest-Ross *et al* (2015) on the variations in the dietary intake of foods and beverages among South Africans between, 1994 and 2012, found that carbonated fizzy drinks were the most commonly consumed SSBs, followed by fruit juices, particularly 100% fruit juices. Consistent with the findings from this study, a 2010 systematic analysis that aimed to determine the global, regional and national intake of SSBs among adults above the age of 20 from 187 countries, found that carbonated fizzy drinks were the most commonly consumed beverage worldwide in comparison to milk and dairy products as fruit juices (Singh *et al* 2015).

Considering all the SSBs available for purchase, a significant number of respondents (n=48, 10.9%) did not purchase beverages in the following categories: sport drinks, energy drinks, flavoured water drinks as well as squashes, concentrates and syrups (juices). Singh *et al*'s (2015) systematic analysis found that fruit juices were consumed more commonly in developed countries than in developing countries. It has been found that the choice of beverages purchased by many people depended on their culture, race and age group (Drewnowski *et al* 2012). This will also have an impact on the dietary habits, energy intake as well as overall health status of the beverage purchasers. The findings of this study indicated that more than three quarters of respondents (n=391, 89.3%) purchased carbonated fizzy drinks.

Various findings from the literature referenced in the paragraph below, are showing evidence of the Black population in particular consuming more energy dense calories from carbonated fizzy drinks worldwide, compared to other ethnicities. A cross sectional analysis that was conducted using data from the NHANES on the consumption of added sugars among American adults for 2005–2010, found that a higher amount of kilojoules from added sugars was consumed by African American males (14.5%) and females (15.2%) compared to Caucasian males (12.9%) and females (12.6%) (Ervin & Ogden 2013). Similar findings were also revealed by another cross sectional study conducted by West *et al* (2006), involving 265 American undergraduate students, where more African American students (91%) consumed carbonated fizzy drinks on a daily basis compared to Caucasian students (50%). The findings of these two

cross sectional studies are similar to the findings of this study in relation to purchasing of more fizzy drinks compared to other types of SSBs beverages.

Among all carbonated fizzy drinks available for purchase, three major brands of fizzy drinks dominated the list Coca-Cola 36.4%; Coe-ee 34.6% and Sparletta 18.0%. The respondents most commonly purchased eight 2 litre bottles per month. Further analysis of the results from this study revealed the existence of a significant relationship between level of education and the purchasing of a Coe-ee 2 litre beverage. Respondents with an education level up to Grade 11 were significantly more likely to purchase the Coe-ee brand (n=82, 52.6%). In contrast, respondents with an education level higher than matric, were more likely to purchase Coca Cola (n=37, 67.3; n=16, 57.1 and n=10, 35% for Certificate, Diploma and Degree respectively). It could be argued that the people with Grade 11 and less, were likely to have a smaller income than people with a tertiary education, who could afford a more expensive brand such as Coca-Cola. This could further increase intake of added sugar due to the high consumption cheap SSBs including Co-ee brand.

5.3 Frequency of sugar-sweetened beverage purchases

Less than half of the respondents reported that they purchased SSBs “At least once a month” (n=202, 46.0%) as well as “Once a week” (n=194, 44.2 %). The lowest frequency (n=1, 0.2%) was observed among respondents who purchased SSBs on a “4-5 times a week” basis. When analysing the results of this study in relation to the frequency of SSB purchases, it was found that a significant number of respondents (n=396, 90.2%) indicated that they purchase sugar-sweetened beverages between one and four times a month.

According to the study that was conducted by Mchiza *et al* (2015) on the dietary habits of South Africa adults, SSBs were among the top ten most frequently consumed items by South African adults. This is in concurrence with the findings of Ronquest-Ross *et al* (2015) who investigated the dietary shifts among South Africans from 1994 to 2012. In this study, the highest frequency of SSB purchases of “at least once a month” (n=202, 46.0%) as well as “once a week” (n=194, 44.2 %). It is also important to note that the respondents were purchasing SSBs on behalf of the entire household members, and the “once a week” SSB purchasing frequency rate could be justifiable if SSBs were popular in the households of these respondents. The findings of this study are similar to the findings of both Mchiza *et al* (2015) and Ronquest-Ross *et al* (2015) studies.

5.4 Factors that influenced the purchases of sugar-sweetened beverages

5.4.1 Factors that were significantly important

Based on the analysis of the results from this study, it was found that the following factors were significantly important when purchasing SSBs: price (mean = 4.62, $p < 0.05$) and taste (mean = 4.00, $p < 0.05$).

Price

The results of this study indicated that price had a great influence on SSB purchases by the respondents. Considering the income status of most respondents who participated in this study, this was expected. Consistent with a cross sectional study conducted on 159 Dutch respondents aged 18 and older, it was found that price was the most influential factor with regards to purchases of food and beverages among consumers from low socioeconomic status. The pricing strategies greatly determined the type and quantity of products to be purchased as consumers seriously take price into consideration when making purchases (Steenhuis *et al* 2011). This is motivated by the fact that the energy dense foods and beverages cost less than the healthy foods and beverages (Waterlander *et al* 2010). The SANHANES-1 also revealed that price was a major determinant (64.5%) of food and beverages purchasing among the South African population (Shisana *et al* 2013).

Taste

Previous studies have indicated that taste was one of the main factors that had a vast influence on the purchasing of most beverages. Sweet taste perception of carbonated fizzy drinks has been found to have an influence on SSB purchases (Sartor *et al* 2011). Sweetness has a great sensory appeal and has been identified as being the most preferred characteristic of beverages (Drewnowski *et al* 2012). Beverage companies subsequently produce more tasty, appealing and appetising products in order to attract people and increase consumer purchases (Chandon & Wansink 2012). Similarly, the findings of this study identified taste as the second most important factor that influenced the SSB purchases.

5.4.2 Factors that were not significantly important

The factors that were significantly not important in order of the mean score included the brand, product advertising, impact on health, design and packaging, recommendation by friends/family, and loyalty to product.

Brand

According to Kotler & Armstrong (2009), brand is a name, symbol or any blueprint that distinctly identifies one seller's good or service from those of other sellers. Brand choice is the behaviour that is imposed upon the buyer's judgements about the existing brand alternatives from preferential rating (Esch, Langner, Schmitt & Geus 2006). Based on the results of this study, the brand factor was rated not significantly important by respondents with a mean score of "2.86" slightly below the central score rate of "3". Although respondents were much enlightened about the various brands on SSBs available for purchases, the price of these brands could have more influence on respondents' purchasing decision (Sawant 2012). The findings of this study were not consistent with most literature rating the brand as one of most important factors that influence consumer purchases. The low income level of most respondents along with the higher number of household members could have contributed to that contrast. More than half of respondents (n=283, 64.5%) reported coming from household with total monthly income below R10 009. Furthermore, the majority of the respondents (n=295, 67.2%) had a big family of four and above members. It could be that around one-third of respondents (n=152, 34.6%) were so focused on buying the cheapest SSB, and they could not allow the brand of the SSB influence their choice.

Product advertising

Although it has been found by Tugendhalf *et al* (2015) that beverage companies use promotions and marketing as the best platforms to persuade consumers to purchase their products, this study rated product advertising as not significantly important factor that influenced SSB purchases with a mean score rate of "2.70" which is below central score rate of "3". Most respondents (n=172, 39.2%) indicated coming from household with a total monthly income of up to R5553. It could be assumed that most these respondents were surviving on Government grants and that low socio-economic conditions could have negatively impacted on the success of product advertising campaign. In contrast with the findings of this study related to the influence of the product advertising factor, the 2010 Coca-Cola annual reviews reported a significant increase of around 50% in the consumption of highly branded and advertised Coca-Cola products, between the years 1992 and 2010, in South Africa (Coca-Cola Company 2010). In similarity with the 2010 Coca-Cola annual report findings, media such as the internet, radio, magazines, newspapers and television are often used to promote and market various beverages by informing the consumers about price of the products and where to find them (Chandon & Wansink 2012).

Impact on health

The consumption of SSBs has been linked to an increased risk of individuals developing NCDs such as type-2 diabetes, high blood pressure, cholesterol and cardiovascular diseases. Recent studies have revealed that the consumption of SSBs, known to be rich in empty calories but having a low satiety, may contribute towards weight gain as these beverages have almost no any nutritional value (Temple & Steyn 2013). The consumption of SSBs is associated with an increased energy intake, weight gain, overweight and obesity (WHO 2016c). The impact on health factor was rated as significantly not important with a mean score of “2.13” below central score rate of “3”. This means that most respondents could be exposed to purchases of unhealthy food and beverages due to poor or misinterpreted knowledge on the poor nutritional quality of SSBs.

Design and packaging and product loyalty

Package designers bring artistic techniques and scientific skills in an attempt to attract consumers and influence their purchasing decisions just by looking at the front of the package without even touching the product (Ampuero & Vila 2006). Food and beverage companies spend a substantial amount of time and money in order to design product packaging that will be most appealing to consumers and increase purchases (Chandon & Wansink 2012). In contrast, the results of this study on design and packaging as well as the product loyalty factors were lowly rated by respondents (mean=1.90 and mean=1.78 respectively). Although some respondents had a tertiary education, the findings of the study indicated they were more influenced by price and taste than design and packaging and product loyalty. American researchers Chandon & Wansink (2012) also confirmed that the choice of beverages that customers purchase or consume is mostly based on label of the products, which was not consistent with the findings of this study. That could be linked to the socio-economic conditions of respondents as a significant number (n= 283, 64.6) reported coming from household with total monthly income below R10 009.

Recommendation by friends/family

According to Higgs & Thomas (2016), eating can also be considered as an important social activity that may effortlessly be influenced by inner circles such as family, friends and the

environment. The SSB purchasing preferences of parents can influence the beverage consumption of the entire household. The findings of a review conducted between 1974 and 2014 by Cruwys *et al* (2015) on the influence of the food choices by the type of environment that people are exposed to, revealed that social factors had a huge impact on quality and quantity of food and beverage products consumed by people. They often adjusted the amount of food consumed according to the choices of their family members, friends and social group members. Although the influence of friends and family members cannot be underestimated, the current evolving modern world highly promotes the freedom of choice as a trend particularly if household members are not adult persons. They are left to make independent decisions about dietary choices including what they want to eat and drink. In contrast with the findings of Higgs & Thomas (2016) and Cruwys *et al* (2015), the results of this study related to the rating of the factor “recommendation by friends/family” by respondents was found to be not significantly important (mean=1.78).

5.5 Impact of impending 2018 sugar-sweetened beverage tax

5.5.1 Consumer awareness of impending 2018 sugar-sweetened beverage tax

A significant number of respondents (n=359, 82.0%) indicated that they were not aware of the SSB tax. Interestingly, among the few respondents (n=45, 12%) who were aware, around two-thirds had either a diploma (n=18, 64.3%) or degree (n=19, 67.9%). It could be postulated that respondents with higher levels of education were more likely to be aware because they keep abreast of current news events.

The low education status of household members could be seen as risk factor for higher SSB intake. High education status however, could provide clear direction for modifiable risk behaviours and promote healthy dietary intake initiatives that may reduce SSB purchases. The effectiveness of nutrition education campaigns was maximal for parents with higher education level (Keihner, Linares, Rider, Sugerman, Mitchell & Hudes 2015).

5.5.2 Impact of impending 2018 tax on sugar-sweetened beverage purchases

Based on the findings of this study, a significant number of respondents (n=213, 48.5%) indicated that if the price of the beverage increased, they would continue to purchase and consume the beverage as usual. It could be articulated that these respondents may have already been purchasing the cheapest available SSB. Conversely, nearly one-third of respondents

(n=151, 35.1%) reported that they would reduce their SSB purchases and consume smaller amounts of SSBs. Fewer respondents (n=68, 15.5%) indicated that they would switch to cheaper drinks, and very few (n=4, 1.0%) confirmed that they would stop purchasing SSBs.

It should be noted that each brand of carbonated fizzy drink has its own specific flavour that consumers prefer. It could be argued that consumers who prefer a more expensive and well-known brand such as Coca-Cola, would be reluctant to purchase a cheaper brand, because it will not have the same flavour. Therefore, consumers that have higher incomes may be willing to pay slightly more in order to not compromise on the flavour that they are used to. The key here, is to educate these consumers to reduce the frequency of SSB consumption, particularly if they or their family are consuming large quantities of SSBs and are currently overweight or obese. Poorer consumers who prefer more expensive brands may have elected to keep purchasing these SSBs and justify this decision by choosing cheaper brands of other food products, where differences in flavour is not as noticeable.

In a Mexican observational study on the effect of beverage purchases from Mexican stores, it was found that the purchases of taxed beverages decreased initially by an average of 6% after one year of tax implementation, and thereafter declined further up to a 12% decrease by December 2014. Although a reduction in the SSB purchases was noticed among all three socioeconomic groups, after implementation of taxes, a higher reduction rate was observed among the households of low socioeconomic status, at a rate of up to a 17% decline by December 2014 compared to pre-tax trends. Purchases of untaxed beverages were 4% higher mainly driven by an increase in purchases of bottle plain water (Colchero *et al* 2016). Based on the results from the study on SSB purchases by Black African women shopping at the Greater Edendale Mall, it was found that out of 439 respondents, around one-third (n=151, 35.1%) reported that they would reduce their SSB purchases and consume smaller amounts of SSBs. The findings of this study with regards of SSB purchases were therefore consistent with the findings of Mexican study conducted by Colchero *et al* (2016).

The analysis of the results from each type of SSB indicated that a significant number of respondents who regularly bought fizzy drinks (n=203, 46.2%) reported that they would continue purchasing beverages after the SSB tax implementation. In contrast, most respondents

who purchased flavoured water drinks (n=13, 3%) reported that they would reduce these purchases after a price increase.

5.6 Influence of demographic characteristics on the SSB purchases after impending 2018 tax implementation

5.6.1 Education level

A significant relationship was noted between level of education of respondents and the purchase of fizzy drinks after the implementation of SSB tax. Most respondents with matric and less (n=188, 62.8%) reported that they would continue purchasing SSBs even if prices increased due to tax. Although SSBs are reported to be the primary source of added sugar intake in the diets, SSB purchases are still rising (Quirnbach, Cornelsen, Jebb, Marteau & Smith 2018). This means that a higher intake of added sugar or “empty calories” may lead to a long-term weight gain. It is would be important to understand how low education level of may impact the health of public.

Conversely, significantly more respondents with a higher education (n=73, 78.5%) indicated that they would reduce the purchasing of their favourite SSBs. In similarity, a cross sectional observational study on relationship between nutritional knowledge and amount of SSB consumed in Los Angeles County, conducted among 1041 Americans, by Gase *et al* (2014), confirmed that a greater nutritional knowledge was negatively associated with SSB consumption. The literature further suggests that less educated women and their children consumed more SSBs than women who had higher levels of education (Wijtzes *et al* 2013; Totland *et al* 2012). More than half of the respondents had a low education level and they indicated to continue purchasing SSBs after the implementation of the impending 2018 tax. These findings are consistent with the findings of Wijtzes *et al* (2013) and Totland *et al* (2012) in relation with the influence of education level on SSB purchases.

5.6.2 Income level

A noteworthy relationship was revealed between income status of respondents and the purchasing of fizzy drinks after the increase of prices due to the SSB tax. Most respondents (n=156, 60.2%) with low and average income of up to R5553 and between R5554 – R10 009 indicated that they would continue purchasing fizzy drinks as usual even after the tax implementation. This could be due to the fact that they do not have more control over choices

of food and beverage purchased due to money restrictions. These respondents may already have been purchasing the cheapest version of SSBs available. In contrast, significantly more respondents with a higher income (n=75, 56.4%) reported that they would reduce fizzy drink purchases if prices increased.

In the five year NHANES study on 22 367 Americans aged 20 and older, it was revealed that the socio-economic status of people influenced the intake of added sugars including SSBs (Ervin & Ogden 2013). Similarly, Han & Powell (2013) study assessing the potential effectiveness of food and beverage taxes for improving public health, indicated also that the consumption of SSBs was higher among individuals from a lower socio-economic status compared to individuals from a higher socio-economic status. The findings of this study with regards to influence of income level on SSB purchases were consistent with the findings of Ervin & Ogden (2013) and Han & Powell (2013). There are similarities in the findings of this study with regard to respondents with low education levels as well as respondents with low income. In both circumstances, respondents reported they would continue purchasing SSBs even after a price increase.

In relation to the impact of SSBs tax on SSB purchases after the 2018 tax implementation, most studies have reported that consumers from low socio-economic status would be negatively affected. Based on the results of this study, most respondents (n=213, 48.5%) indicated that they would continue to purchase their preferred beverage as usual after SSB tax implementation. However, nearly one-third of respondents (n=151, 35.1%) revealed that they would reduce their SSB purchases if the price of the beverage increased. This might be beneficial in decreasing the consumption of added sugars contained in SSBs.

5.7 Summary

The first null hypothesis of the chapter one stating that “there would be no change in types of SSB purchases after tax implementation” is accepted because nearly two thirds of respondents were likely to purchase their usual preferred of SSBs.

Considering the frequency of SSB purchases, the second hypothesis of chapter one stated that “there would be a change in frequency of SSB purchases after tax implementation” is rejected because only one-third of respondents purchased indicated that they would reduce their SSB purchases and start consuming smaller amounts of SSBs.

The third hypothesis stating “Price would be the most important factor influencing SSB purchases” is therefore accepted because the findings of the study showed that price played a significant role in the purchasing of SSBs.

The final hypothesis of chapter one stated that “the impending 2018 tax will have a positive impact on purchases of SSBs”. This hypothesis is rejected because more than half of respondents indicated that they would continue to purchase their preferred beverages as usual after the implementation of the impending 2018 SSB tax.

CHAPTER 6: CONCLUSION AND RECOMMENDATIONS

6.1 Introduction

An increased incidence of mortality from NCDs is escalating steadily worldwide, particularly in low-and middle-income countries. Several studies conducted in South Africa had shown that obesity was more severe among females than males, particularly in the Black African race group. Recent literature suggested that the consumption of sugar-sweetened beverages (SSBs) could have contributed towards this problem.

The increased negative health effects of SSBs has led to action to be taken in order to limit their consumption. In conjunction with this, the South Africa Government decided to consider the use of fiscal policies by introducing taxes in 2018 on SSBs in order to improve the health standards of public. This study focused on investigating the impact of the SSBs tax before they were implemented, on the purchases of Black African women aged 19 and older, shopping at the Greater Edendale Mall in Pietermaritzburg. In concurrence with this, the demographic characteristics of respondents who purchased SSBs were explored, the types of SSB purchased were evaluated, the frequency of SSB purchases was determined, the factors that influenced the respondents to purchase SSBs were investigated, and the impact of the 2018 tax on future SSB purchases was assessed.

In this chapter conclusions are drawn from the main findings of the study in relation to the objectives. Additionally, limitations of the study, recommendations for improvement of the study as well as implications for further research will be discussed.

6.2 Conclusions of the study

6.2.1 The demographic characteristics of the respondents

The study population consisted of 439 Black African women. The mean age of the respondents was 33.69 years with minimum and maximum ages of 19 and 55 respectively. The findings of the study showed that around two thirds were of matric or up to Grade 12 level. Only one third had a tertiary qualification. More than half of the respondents were from household with at least 4 members. More than one-third of respondents indicated that their total monthly household income were up to R5553. Less than half of respondents had a monthly food budget of R2640 and more, while more than one-third had food budget of between R1320 to R2639 per month.

6.2.2 The types of sugar-sweetened beverages purchased by the respondents

The findings of this study indicated that among all SSBs purchased by respondents, carbonated fizzy drinks were the most purchased beverage while sport drinks were purchased less frequently. Squashes, concentrates and syrups (Juices) were the second most purchased SSBs, followed by flavoured water drinks. Energy drinks were the second least frequently purchased beverage. Among all fizzy drinks available for purchase, three major brands of fizzy drinks dominated the list: Coca-Cola; Coe-ee and Sparletta.

6.2.3 The frequency of sugar-sweetened beverage purchases

A relatively high frequency of SSB purchases was observed with more than three-quarters of respondents purchasing SSBs between one and four times a month. The findings of this study showed that nearly one-third of the respondents purchased SSBs “at least once a month”, while about another one-third indicated purchasing SSBs at a frequency of “once a week”. The respondents most commonly purchased eight 2 litre bottles of carbonated fizzy drinks per month.

6.2.4 The factors that influence respondents to purchase sugar-sweetened beverages

The findings of the study indicated that price and taste played a significant role in the purchasing of SSBs. Based on analysis, the majority of respondents indicated that price impressively influenced the decision to purchase SSBs, followed by taste. Meanwhile, factors such as brand, product advertising, impact on health, design and packaging, recommendation by friends/family and loyalty to product were rated significantly not important on the purchases of SSBs.

6.2.5 The impact that the impending SSB tax will have on consumer purchases

Most respondents were not aware of the impending SSB tax. Interestingly, among the few respondents who were aware, the majority had either a diploma or degree. The main findings of the study showed that around one-third of respondents would reduce their SSB purchases and start consuming smaller amounts of SSBs. In contrast, nearly half of respondents indicated their intention to continue purchasing and consume their preferred beverages as usual, even when the prices increased due to the sugar-sweetened beverages tax. It could be that they were already buying the cheapest brand. Curiously, very few respondents purchased squashes, concentrates and syrups (juices) most likely because more respondents were interested on carbonated fizzy drinks.

The analysis of the results from each type of SSB indicated that a significant number of respondents who regularly bought fizzy drinks reported that they would continue purchasing beverages after the SSB tax implementation. In contrast, most respondents who purchased flavoured water drinks indicated that they would reduce these purchases after a price increase. Although differences in SSB purchases were observed depending on the socio-economic status of the respondents, the high frequency of consumption of added sugars from carbonated fizzy drinks by Black African women entails further investigation. This would highlight the need to consider the implementation of appropriate strategies to promote healthier eating habits among Black African women. It is not assumed that the respondents were drinking the SSBs alone as they were selected to participate in this study because it was assumed that they made purchases on behalf of the household.

6.2.6 Influence of demographic characteristics on the sugar-sweetened beverage purchases after impending 2018 tax implementation

Based on an analysis of the findings of this study, education and income levels of respondents will be presented in this section.

6.2.6.1 Education and income levels

An important relationship was noted between level of education as well as income of respondents and the purchase of carbonated fizzy drinks after the implementation of SSB tax. More than half of respondents with matric and less reported that they would continue purchasing SSBs as usual after impending 2018 tax implementation. A significant number of the respondents with less than matric bought Coe-ee while significantly more of those with higher education did not buy that beverage opting for more established brands including Coca-Cola. This illustrates the influence that price has on SSB purchases with the assumption that respondents with a tertiary education were likely to earn a higher income and could afford more expensive, popular SSB brands.

6.2.6.2 Type of sugar-sweetened beverage already being purchased versus frequency of purchases

The findings of the study showed a noteworthy relationship between income status of respondents and the purchasing of carbonated fizzy drinks after the increase of prices due to the SSB tax. Most respondents with low and average income of up to R5553 and between R5554

– R10 009 indicated that they would continue purchasing carbonated fizzy drinks as usual even after the tax implementation. It should be noted that some of the respondents were already purchasing the cheapest carbonated fizzy drink brand. In contrast, significantly more respondents with a higher income reported that they would reduce the amount of carbonated fizzy drink purchases if prices increased.

Although taxation of SSBs alone will not reduce the obesity prevalence rate, it might constitute a first step in the right direction.

6.3 Study limitations

- The study was conducted in one site, the Greater Edendale Mall, in the uMgungundlovu District, KwaZulu-Natal, therefore there are some limitations for generalising the findings to the whole province and country due to differences in the socio-economic status of population.
- Anthropometric measurements of respondents were not taken therefore the researcher was not able to correlate the respondents body mass index (BMI) with their SSB purchasing practices.
- Respondents who were purchasing artificially sweetened beverages were not included in this study.
- Measuring values used to assess total monthly household income of respondents in data collection tool were 2012 figures from Statistics South Africa. Unfortunately, at the time of questionnaire development, they were the most recent figures.
- This study took place before the tax was implemented therefore it is not possible to determine if changes were actually made because of price increases.
- This study was conducted from 05 to 20 August 2017, therefore consumption of beverages by respondents could be have varied because of the season.

6.4 Recommendations

6.4.1 Recommendations for improvement of the study

- Further studies similar to this one should be conducted in different sites for a greater diversity of respondents and a larger collective sample size.
- Anthropometric measurements should be taken to assess the nutritional status of the respondents for better understanding of household dietary habits.

- Taste preference for artificially sweetened carbonated fizzy drinks should be explored to determine whether consumers would be willing to substitute their SSB of choice with an artificially sweetened version.

6.4.2 Recommendations for Government

Although the Government implemented the 2018 SSB tax in April more interventions with strict rules and regulations are needed including:

- Promotion of healthy eating patterns by introducing strategies that decrease the price of more nutritious food and beverage products. This could improve dietary habits of public, since price was identified as most factor that influence SSB purchases in this study.
- Stricter food labelling rules where contents and nutritional information should be clearly mentioned on the labels, preferably using easy household measurement tools and colour coding system that uneducated people could understand to ensure they consume the recommended serving size. This is particularly important when consumers purchase larger packaging sizes of SSBs.
- Monitoring of all advertising and marketing of food and beverages high in added sugar to ensure that consumers are not misled into purchasing SSBs because of the illusion that clever marketing and advertising strategies gives them.

6.4.3 Implications for further research

Very few studies have been conducted in South Africa in regard to the impact of SSB tax on consumer purchases. Taking in consideration that this study was conducted over a short period of time, future similar studies should be conducted over a long period of time, in other larger townships across the province of KwaZulu-Natal as well as other provinces of South Africa. This could help to investigate trends in SSB purchases among Black African women in different areas, after the price increase due to SSB tax, over a longer period of time.

Since differences in SSB purchases were observed in this study, depending on socio-economic status of respondents, the high frequency of consumption of added sugars from carbonated fizzy drinks by Black African women and their family members entails further investigation. There is need to investigate the long term effect of SSB tax policy on Black African women and their

family members from different locations at provincial and national level in order to monitor the outcome of that fiscal policy and advise the authorities accordingly. In conjunction with this, anthropometric measurements should be included in the study for body weight assessment over a long period of time. This would highlight the need to consider the implementation of appropriate strategies that could promote healthier eating habits among Black African women and their family members alongside the SSB tax.

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APPENDIX A: Data collection tool (English version)**SECTION A:**

Subject Code: _____

Please note that your responses are anonymous and will be kept strictly confidential

Consent obtained: _____ Shopping centre: _____

Age: _____

In what suburb/location do you live? _____

Please place a tick in the box of the most appropriate choice:

1. What is your highest level of education?

Grade 11 or less	
Matric	
Certificate	
Diploma	
Degree	

2. How many people, including yourself, live in your household?

Live alone	
Two	
Three	
Four	
Five	
Six or more	

3. What is the total monthly income for the household?

Up to R5553	
R 5554 - R 10009	
R 10010 - R 18544	
R 18545 - R 44948	
R 44949 and above	

4. How much money available each month to spend on food and beverages for your household?

Up to R791	
R792 - R 1319	
R1320 - R 2639	
R2640 - R 12591	
R 12592 and above	

SECTION B

From the list of drinks shown to you, FOR THOSE THAT YOU DO PURCHASE, indicate the package size and quantity you normally purchase (select only ONE quantity per brand).

5. Fizzy drinks

	Brand of fizzy drinks	Flavour	Package size	Quantity (How many)
5.1	Coo-ee	Apple, Coco pine, Cola, Cranberry, Grape, Granadilla, Ginger Brew, Crème Soda, Iron Brew, Lemon, Raspberry, Litchi, Mango, Orange, Pineapple	300 ml	
			330 ml	
			1.5 litre	
			2 litre	
5.2	Sparletta (Coca-Cola)	Crème Soda, Sparberry, Cherry Plum, Stoney Ginger Beer, Pine Nut, Apple, Iron Brew, Blackcurrant	330 ml	
			500 ml	
			1.25 litre	
			2 litre	
5.3	Coca-Cola	Coke, Fanta Orange, Sprite, Schweppes, Twist Lemon, Granadilla Twist	200 ml	
			250 ml	
			300 ml	
			440 ml	
			500 ml	
			1 litre	
			1.25 litre	
5.4	Pepsi	Soft drink	440 ml	
			600 ml	
			2 litre	
5.5	Miranda	Grape, Orange, Pineapple	330 ml	
			2 litre	
5.6	7UP	Regular soft drink	330 ml	
			2 litre	

6. Sport drinks

	Brand of sport drinks	Flavour	Package size	Quantity (How many)
6.1	Energade	Energade Ready to Drink (all flavours)	300 ml	
		Energade Sports Drink (all flavours)	500 ml	
		Energade Concentrated (all flavours)	1 litre	
6.2	Powerade	Drink (all flavours)	500 ml	
		Sports Drink Concentrated (all flavours)	750 ml	

7. Energy drinks

	Brand of energy drinks	Flavour	Package size	Quantity (How many)
7.1	Red Bull	Energy Drink (all flavours)	250 ml	
			355 ml	
			473 ml	
7.2	Play	Power Play Original	250 ml	
			330 ml	
			440 ml	
7.3	Dragon	Energy Drink	330 ml	
		Energy Drink	440 ml	
7.4	Monster	Energy Drink (all flavours)	500 ml	
7.5	Score	Energy Drink Original, Energy Drink Apple	440 ml	
7.6	Lucozade	Energy Drink (all flavours)	330 ml	
			500 ml	
			1 litre	

8. Flavoured water drinks

	Brand of flavoured water drinks	Flavour	Package size	Quantity (How many)
8.1	Aquelle	Flavoured water (all flavours)	500 ml	
			1.5 litre	
8.2	Bonaqua	Flavoured water (all flavours)	330 ml	
			500 ml	

9. Sweetened ice tea drinks

	Brand of sweetened ice tea	Flavour	Package size	Quantity (How many)
9.1	Fuze Tea	All flavours	330 ml	
			500 ml	
			1.5 litre	
9.2	Manhattan Ice Tea	All flavours	330 ml	
			500 ml	
			1.5 litre	
9.3	Lipton Ice Tea	All flavours	330 ml	
			500 ml	
			1.5 litre	
9.4	Nestea	All flavours	330 ml	
			500 ml	

10. Squashes- Concentrates- Syrups (Juices)

	Brand of juices	Flavour	Package size	Quantity (How many)
10.1	Brookes Oros	Original Orange Squash, Lite Naartjie Squash	2 litre	
			5 litre	
10.2	Halls Fruit Nector	Orange, Fruit Punch, Naartjie, Guava, Mango, Granadilla, Litchi, Passion fruit, Peach & Apricot, Orange Mango	1 litre	
			1.25 litre	
			5 litre	
10.3	Ceres Fruit Squash or Nector	Orange, Mango Orange, Fruit punch, Peach and Apricot, Guava	1 litre	
			1.75 litre	
10.4	Super Fruit Concentrate Nector	Orange, Breakfast Punch, Fruit & Vitamins, Fruit Cocktail, Peach & Mango, Peach Apricot, Apple, Guava	1 litre	
			4 litre	
10.5	Magalies Concentrates	Orange, Mango & orange, Breakfast Punch, Peach Mango, Fruit Cocktail, Peach, Mango	2 litre	
			5 litre	
10.6	Elvin Concentrate	Guava Banana, Mixed berry, Tropical, Pineapple, Fruit Punch, Mango orange, Peach Apricot	1 litre	
			5 litre	
10.7	Daly's Fruity Concentrate	Peach Apricot, Mango & orange, Breakfast Punch	1.25 litre	
10.8		Orange	2 litre	

	Fruitree Concentrate Squash		5 litre	
10.9	Wild Island Smoothie	Tropical Punch, Guava, Pineapple, Lite Tropical, Kick Pineapple Extreme, Ginger beer, Fantasy Fruit, Orange dairy blend Cordial, Peach and Apricot dairy blend, Mango Granadilla dairy blend	1 litre	
10.10	Fusion Dairy Blend Concentrate	Orange, Pineapple, Mango, Granadilla, Tropical, Guava, Apple, Peach Apricot, Mango Apple, Mango orange, Fruit Cocktail	750 ml	
			1 litre	
			5 litre	

SECTION C

11. Rate the importance (1= not at all important to 5= extremely important) of the following factors when purchasing the sugar-sweetened beverages

		Importance rating
11.1	The price	
11.2	Design & packaging	
11.3	Product advertising	
11.4	The brand	
11.5	The taste	
11.6	Impact on the health	
11.7	Loyalty to the product (been consuming for many years)	
11.8	Recommendation by friends/family	

SECTION D

12. How often do you purchase sugar-sweetened beverages?

(Select ONE option only)

Less often than once a month	
At least one a month	
Once a week	
2-3 times a week	
4-5 times a week	
6 times a week	
Everyday	

SECTION E

The South African government is in the process of implementing a sugar-sweetened beverages tax later this year.

13. Are you aware of that sugar-sweetened beverages tax?

Yes	
No	

Using Coke as example, the sugar-sweetened beverages tax rate will be as below.



Volume: 330 ml

500 ml

1 litre

2 litre

Price increase: **R0.46**

R0.69

R1.38

R2.77

Below are some sample prices of selected sugar-sweetened beverages after projected tax implementation:

Type of beverage	Beverage size	Price will increase by
Fizzy drinks	300 ml bottle of Coo-ee (all flavours)	R0.50 to R0.60
	330 ml can (all brands and flavours)	R0.43 to R0.79
	500 ml bottle (Coca-Cola brands, all flavours)	R0.65 to R0.98
	2 litre bottle (all brands, all flavours)	R2.60 to R3.93
Energy drinks	250 ml (Red Bull, Play and Score)	R0.38 to R 0.41
	330 ml (Red Bull, Dragon, Lucozade)	R0.43 to R0.49
	355 ml (Red Bull)	R0.52 to R0. 58
	440 ml (Play, Dragon and Score)	R0.70 to R0.73
	475 ml (Red Bull)	R0.70 to R0.78
	500 ml (Lucozade, Monster)	R0.65 to R0.74
	1 litre (Lucozade: Original, Orange)	R0.99 to R1.13
Sport drinks	300 ml (Energade, all flavours)	R0.15 to R0.18
	500 ml (Powarade and Energade, all flavours)	R0.40 to R0.65
Flavoured water drinks	500 ml (Aquelle and Bonaqua flavoured water, all flavours)	R0.10 to R0.21
	1 litre(Aquelle, all flavours)	R0.21 to R0.42
Ice Tea drinks	330 ml (Fuze Tea, Manhattan Ice Tea, Lipton Ice Tea, Nestea; all flavours)	R0.25 to R0.26
	500 ml (Manhattan Ice Tea and FUZE Ready To Drink, all flavours)	R0.39 to R0.40

	1.5 litre (Fuze Tea, Manhattan Ice Tea and Lipton; all flavours)	R1.16 to R1.20
Squashes- Concentrates- Syrups (Juices)	500 ml (Woolworths Rose Flavoured Syrup; all flavours)	R2.10 to R2.44
	750 ml (Fusion, Woolworths Rose's concentrate; all flavours)	R0.07 to R0.46
	1 litre Squash (Brookes Oros, Halls, Ceres, Super Fruit, Megalies, Elvin, Daly's, Fruitree, Wild Island, Fusion, Woolworths; all flavours)	R0.45 to R0.62
	2 litre (Brookes Oros , Fruitree Concentrate Squash, Magalies Concentrates, Woolworths Squashes; all flavours)	R0.90 to R1.24
	5 litre (Brookes Oros , Halls Fruit Nector, Magalies Concentrates, Elvin Concentrate, Fruitree, Fusion and Dairy Blend Concentrate; all flavours)	R 2.25 to R 2.48

15. The price of sugar-sweetened beverages will be increased after tax implementation. What impact will the price increase have on your future purchases of the sugar-sweetened beverages?

(Select ONE option only for each type of drink)

	Type of Beverage	After price increase due to sugar-sweetened tax, you will:			
		Continue purchasing sugar-sweetened beverages as usual.	Reduce the amount of sugar-sweetened beverages purchased.	Switch to a cheaper brand.	Stop purchasing sugar-sweetened beverages
15.1	Fizzy drinks				
15.2	Energy drinks				
15.3	Sport drinks				
15.4	Flavoured water drinks				
15.5	Ice tea drinks				
15.6	Squashes- Concentrates- Syrups (Juices)				

Thank you for your time and contribution.

APPENDIX B: Data collection tool (isiZulu version)**ISITHASISELO B: ITHULUZI LOKUQOQA IDATHA****INGXENYE A:**

Isihloko sekhodi: _____

Ngicela wazi ukuthi izimpendulo zakho angeke zaziwe muntu futhi ziyimfihlo

Inikiwe imvumo: _____ Izitolo: _____

Iminyaka: _____ Uhlala kwamaphi amaphethelo/indawo: _____

Ngicela ufake umkhaza endaweni efanele:**1. Iliphi izinga eliphakeme lakho lemfundo?**

1.	Ibanga leshumi noma ngaphansi	
2.	Umatekuletsheni	
3.	Isitifiketi	
4.	Idiploma	
5.	Isiqu	

2. Bangaki abantu, uma nawe uzibala, abahlala ekhaya?

1.	Uhlala wedwa	
2.	Babili	
3.	Bathathu	
4.	Bane	
5.	Bahlanu	
6.	Bayisithupha noma ngaphezulu	

3. Imalini isiyonke imali engenayo ngenyanga ekhaya?

1.	Ngaphansi kuka R5553	
2.	R 5554 - R 10009	
3.	R 10010 - R 18544	
4.	R 18545 - R 44948	
5.	Ngaphezu kuka R4498	

4. Imalini onayo etholakalayo njalo ngenyanga ongayisebenzisa ekudleni naseziphuzweni zasekhaya?

1.	Ngaphansi kuka R791	
2.	R792 - R 1319	
3.	R1320 - R 2639	
4.	R2640 - R 12591	
5.	Ngaphezu kuka R12591	

INGXENYE B:

Kulezi ziphuzo ezikhombisiwe, KULEZI OZITHENGAYO, khombisa ukuthi ujwayele ukuthenga isiphuzo esingakanani nokuthi ziba ngaki (khethe ubungako besiphuzo ESISODWA kwibrand ngayinye).

5. Iziphuzo eziyifizzy

	Uhlobo lweziphuzo ezinegwebu	iFlavour	Ubungako besiphuzo	Inani leziphuzo
5.1	iCoo-ee	iApple, iCoco pine, iCola, iCranberry, iGrape, iGranadilla, iGinger Brew, iCrème Soda, iIron Brew, iLemon, iRaspberry, iLitchi, iMango, iOrange	300 ml	
			330 ml	
			1.5 litre	
			2 litre	
5.2	iSparletta (Coca-Cola)	iCrème Soda, iSparberry, iCherry Plum, iStoney Ginger Beer, iPine Nut, iApple, i-Iron Brew neBlackcurrant	330 ml	
			500 ml	
			1.25 litre	
			2 litre	
5.3	iCoca-Cola	iCoke, iFanta Orange, iSprite, iSchweppes, iTwist Lemon neGranadilla Twist	200 ml	
			250 ml	
			300 ml	
			440 ml	
			500 ml	
			1 litre	
			1.25 litre	
5.4	iPepsi	iSoft drink	440 ml	
			600 ml	
			2 litre	
5.5	iMiranda	iGrape, iOrange nePineapple	330 ml	
			2 litre	
5.6	i7UP	iRegular soft drink	330 ml	
			2 litre	

6. Iziphuzo zezemidlalo

	Uhlobo lweziphuzo zezemidlalo	iFlavour	Ubungako besiphuzo	Inani leziphuzo
6.1	iEnergade	iEnergade Ready to Drink (wonke amaflavours)	300 ml	
		iEnergade Sports Drink(wonke amaflavours)	500 ml	
		iEnergade Concentrated(wonke amaflavours)	1 litre	
6.2	iPowerade	iDrink (wonke amaflavours)	500 ml	
		iSports Drink Concentrated(wonke amaflavours)	750ml	

7. Iziphuzo ezinika amandla

	Uhlobo lweziphuzo ezinika amandla	iFlavour	Ubungako besiphuzo	Inani leziphuzo
7.1	iRed Bull	iEnergy Drink (wonke amaflavours)	250 ml	
			355 ml	
			473 ml	
7.2	iPlay	iPower Play Original	250 ml	
			330 ml	
			440 ml	
7.3	iDragon	iEnergy Drink	330 ml	
		iEnergy Drink	440 ml	
7.4	iMonster	iEnergy Drink (wonke amaflavours)	500 ml	
7.5	iScore	iEnergy Drink Original, Energy Drink Apple	440 ml	
7.6	iLucozade	iEnergy Drink (wonke amaflavours)	330 ml	
			500 ml	
			1 litre	

8. Iziphuzo ezamanzi ezithakiwe

	Uhlobo lweziphuzo zamanzi athakiwe	iFlavour	Ubungako besiphuzo	Inani leziphuzo
8.1	iAquelle	Wonke amaflavours	500 ml	
			1.5 litre	
8.2	iBonaqua	Wonke amaflavours	330 ml	
			500 ml	

9. Itiye elibandisiwe elinoshukela

	Uhlobo Iwetiye elibandisiwe elinoshukela	iFlavour	Ubungako besiphuzo	Inani leziphu zo
9.1	iFuze Tea	Wonke amaflavours	330 ml	
			500 ml	
			1.5 litre	
9.2	iManhattan Ice Tea	Wonke amaflavours	330 ml	
			500 ml	
			1.5 litre	
9.3	iLipton Ice Tea	Wonke amaflavours	330 ml	
			500 ml	
			1.5 litre	
9.4	iNestea	Wonke amaflavours	330 ml	
			500ml	

10.AmaSquashes- amaConcentrates- neSyrups (Juices)

	Uhlobo lweziphu zo ezinika amandla	iFlavour	Ubungako besiphuzo	Inanilezi phuzo
10.1	iBrookes Oros	iOriginal Orange Squash neLite Naartjie Squash	2 litre	
			5 litre	
10.2	iHalls Fruit Nector	iOrange, iFruit Punch, iNaartjie, iGuava, iMango, iGranadilla, iLitchi, iPassion fruit, iPeach & Apricot neOrange Mango	1 litre	
			1.25 litre	
			5 litre	
10.3	iCeres Fruit Squash noma Nector	iOrange, iMango Orange, iFruit punch, iPeach and Apricot neGuava	1 litre	
			1.75 litre	
10.4	iSuper Fruit Concentrate Nector	iOrange, iBreakfast Punch, iFruit & Vitamins, iFruit Cocktail, iPeach & Mango, iPeach Apricot, iApple neGuava	1 litre	
			4 litre	
10.5	iMagalies Concentrates	iOrange, iMango & orange, iBreakfast Punch, iPeach Mango, iFruit Cocktail, iPeach neMango	2 litre	
			5 litre	
10.6	iElvin Concentrate	iGuava Banana, iMixed berry, iTropical, iPineapple, iFruit Punch, iMango orange nePeach Apricot	1 litre	
			5 litre	

10.7	iDaly's Fruity Concentrate	iPeach Apricot, iMango & orange neBreakfast Punch	1.25 litre	
10.8	iFruitree Concentrate Squash	iOrange	2 litre	
			5 litre	
10.9	iWild Island Smoothie	iTropical Punch, iGuava, iPineapple, iLite Tropical, iKick Pineapple Extreme, iGinger beer, iFantasy Fruit, iOrange dairy blend Cordial, iPeach & Apricot dairy blend neMango Granadilla dairy blend	1 litre	
10.10	iFusion Dairy Blend Concentrate	iOrange, iPineapple, iMango, iGranadilla, iTropical, iGuava, iApple, iPeach Apricot, iMango Apple, iMango orange neFruit Cocktail	750 ml	
			1 litre	
			5 litre	

INGXENYE C

13. Kelisa ngokubaluleka (1= **not at all important** to 5= **extremely important**) kwalezinto ezilandelayo uma uthenga iziphuzo ezinongwe ngoshukela.

		Ukukeliswa kokubaluleka
11.1	Intengo	
11.2	Umhlamo nephakethe	
11.3	Ukukhangiswa komkhiqizo	
11.4	Uhlobo	
11.5	Ukunambitheka	
11.6	Umthelela kwezempilo	
11.7	Ukuthembembeka kumkhiqizo (usuyisebenzisa iminyaka ngeminyaka)	
11.8	Recommendation by friends/family	

INGXENYE D

14. Usithenga kangaki isiphuzo esinoshukela?

(Khetha OKUKODWA kuphela kulokhu okungezansi)

Akujwayelekile kuyaba ngaphansi kokukodwa ngenyanga	
Okungenani kanye ngenyanga	
Kanye ngesonto	
Kabili noma kahlanu ngesonto	
Kane noma kahlanu ngesonto	
Kuyisithupha ngesonto	
Nsukuzonke	

INGXENYE E

Uhulumeni waMzansi Africa usezinhlelweni zokufaka intela kwiziphuzo ezinoshukela ngasekupheleni kwalonyaka.

15. Ngaba sewuyazi mayelana nentela yeziphuzo ezinoshukela?

Yebo	
Cha	

Kusetshenziswe icoke njengesibonelo, izinga lentela leziphuzo ezinoshukela lizofana nalokhu okungezansi.



Isikali: 330 ml

Ukunyuka

kwentengo: R0.46



500 ml

R0.69



1 litre

R1.38



2 litre

R2.77

Lapha ngezansi amasempuli entengo yeziphuzo ezinoshukela emuva kokufakwa kwezintela:

Uhlobo Iwesiphuzo	Ubungako besiphuzo	Intengo izonyuka nge
Iziphuzo ezinegwebu	300 ml Ibhodlela le Coo-ee (wonke amaflavours)	R0.50 to R0.60
	330 ml Ikani (zonke izinhlobo namaflavours)	R0.43 to R0.79
	500 ml Ibhodlela (iCoca-Cola wonke amaflavours)	R0.65 to R0.98
	2 litre Ibhodlela (zonke izinhlobo namaflavours)	R2.60 to R3.93
Iziphuzo ezinika amandla	250 ml (iRed Bull, iPlay neScore)	R0.38 to R
	330 ml (iRed Bull, iDragon neLucozade)	R0.43 to R0.49
	355 ml (iRed Bull)	R0.52 to R0.
	440 ml (iPlay, iDragon neScore)	R0.70 to R0.73
	475 ml (iRed Bull)	R0.70 to R0.78
	500 ml (iLucozade neMonster)	R0.65 to R0.74
	1 litre (iLucozade: iOriginal neOrange)	R0.99 to R1.13
Iziphuzo zezemidlalo	300 ml (iEnergade, wonke amaflavours)	R0.15 to R0.18
	500 ml (iPowarade neEnergade, wonke amaflavours)	R0.40 to R0.65
Iziphuzo zamanzi athakiwe	500 ml (iAquelle neBonaqua flavoured water, wonke amaflavours)	R0.10 to R0.21
	1 litre(iAquelle, wonke amaflavours)	R0.21 to R0.42
Itiye elibandisiwe elinoshukela	330 ml (iFuze Tea, iManhattan Ice Tea, iLipton Ice Tea, neNestea; wonke amaflavours)	R0.25 to R0.26
	500 ml (iManhattan Ice Tea neFUZE Ready To Drink, wonke amaflavours)	R0.39 to R0.40
	1.5 litre (iFuze Tea, iManhattan Ice Tea neLipton; wonke amaflavours)	R1.16 to R1.20
AmaSquashes, amaConcentrates neSyrups (Juices)	500 ml (iWoolworths Rose Flavoured Syrup; wonke amaflavours)	R2.10 to R2.44
	750 ml (iFusion neWoolworths Rose's concentrate; wonke amaflavours)	R0.07 to R0.46
	1 litre Squash (iBrookes Oros, iHalls, iCeres, iSuper Fruit, iMagalies, iElvin, Daly's, iFruitree, iWild Island neFusion, wonke amaflavours)	R0.45 to R0.62
	2 litre (iBrookes Oros , iFruitree Concentrate Squash, iMagalies Concentrates neWoolworths Squashes; wonke amaflavours)	R0.90 to R1.24
	5 litre (iBrookes Oros , iHalls Fruit Nector, iMagalies Concentrates, iElvin Concentrate, iFruitree, Fusion ne Dairy Blend Concentrate; wonke amaflovours Dairy Blend Concentrate; all flavours)	R 2.25 to R 2.48

15. Intemgo yeziphuzo ezinoshukela izonyuka emveni kokuba sekwenziwe intela. Imuphi umthelela ozobangelwa ukwenyuka kwentengo ekusaseni lakho lokuthenga iziphuzo ezinoshukela? **(Khetha OKUKODWA kuphela kwinhlobo ngayinye yesiphuzo)**

	Izinhlobo zeziphuzo	Emuva kokwenyuka kwentengo ngenxa yentele kwiziphuzo ezinoshukela, uzo:			
		Uzoqhubeka uthenge iziphuzo ezinoshukela njengoku jwayelekile	Ukwahlisa inani leziphuzo ezinoshukela ozithengayo	Uthenge uhlobo olushibhile	Uzoyeka ukuthenga iziphuzo ezinoshukela
15.1	Iziphuzo ezinegwebu				
15.2	Iziphuzo ezinika				
15.3	Iziphuzo zezemidlalo				
15.4	Iziphuzo ezamanzi				
15.5	Itiye elibandisiwe				
15.6	AmaSquashes, amaConcentrates neSyrups (Juices)				

Ngiyabonga ngesikhathi nangomnikelo wakho.

APPENDIX C: Gatekeeper's permission

UNIVERSITY OF
KWAZULU-NATAL
INYUVESI
YAKWAZULU-NATALI
Dietetics & Human Nutrition
University of KwaZulu- Natal,
Pietermaritzburg
Private Bag X01
Scottsville - 3209
South Africa
Tel: 27 - 33 - 260 5430
6 March 2017

MANAGER: GREATER EDENDALE MALL

Dear Sir/ Madam

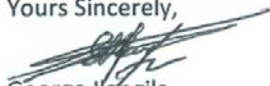
RE: REQUEST FOR PERMISSION TO CONDUCT RESEARCH

I am student studying towards an MSc in Human Nutrition at the University of KwaZulu-Natal. My research topic is entitled "The impact of sugar-sweetened beverage taxes on consumer purchases among females aged 25-45".

I would like to conduct a survey amongst consumers in your mall. Only consumers that have given written consent will participate in this study and their participation will be on a voluntary, anonymous and confidential basis. They may withdraw from participation in my survey at any point, without fear of negative repercussions.

Should you have any queries regarding this, please do not hesitate to contact me or my supervisor Dr Nicky Wiles.

Yours Sincerely,



George Ilangila
MSc Human Nutrition student
University of KwaZulu-Natal
0846508784

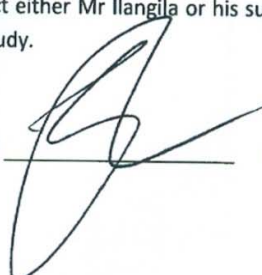


Dr Nicky Wiles
Supervisor
Dietetics & Human Nutrition Lecturer
University of KwaZulu-Natal
033 - 260 5430

I Alan Tarr manager of the Greater Edendale Mall, have read and understood the letter requesting permission to use my mall as part of a MSc (Hum Nut) study.

I hereby consent to allow Mr Ilangila to use my mall to collect data. I understand that I may contact either Mr Ilangila or his supervisor Dr Nicky Wiles, should I have any queries regarding this study.

Signed



Date

07/03/2017.

APPENDIX D: Ethical clearance



14 June 2017

Mr G R Ilangila (210520887)
 Discipline of Dietetics and Human Nutrition
 School of Agriculture, Earth and Environmental Sciences
ilangila167@gmail.com

Dear Mr Ilangila

Protocol: The impact of sugar-sweetened beverages tax on consumer purchases among females aged 19 and older, in supermarkets from low and high socioeconomic suburbs in Pietermaritzburg. Degree: MSc
 BREC Ref: BE287/17

A sub-committee of the Biomedical Research Ethics Committee has considered and noted your application received on 05 May 2017.

The study was provisionally approved pending appropriate responses to queries raised. Your response received on 08 June 2017 to BREC letter dated 01 June 2017 have been noted by a sub-committee of the Biomedical Research Ethics Committee. The conditions have now been met and the study is given full ethics approval and may begin as from 14 June 2017.

This approval is valid for one year from 14 June 2017. To ensure uninterrupted approval of this study beyond the approval expiry date, an application for recertification must be submitted to BREC on the appropriate BREC form 2-3 months before the expiry date.

Any amendments to this study, unless urgently required to ensure safety of participants, must be approved by BREC prior to implementation.

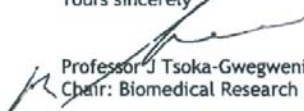
Your acceptance of this approval denotes your compliance with South African National Research Ethics Guidelines (2015), South African National Good Clinical Practice Guidelines (2006) (if applicable) and with UKZN BREC ethics requirements as contained in the UKZN BREC Terms of Reference and Standard Operating Procedures, all available at <http://research.ukzn.ac.za/Research-Ethics/Biomedical-Research-Ethics.aspx>.

BREC is registered with the South African National Health Research Ethics Council (REC-290408-009). BREC has US Office for Human Research Protections (OHRP) Federal-wide Assurance (FWA 678).

The sub-committee's decision will be RATIFIED by a full Committee at its next meeting taking place on 11 July 2017.

We wish you well with this study. We would appreciate receiving copies of all publications arising out of this study.

Yours sincerely


 Professor J Tsoka-Gwegweni
 Chair: Biomedical Research Ethics Committee

cc supervisor: wilesn@ukzn.ac.za
 cc postgraduate administrator: manjoom@ukzn.ac.za

Biomedical Research Ethics Committee
 Professor J Tsoka-Gwegweni (Chair)
 Westville Campus, Govan Mbeki Building
 Postal Address: Private Bag X54001, Durban 4000

Telephone: +27 (0) 31 260 2486 Facsimile: +27 (0) 31 260 4808 Email: brec@ukzn.ac.za

APPENDIX E: Information sheet and consent form to Participate in Research
(English version)

Dear Madam,

My name is George Ilangila, a MSc student from Dietetics & Human Nutrition, University of KwaZulu-Natal at Pietermaritzburg Campus, contact number 0845608784 and email address ilangila167@gmail.com.

You are being invited to consider participating in a study that involves research, entitled: “The impact of sugar-sweetened beverages tax on consumer purchases among females aged 19 and older, in supermarkets from low and high socioeconomic suburbs in Pietermaritzburg”

The aim and purpose of this research is to address the following information regarding the consumer purchases of Sugar-Sweetened Beverages (SSBs): the demographic characteristics of consumers who purchase SSBs; the types of SSBs purchased; the frequency of consumer purchases; what motivated consumers to purchase SSBs; and what impacts will have the SSB taxes on consumer purchases of SSBs? The study is expected to enroll 422 participants in total, in two different malls: Edendale mall and Cascades Lifestyle Centre. The duration of your participation if you choose to enroll and remain in the study is expected to be approximately ten minutes.

The study will focus on whether people will be prepared to pay more when the taxes on SSBs will be implemented. The study will provide no direct benefits to participants. Information gathered in this study will include data retrieved from the questionnaire that I request you to answer. Please note the participation in this study is entirely on a voluntary, anonymous and confidential basis. The participants may withdraw at any time without affecting any treatment or care that they would usually be entitled to.

This study has been ethically reviewed and approved by the UKZN Biomedical research Ethics Committee BREC ref.BE 287/17.

In the event of any problems or concerns/questions you may contact the researcher Mr. George Ilangila at Dietetics & Human Nutrition, University of KwaZulu-Natal at Pietermaritzburg Campus, contact number 0845608784 and email address ilangila167@gmail.com or the UKZN Biomedical Research Ethics Committee, contact details as follows:

BIOMEDICAL RESEARCH ETHICS ADMINISTRATION

Research Office, Westville Campus

Govan Mbeki Building

Private Bag X 54001

Durban

4000

KwaZulu-Natal, SOUTH AFRICA

Tel: 27 31 2604769 - Fax: 27 31 2604609

Email: BREC@ukzn.ac.za

CONSENT FORM

I(Full names of participant) have been informed about the study entitled : “The impact of sugar-sweetened beverages tax on consumer purchases among females aged 19 and older, in supermarkets from low and high socioeconomic suburbs in Pietermaritzburg” by Mr.George Ilangila.

I understand the purpose and procedures of the study.

I have been given an opportunity to answer questions about the study and have had answers to my satisfaction.

I declare that my participation in this study is entirely voluntary and that I may withdraw at any time without affecting any treatment or care that I would usually be entitled to.

If I have any further questions/concerns or queries related to the study I understand that I may contact the researcher Mr. George Ilangila at Dietetics & Human Nutrition, University of KwaZulu-Natal at Pietermaritzburg Campus, contact number 0845608784 and email address ilangila167@gmail.com.

If I have any questions or concerns about my rights as a study participant, or if I am concerned about an aspect of the study or the researchers then I may contact:

BIOMEDICAL RESEARCH ETHICS ADMINISTRATION

Research Office, Westville Campus
 Govan Mbeki Building
 Private Bag X 54001
 Durban
 4000
 KwaZulu-Natal, SOUTH AFRICA
 Tel: 27 31 2604769 - Fax: 27 31 2604609
 Email: BREC@ukzn.ac.za

 Signature of Participant

 Date

**APPENDIX F: Information sheet and consent form to Participate in Research
(IsiZulu version)**

Nkosikazi

Igama lami ngingu George Ilagila, umfundi owenza iziqu zemastasi kwi Dietetics & Human Nutrition, eNyuvesi yakwaZulu-Natal Pietermaritzburg campus, otholakala kule nombolo yocingo 0845608784 ne i-imeyile ilagila167@gmail.com.

Uyamenywa ukuba ucabange ngokuzibandakanya ocwaningeni oluthinta ucwaningo oluvunyelwe. “Umthelela kwintela yeziphuzo ezinoshukela kubathengi abathengayo phakathi kwabesifazen abaseminyakeni eyishumi nesishiyaga lolunye kanye naphezulu, emasuphamakethe kusukela phansi kuya phezulu kwezokuhlalisana nakwezeomnotho ePietermaritzburg”. Inhloso kanye nenjongo yalolucwaningo ukukhuluma ngalolulwazi olulandelayo, oluthinta abathengi abathenga iziphuzo ezinoshukela. Ukwehlukanisa ukubala ubuningi babantu abathenga iziphuzo ezinoshukela, izinhlobo zeziphuzo zoshukela ezithengwayo, invamisa yabathengi abathengayo, yini abagqugquzelayo abathengi ukuba bathenge iziphuzo ezinoshukela, futhi zoba namthelela muni ntela yeziphuzo ezinoshukela. Ucwaningo lulindeleke ukuba lubhalise abazobamba qhaza abangama 422 sebephelele, Ezinxanxatheleni zezitolo ezimbili ezahlukene: Edendale mall and Cascades lifestyle centre. Isikhathi Sisonke ubude ongabamba ngaso iqhaza uma ukhetha ukubhalisa futhi uhlelo locwaningo kulindeleke ukuba lubecishe yimizuzu eyishumi nanhlanu. Ucwaningo lizogxila ekuthene abantu bazobe belulindele ukukhokha kakhulu lapho intela yeziphuzo ezinoshukelaizoqaliswa. Ucwaningo aluzukuletha inzuzo ngqo kwazobe bebambe iqhaza. Ulwazi oluhlenganiswe kulolucwaningo luzobe lufaka nolwazi olubuyiswe emibuzweni engicela uyiphendule. Ngicela uqhaphele ukuthi ukbamba iqhaza kulolucwaningo kungukuzithandela ngokupheleleyo, engaziwa isisekelo oluyimfihlo. Obambe iqhaza angahoxa noma ngabe yisiphi isikhathi ngaphandle.

Lolucwaningo luphinde lwabhekwa nobulungiswa futhi lavunyelwa yiNyuvesi yakwaZulu Natali Biomedical Research Ethics Committee BREC ref.BE 287/17

Uma ngineminye imibuzo/ukukhathazeka okusondelene nocwaningo, ngiyayiqonda kuthi ngingamthinta umcwaningi u Mnu. George Ilagila kwi Dietetics & Human Nutrition, eNyuvesi yakwaZulu-Natali Pietermaritzburg campus, kulenombolo 0845608784 kanye ne i imeyili Ilagila176@gmail.com noma eNyuvesi yakwaZulu-Natali - UKZN Biomedical

Research Ethics Committee:

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Durban

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KwaZulu-Natal, SOUTH AFRICA

Tel: 27 31 2604769 - Fax: 27 31 2604609

Email: BREC@ukzn.ac.za

Isignesha yakho

Usuku

IMVUME UNOLWAZI

Mina ngaziswe ngocwaningo oluvunyelwe ngokusemthethwen:” Umthelela kwintela ezinoshukela kubathengi abathengayo Phakathi kwabesifazen abaseminyakeni eyishumi nesishiyaga lolunye Kanye naphezulu, emasuphamakethe kusukela phansi kuya phezulu kwezokuhlalisana nakwezemnotho ePietermaritzburg” ngu Mnu. George Ilangila.

Mina ngiyayiqonda injongo kanye nenqubo yalolucwaningo.

Mina nginikeziwe ithuba lokuphendula imibuzo ngalolucwaningo futhi ngibe nezimpendulo ezingenelisile.

Mina ngiyakuveza ukuthi iqhaza lami kulolucwaningo lingukuthanda kwami ngokupheleleyo futhi ngingahoxa noma ngabe yisiphi isikhathi ngaphandle

Uma ngineminye imibuzo/ukukhathazeka okusondelene nocwaningo, ngiyayiqonda kuthi ngingamthinta umcwaningi u Mnu. George Ilangila kwi Dietetics & Human Nutrition, eNyuvesi yakwaZulu-Natali ePietermaritzburg campus, kulenombolo 0845608784 kanye ne imeyili Ilangila176@gmail.com.

Uma ngingaba noma yimiphi imibuzo noma ukukhathazeka ngolwamalungelo ami ngomhlanganyeli kucwaningo, noma nginokukhathazeka ngesici socwaningo noma umcwaningi khonake sengathinta:

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Isignesha yakho