Barriers and Reasons for Exercise of Rural and Urban Overweight and Obese Populations in Buffalo City Metropolitan Municipality, Eastern Cape

Dissertation submitted in partial fulfillment of the requirements for the degree Master of Philosophy in Environmental Studies

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ABSTRACT

It is documented that obesity is highly prevalent across rural and urban groups in industrialised and underdeveloped countries. This problem is an alarming issue as community members remain unsure about avoiding risking their health. Various health surveys reveal that obesity has increased among communities in the Buffalo City Metro Municipality in the Eastern Cape, and it has consequently made communities vulnerable to non-communicable diseases.

The researcher explored factors and barriers of exercise for rural and urban obese populations in Buffalo City Metropolitan Municipality, Eastern Cape. This study was descriptive and explorative, utilising a questionnaire for gathering information. A purposive sample of 80 members from the two selected communities completed the questionnaire. A factor analysis was performed to identify factors that motivate physical activity and barriers to physical activity.

It was discovered that all evaluated members were fully aware of the harmful repercussions of being overweight or obese. Nevertheless, only a tiny percentage of those who took part in the study decided to live a healthier lifestyle because of their obesity. Constructive motivating factors included increasing their self-image, enhancing their wellbeing, and getting highly involved in active and regular exercise. Negative motivators included finding it challenging to fit into old clothes and the worry of developing obesity-related diseases. Respondents noted the following impediments in regular exercises and physical activities; African cultural values, limited operational hours of physical activity facilities, insufficient time, and a lack of enthusiasm.

Key Words: *Obesity, Rural, Urban, Exercise, Communicable, Disease, Buffalo City Metropolitan*

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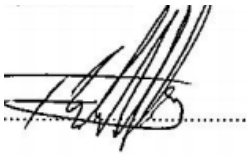

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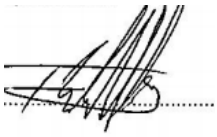

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TABLE OF CONTENTS

INDEX OF FIGURES

INDEX OF TABLES

LIST OF APPENDICES

ABBREVIATIONS

AIDS Acquired Immune Deficiency Syndrome

AHA American Heart Association

ACSM American College of Sport Medicine

ARV Antiretroviral

BMI Body Mass Index

CHCW Community Health Care Workers

DOH Department of Health

HBM Health Belief Model

NCD Non-Communicable Disease

WHO World Health Organization

CHAPTER 1

BACKGROUND AND INTRODUCTION

1.1 INTRODUCTION

Various studies (Dumith, 2015; McGuire, 2014; Petridou, Siopi, Mougios, 2019) claim that exercise is necessary for healthy individuals. Numerous organisations such as the American College of Sports Medicine (2019), the American Heart Association (2018), Diabetes South Africa (2018), and the World Health Organisation (2020) advocate that exercise reduces the likelihood of lifestyle diseases.

According to Samuel,et al. (2011), physical exercise is defined as any activity that requires physical strength to optimise physical fitness and wellbeing. McGuire accentuates that it is the purpose of physical activity to maintain and improve fitness levels. Similarly, Stephen and Edwards (2018) suggests that it is a subset of physical activities that are purposefully planned with attempts to improve health and wellbeing. Taylor et al. (1978) suggested that physical activity and physical exercise are terms known to define different concepts. However, there is a confusion among the two terms, and they are frequently used interchangeably.

Lack of exercise has contributed to lifestyle diseases such as cardiovascular diseases, pulmonary diseases, and many more. Among the most prevalent of these medical conditions is obesity (Rosenheck, 2018). Obesity leads to health problems that severely decrease the duration and quality of life of those who have it (Wilcox, Van Sebille; Hardesty, 2015).

Obesity and overweight are global problems prevalent in countries like South Africa, which is undergoing an epidemiological transition. By its nature, obesity is linked to risks of non-communicable diseases, and in a World Health Organisation report, excess body weight and fatness were ranked the fifth highest factors leading to death in South Africa (World Health Organisation, 2017). This is confirmed by CANSA, as they claim that obesity is set to have a profound effect on health outcomes, death rate, and prolonged non-communicable diseases, that account within the top five causes of death in South Africa (Visser, Knight, Wallace, Blaauw, 2017)

In the context of this study, culture is understood to refer to the values, practices and beliefs that is considered dominant in a particular community, be it rural or urban,

across the Buffalo City Metropolitan Municipality (BCMM), Eastern Cape. Numerous studies (Simfukwe, 2017; WHO, 2017; Petridou et al., 2015) have shown that rural South Africans have a positive bias for larger body sizes than their urban counterparts. In other studies, it was found that in married couples, whether in urban or rural areas, obesity was positively linked with wealth, happiness, attractiveness and being treated well by husbands (Petridou et al., 2019).

However, in some African cultures, having a slim body shape is linked with illness and common diseases such as HIV/AIDS and tuberculosis (Simfukwe, 2017). While several research studies (Godyki, 2018; Puone, 2015; Monakali et al., 2018) have evaluated perceptions of physical appearance and body size ideals in various places, few studies have been undertaken to examine the perceptions of urban and rural populations with regards to weight loss and its impact on their livelihoods.

This study was guided and assembled using one of the biosocial health geography Socio-Ecological theories, namely the Health Belief Model. In the broader context of Health Geography theories, biosocial health geographies clarify and define Ecology frameworks of health behaviour are well-known ideas that propose that multiple individuals shape behaviour, sociocultural, and physical-ecological issues (Simfukwe, 2017). The Health Belief Model (HBM) is a psychological health behaviour transformation framework advanced to illustrate and provide predictions regarding health and associated ecological behaviours (Dumith, 2015). It can be used to guide location-based health promotion and an individual's behavioural reaction to health-related circumstances that are shaped by several perspectives regarding an illness and their physical space or environmental aspects. (Simfukwe, 2017).

Therefore, this study aimed to explore factors and barriers which influence exercising among rural and urban obese populations in Buffalo City Metropolitan Municipality, Eastern Cape. The findings of the research would yield much-needed assistance through advancing a culturally suitable weight-loss intervention.

1.2 STATEMENT OF THE PROBLEM

It has been noted in numerous studies (Zoellner, 2014; Simfukwe, 2017) that obesity is a problem among the South African population, especially in the Eastern Cape. Given that obesity puts pressure on the health care system and citizens in general, it

is worth noting that research investigating issues similar to the ones in this study is urgently required.

There is a wide gap in the research and literature that helps academics and general members of the BCMM area position themselves against obesity challenges, especially needed in physical activity. Thus far, there is little research conducted focusing on exploring BCMM members' perspectives regarding obesity, their mental perception of obesity, and the obstacles they face in adopting a healthy lifestyle. This study examines the reasons and barriers for exercise as a health care tool to remedy obesity amongst members of the BCMM in Nahoon (urban) and Nxarhuni (rural) communities in the Eastern Cape Province. The exploration will then inform how health promotion facilities and providers provide healthy lifestyle services and recommendations.

1.3 AIMS AND OBJECTIVES OF THE STUDY

The aim of the study was to determine the barriers and reasons for exercising among the urban and rural communities in BCMM, Eastern Cape.

Objectives

- To assess the exercise behaviour of overweight and obese communities from rural and urban areas
- To explore barriers and reasons for exercise among overweight and obese communities from rural and urban areas
- to determine group differences for the barriers and reasons for exercise and their correlation with the BMI of overweight and obese geographical groups (urban and rural comunities).

1.4 SIGNIFICANCE OF THE STUDY

This study is significant to society because it promotes exercise as a possible intervention that may be the cheapest found in the local space.

Pragmatic significance

This study would influence a change in policy to communities that intend to establish controlled physical activity programs that could be implemented in the communities to

help better their lives. Schools may change their approach towards physical activity too and keep students in schools active.

Economic significance

This study will be helpful for health care medical schemes, health investment organisations, health practitioners and help the government save on health care expenditure. The research findings will help medical schemes or medical aids to understand the risk minimising methods towards health challenges.

Professionals working with obese clients/patients can use this information to understand the practical involvement of their clients both in gyms and at home. Medical schemes can further use this information to track high-risk clients and adjust premiums accordingly. Clients will exercise more with the knowledge that they are being tracked on results and will get discounts not based on attendance but results, and that may mean they also save money while exercising with better benefits.

Theoretical significance

The combination/collaboration between Human Movement Science and geography theories to achieve the research aim magnifies the view and understanding of the environmental perceptions of physical activity in a broader spectrum. Researchers can use the blend of these theories as a tool to merge the understanding of commonalities between physical activity and environmental sciences.

1.5 CHAPTER OUTLINE

Chapter 1, in summation, contains the introduction, statement of the problem, aims and objectives, the significance of the study, and a summary of each subsequent chapter.

Chapter 2 provides a literature review on various studies on the same topic. This includes studies on healthy lifestyles, obesity prevalence, and perceptions of obesity. A theoretical foundation is also provided within the chapter.

Chapter 3 focuses on the methods used in the study. This includes the study design, sampling techniques, data collection instruments and the analysis.

Chapter 4 provides the results on the demographics of the participants and their understanding, attitudes, and obstacles they encountered in adopting a healthy lifestyle.

Chapter 5 consists of detailed elaboration and discussion of the study's findings through conducting a comparison of the results with other quantitative research on obesity.

CHAPTER 2

LITERATURE REVIEW

2.1 INTRODUCTION

The literature review chapter requires a comprehensive examination of pertinent material, including papers, publications, and research issues. It is broken into two parts. The first section summarises the relevant studies on ecological obesity and exercise studies, obesity prevalence, and obesity perspectives. The second part presents environmental perceptions and barriers to exercise. It highlights the challenges that prevent urban and rural communities from controlling their weight and managing their exercise regime for a healthy lifestyle in a more comprehensive way regarding overweight or obesity.

2.2 ENVIRONMENTAL RISK FACTORS OF OBESITY AND EXERCISE

On this study the researcher selected two risk factors which reasonate with the aim and objectives of the study. The risk factors are in two types; environmental and genetic risk factors. According to Brownson, Boehner and Luke (2015), obesity is a health challenge or threat that is associated both with the environmental and genetic exposures. Extensively obesity increases stroke, diabetes, heart diseases and some forms of cancer, and those are some of the severe dangers of these risk factors (Brownson et al., 2015). According to Murphy et al. (2015) and Martin et al.,(2000) exercise as medicine is highly important among remedies employed as part of treatment to some of the obesity related risk factors.

Recent epidemiological literature shows that obesity has been dominant among, especially urban populations in the Sub-Sahara region (Dunton, et al., 2016). As indicated by the World Health Organisation (2019), obesity is described as a high or abnormal fat gaining that presents a health risk. According to Rosenheck (2018), this condition is measured through the use of the (BMI) body mass index method, which is measured with a person's weight in kilograms divided by the square of height in metres.

Environmental factors of obesity, according to Simfukwe (2017), are physical inactivity, overeating, high carbohydrate diet, medication, psychological factors, and chemical imbalances in the body. Simfukwe (2017) elaborated that these factors are

misunderstood and attended to differently. For example, chemical imbalance-based obesity is frequently sent to gyms for remedial purposes in urban areas, while overeating-established obesity is commonly confused with genetic-based obesity in the rural context (Simfukwe, 2017).

Environmental factors of obesity, according to Xu et al., (2017), may be attributes of physical inactivity, overeating, high carbohydrate diet, medication, psychological factors, and chemical imbalances on the body, location, access, affordability and the lifestyle of the people. This understanding is supported by Puonne and Mciza (2016) in their study focusing on Environmental Factors of Obesity in South African communities. Furthermore, according to Puonne and Mciza (2016), how individuals understand or think about obesity is uniquely shaped by different issues depending on age, ethnicity, culture, and customs.

A similar culturally based view was found in Matoti-Mvalo's (2006) study, where most women in South Africa attached thinness with HIV/AIDS and as a consequence, they preferred to be obese than face the stigma associated with thinness. Such views are held by numerous black communities in South Africa (McGuire, 2014).

Looking at genetic risk factors of obesity the researcher perused a number of studies with interesting views. Some of those views are of Megan et al., (2021) whom clarified that genome–wide association studies have presented that most genetic-variants contribute to obesity developments. However, studies focusing on this complex trait tend to dwell majorly on ancestrally tracked populations, despite the high prevalence of obesity in some minority groups (Yang et al., 2007). Xu et al., (2017) suggest that variation in body fat and body-composition may have a substantial genetic component, with numerous family studies demonstrating that much of the variation in BMI-related measures is heritable.

Although more recently, genome–wide association studies (GWAS) and replication studies have identified multiple genetic variants across a range of ethnic groups, none explain a substantial amount of population variation in Body Mass index (Puone and Mciza 2016). Daniel et al., (2013) suggest that candidate gene and genome-wide association studies have led to the discovery of nine loci involved in Mendelian forms of obesity and 58 loci contributing to polygenic obesity. However, rarely does obesity occur in families according to a clear inheritance pattern caused by changes in a single

gene (Daniel et al.,2013). Xu et al., (2017) suggests that the most commonly implicated gene is MC4R found in a small fraction of obese people in various ethnic groups Xu et al., (2017). According to Puonne and Mciza (2016) affected people feel extremely hungry and become obese because of consistent overeating (hyperphagia). So far, rare variants in at least nine genes have been implicated in single-gene (monogenic) obesity (Daniel et al.,2013). In other words, it is very difficult to separate the genetic based obesity functions from the environmental influences, as Xu et al., (2017) and Puonne and Mciza (2016) elaborate. As much as genetic predispositions influence an activity of over eating disorders in most times, rarely will a variant be responsible for progressive obesity overtime without the influence of environmental factors.

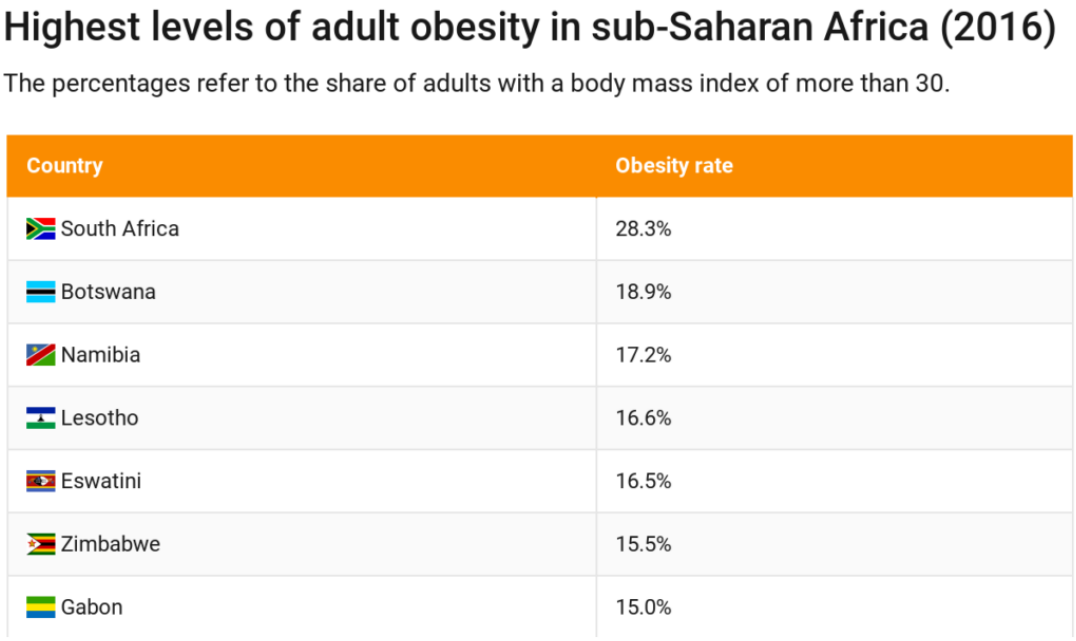
According to Choquet and Meyre (2011) in most obese people, no single genetic cause can be identified and genome-wide association studies have found more than 50 genes associated with obesity, most with very small effects. Several of these genes also have variants that are associated with monogenic obesity, a phenomenon that has been observed in many other common conditions (Choquet and Meyre, 2011). In summary Xu et al., (2017) extends that most obesity seems to be multifactorial, which is the result of complex interactions among many genes and environmental factors.

Physical inactivity has been found in many studies to affect rural and urban communities, and that discovery is elaborated on the studies mentioned underneath. In a study conducted by Kowaleski (2017) on Hawaiian native rural and urban communities, with an increased percentage of take away outlets, the findings pointed out that they is a correlation between an increased number of food outlets and low exercise resources.

According to McGuire (2014), general factors associated with obesity are frequently ignored by various health practitioners to a greater extent and obesity prevalence is associated with socio-economic status, gender and ethnicity values. However, numerous exercise programmes are not tailored based on these risk factors and are targeted at everyone, while food remains one of the essential factors linked to obesity (Wilcox, Van Sebille, and Hardesty, 2015).

2.2.1 Geography

According to Murphy et al. (2015), obesity occurrence differs by geographical region. For example, the South and the Midwest parts of Southern Africa have an increased scale of obesity among adults. The Midwest and South also have high rates of metabolic syndrome and diabetes that are commonly associated with obesity (Cois and Day., 2016). In statistics, 55% of global accumulation in (BMI) body mass index can be traced back and linked to increasing BMI in rural areas, which may be as high as 80% in low- and middle-income countries (Murphy et al. 2015). In the Southern African Developing Countries (SADC), rural people residing in the rural areas have 1.36% odds of obesity than those in urban areas. Furthermore, the economic development of these Sub-Sahara states has been found to have correlation with obesity development based on BMI (WHO, 2016). The obesity levels in SADC are shown in fgure 2.1.



Highest levels of adult obesity in sub-Saharan Africa (2016)

The percentages refer to the share of adults with a body mass index of more than 30.

Country	Obesity rate
South Africa	28.3%
Botswana	18.9%
Namibia	17.2%
Lesotho	16.6%
Eswatini	16.5%
Zimbabwe	15.5%
Gabon	15.0%

Figure 2.1 Obesity statistics Cois and Day (2016)

Murphy et al. (2015) add that rural areas are further to supermarkets, recreational opportunities and residents; as a result, this has a negative impact on the ability to follow proactive healthy behaviours that prevent obesity. However, considering the distance and the physicality of jobs in rural areas, it can be inferred that people who

reside there exercise indirectly through those activities; as a result, the prevalence of obesity is minimum.

2.2.2 Supermarkets

Accessibility of supermarkets does not result in healthier eating outcomes, as claimed by Godycki (2018). Yaneth Herazo-Beltrána, Yisel Pinillos a, José Vidarteb, Crissiena, Damaris (2017) strongly suggests that access to supermarkets does not usually lead to consumption of healthy food behavioural habits and weight status. The assumption is that if an individual has access to a supermarket, there are various options that one exercise, which may also affect their health outcomes. Simfukwe (2017) found that lower body mass index (BMI) and prevalence of obesity in areas with high reach and access to supermarkets compared to low reach and access areas (Simfukwe, 2017).

Godyki (2018) suggests that although these findings are contradictory and have different views, it is vital to consider how shifts in food preference at neighbourhood scale might happen quite gradually to be considered in these studies. Studies have found that, besides food accessibility, quality and its impact, change in food amount, modalities and prices, highly related to the obese challenge epidemic.

Current studies, for instance, reflects and link increased vulnerability to weight gain and obesity to consuming foods and beverage that are high in sugar at an increased scale (Kasu et al., 2015). Another interesting view to the food perception operandi was the issue of food advertising. Ibrahim, Karim, Oon, Zurinah and Ngah (2013) suggests that, even though adults are less vulnerable to the negative impact of food marketing, experiments conducted with children reveal an average impact for the significantly vulnerable population.

Another stance by Ibrahim, et al. (2013) is that of what he calls a common misconception which suggests that the reality facing consumers is the high prices of healthier food which make it unaffordable. Nonetheless, empirical studies highlight erroneous price statistics that influence this perspective and also shifts in fruit and vegetable convenience and rate of preparation. According to Kasu et al. (2015), price per calories benchmarks indicates fruits and vegetables have high prices compared to unhealthy food. Regardless, the price per average portion and price per edible 100 grams generally indicates that fruits and vegetables are not costly (Ettarh et al, 2013).

During periods of recession and economic hardships, the socioeconomically impoverished and vulnerable community's extracts energy value for money, leading to energy, nutrition-deficient meals that cause obesity (Ettarh, Van der Vijver, Oti, Kyobutungi, 2013).

2.2.3 Infrustructure accessibility

According to Kasu et al. (2015), physical exercise facilities might determine and influence modes of mobility and neighbourhood accessibility, both of which are connected with weight increase and decrease. Furthermore,it is claimed that better neighbourhood exercise facility accessibility is associated with lower rates of overweight and obesity.

The apparent beauty of retailers, houses, and entertainment spaces, as well as the quality of infrastructure in a neighbourhood, can have an effect on the utilisation of all of these resources. A study in a high-income and low-income neighbourhood revealed that, despite the fact that the number of leisure facilities in the neighbourhoods was comparable, individuals in the low-income neighbourhood felt themselves to have less accessibility to leisure facilities (Iwuala, Ayankogbe, Olatona, et al. 2015).

2.2.4 Work Environment and Advances in Communication Technology

The physical environment and food environment in South Africa have shifted, as has the workplace atmosphere. Between 1960 and 2010, 50 per cent of employment in the SA private sector required at least many physical exercises, whereas less than 20 per cent required this degree of activity intensity (WHO, 2015). Results from the National Health and Nutrition Examination Survey show a link between gaining weight over a similar period and declines in work-related energy expenditure (World Health Organization, 2016). These shifts in occupational-related physical activity may result from advancements in labour-saving technologies (Phiri, 2014 According to Ettarh et al. (2013), while searching for information about healthy weight loss behaviours and adopting a healthy attitude on the internet in SA, it has been indicated that access to information regarding healthy weight loss behaviours and adopting a healthy mindset is inadequate (Ettarh et al. 2013). "Screen time," or time spent engaging in technology that uses a screen surface, has been linked to an increased risk of obesity (Phiri, 2014); nevertheless, several application outlets and scholars are now employing a

similar technology to assist with preventing obesity and its diagnosis. 2.3 modern-day strategies to avoid obesity and improve exercise levels.

According to (McGuire, 2014) communication technologies such as devices: smartphones, smartwatches, and rhythmic monitors offer a suitable strategy to exercise routines. It is argued that personally accessible, precisely customised and contextually relevant behavioural treatments could be a relatively important method to overcoming frequent gaps in health behaviour change (Ettarh et al. 2013).

Research evidence explains and suggests that mobile devices (phones) are a valuable instrument for strategies to enhance health outcomes (Hee-Tae Roh, Su-Youn, and Wi, 2020). Nevertheless, rigorous clinical testing, cutting-edge technologies, and the application of powerful theoretical models while differentiating and separating the impact of technology are all limited (Ron. et al., 2020). According to Hee-Tae et al. (2020), even though there are over 5000 consumer health programmes for smartphones alone, just several applications have been confined to and focused solely on clinical trials to examine effectiveness in transforming health behaviours.

2.2.5 Mobile technology

Although mobile technologies have a broad reach and communication capability, few studies have evaluated mobile technology as a stand-alone intervention to modify obesity-associated behaviours in at-risk adults. (Roh and So, 2017). McGuire (2014), who conducted a study to verify the impact of mobile technology, discovered exciting findings. In his trial test of a 12-week mobile technology intervention for employment and estimates of impact sizes for a fully powered trial, McGuire (2014) found that a stand-alone mobile app might generate small to average impact for changes in the specific behaviour of a subject against obesity.

Although mobile technologies have a broad reach and communication capability, few studies have evaluated mobile technology as a stand-alone intervention to modify obesity-associated behaviours in at-risk adults (Roh and So, 2017). McGuire (2014) found that a stand-alone mobile app might generate small to average impact for changes in the specific behaviour of a subject against obesity.

According to Roh and So (2017), while recent studies indicate that youth prefer mobile applicationsfor optimising their nutritional and exercise routines, limited studies have looked at whether these programs help effect change. Furthermore, a large proportion of studies have concentrated on mobile applications as a supplement to weight-loss treatment. On the other hand, Petridou, Siopi, and Mougios (2019) state that technology development in fitness is growing and consumers are at the forefront of influencing that growth. They suggest that though the technology is not developing more interest in home-based workouts, fitness applications are widely used at gymnasiums and in outdoor activity and fitness-designed settings (Petridou, et al., 2019). There has been a notable growth of gadgets, including the Fit-bit, which is the best known of such devices and interest in that specific product has risen and peaked.

According to Simfukwe (2017), physical fitness is emerging into an entirely novel meaning in this decade, particularly considering that it is becoming a recognised health care tool into considerably a number of areas than we are not used to such as during travel. According to Roh and So (2017), the physical fitness business is thriving and worth £21.7 billion in the UK alone. It has not taken long to evolve and make it convenient for everyone to exercise at home or in smaller areas (Sandrin, 2019).

As a result, individuals have made a trend out of then-new exercises such as hybrid spin courses, meditation applications, device tracked lunchtime HIIT sessions, and even goat yoga during the last decades. Currently, one can witness quite a lot with less difficulty with use of modern day technologies. There are far more creative ways to ensure that individuals receive their fitness routine at residence or in the park and receive data through their handy devices (Petridou, et al. 2019). They say that recently, home visit sessions have taken on a new degree of frequency as a result of thanks to spatial challenges.

2.2.6 Physical exercise moving to applications

The coronavirus pandemic has brought about a new wave of health precautions and behaviour patterns to change societal operations, including gymnasiums. Because the coronavirus infects people through ventilation and respiration, according to WHO (2020), most people have had to adjust their lives accordingly. The regulations placed

by the World Health Organisation (2020) include wearing masks in physical activity and exercise with the use of hand sanitisers, including inside gymnasiums. Additionally, there have been many restrictions on facilities, with some people not even returning to gyms (WHO, 2020).

Physical activity facilities have been forced to shut down their operations as a result of the pandemic. Many popular known gyms have decided to use the internet to maintain their business stature and keep their heads above water (El-Sayes, Harasym, Turco, Locke, Nelson, 2020). With options like Frame, people can stream their programs while being at home. Research from the Journal of Medical Internet Research states that wellness applications significantly encourage desirable behavioural shifts in many different ways (Litman, 2020).

According to Petridou et al. (2019), whose research focused on digital application use compared to behavioural shifts, exercise app consumers are more likely to work out in their leisure period on any specific timeframe than those who do not use any type of applications. Furthermore, their research discovered that these applications made it convenient for users to navigate the challenges of exercising (Petridou, et al. 2019). According to Litman (2020), workout applications can be an instrument of high influence for behaviour shifts in fitness routes similar to a nicotine patch that can influence behaviour shifts in smoking. Litman, (2020) suggest that exercise applications are more successful when personalised to the individual, with features such as goal programming, specialised diets, meal plans, or interaction with actual professional trainers.

2.3 Environmental Perceived Exercise Benefits and Barriers

Researchers such as Simfukwe, (2017), Puone and Mciza (2015), and Litman (2020) have all found that there is an effective and worth attached to multiple health behaviour change interventions involving physical exercise, despite evidence of the effectiveness and value (Ettarh et al., 2013). There is a clear indication that they anticipate a variety of advantages and obstacles to transforming behavioural patterns. McGuire (2014) further elaborates that although there are known and widespread health benefits of exercise for disease prevention and obesity, the urban South African women's perspective regarding the advantages and limitations behavioural shifts are different from those of men. Furthermore, interpretation of women's perspective is essential to assist improve and design approaches that appropriately enhance the workout routine

shifts. It might also be essential to comprehending and sustaining the upholding of behavioural shifts in the context the establishment of physical exercise behavioural adjustment strategies (Rosenheck, 2018).

According to Pender, Murdaugh, & Parsons, (2011), apparent advantages are characterised as perceptions and understanding concerning the efficacy of prescribed procedures and activities in preventing a health concern. On the other hand, Van Stralen et al. (2009) explains them to be views of possible repercussions of activity, such as risk, cost, discomfort, time needed, and delay. There is a variation of claims of usefulness to exercising which are essential factors of physical activity among South African women and men (Adams & McCrone, 2011). consequently some research has discovered that only expected advantages influence physical activity, others have found that only reported restrictions do (Van Dyck et al., 2014).

In a study conducted in Durban in Kwa Zulu Natal, Trost and colleagues (2002), advanced that advantages were shown to be favorably connected with physically exercising and challenges were found to be negatively associated. Van Stralen et al. (2009) discovered in another Potchefstroom study that among older individuals, anticipated advantages were connected and related with continuation and commencement of regular exercise; with impediments not linked with initiating of workout routines, on the other hand, maybe negatively associated with Physical Activity persistence and endurance. A comprehensive survey of reviews conducted by Bauman et al., (2012) was not convincing in determining if exercising advantages and obstacles were indicators or causes of fitness routines. However, rather than the perceived barriers are the main reason people affected by obesity and unwanted fatness remain inactive.

2.3.1 Perceived Exercise Benefits And Barriers of Urban And Rural South African People

According to McGuire (2014), the variation of anticipated advantages comprises enhanced workout routines, improved physical fitness, improved psychological wellness, development of muscle strength, experiencing improved health, reduced tension and stress, enhanced heart functioning cardiovascular function, and better sleeping routines. On the other hand, the variation of indicated challenges includes

failing to find proper timeframe, lack of motivation, personal commitments, absence of sufficient motivation from closer loved ones, perceived fatigue due to and less interesting, tiredness, uncomfortable workout equipment, terrible weather, atmosphere, and being ashamed of one's physical appearance (Van Dyck et al., 2014). Personal hurdles such as health difficulties, exhaustion, boredom, and motivation are higher for African American women, according to comparisons reviews of African American and European American women (Wilcox et al., 2005).

In a study done by Prior (2015), there was a discovery that risk health was an obstacle in the deciding period phase in all ethnic communities except African Americans. Caregiving duties and lacking a safe place to carry exercises or physical activity were obstacles for all groups in the contemplation stage (McGuire, 2014). In the South African context, in Kwazulu Natal, people residing in rural areas have discovered anticipated environmental and personal impediments to workout routines and wellness enhancement routines (Osuji et al., 2006). Again, similarly in rural KZN, issues which include time constraints, exhaustion, poor weather, absence of motivation, lack of energy, hatred of exercise, traffic, work-related exercise, and a lack of people to work out with were all commonly cited impediments (Reference).

Furthermore, according to Osuji et al. (2006), women with significant obstacles to workout were less likely to meet their desired exercise demands. Additionally, more research of rural women who are vulnerable to cardiovascular heart illness discovered that significant challenges for those engaging in a walking program comprised trouble adjusting chronic sickness and injuries, family and self, which disrupted their physical workouts (Perry et al., 2008). In an international context, the absence of proper infrastructures and facilities, freezing temperatures, family obligations, severely hot weather, distance travelled, absence of dietary diversity, and loneliness have been identified as hurdles to maintaining a healthy weight by rural Canadian women (Paluck, et al., 2006). In a similar case, a recent study of the obstacles and predictors to exercising in older persons discovered no literature pertaining to rural and isolated Australia (Prior, 2015).

On the other hand, research conducted on men yielded comparable findings. Leone and Ward (2013) discovered that obese men have lower probability of regularly

engaging into physical activities; many people perceive exercising as challenging and only do it in an urgent situation or while contemplating to reduce their weight. Obesity was also recognised as a hindrance to regular exercise among 2,298 Australian individuals (53 percent of males) who took part in the Exercise of Australians pilot research in Australia in 2000 (Ball, Crawford, & Owen, 2000

It seems that very few studies thus far have examined the advantages and obstacles of men's online health behavioural shifts programs, nor has it explored what issues can determine workout disorders in South African men (Simfukwe, 2017). Variations in the actual impacts of these issues based on socio-economic class, culture, and geographical area, according to Pipkin (2014), are a major challenge in obesity studies. On the topic of environmental influences on regular exercise, there are proximal (at home) and distal (neighbourhood) ecological and social elements to consider (Kowaleski, 2017). Distance or proximity issues aspects comprises impact on inactive behaviour in the course of one upbringing and workout routine scales in the course of one's life experience.

Many studies cover urban and rural configuration in terms of its effects on workout routines, presented notably in terms of neighbourhood accessibility and degrees of physical engagement, particularly in industrialised countries (Zoellner, 2014). This is why, in the end, sprawling was characterised as low-density suburban development, fragmented land uses, poor accessibility, heavy reliance on automobiles, and disincentives to physical exercise (Kearney, 2010). According to Kearney (2010), neighbourhoods with physical activity infrustructure, as opposed to congested areas, encourage walking or biking to workplaces and facilities, including shopping centres, schools, parks, and recreational facilities.

This research focused on the equitable allocation of environmental advantages and access to regular exercise. In general, living near public open space (POS) is associated with increased workout routines and better health for all age groups (World Health Organization, 2016). However, access to public open space differs concerning the specific ethnic community in the context of the broader notion of ecological injustice, which includes inappropriate vulnerability to ecological risk issues exposed to the poor, marginalised and minority communities (Rosenheck, 2018). For instance, there is an indication that the allocation of urban green space and parks is biased

towards affluent spaces and areas (Zoellner, 2014). Accessing and nature of parks usually rely on the socio-economic level of the physical area.

2.3.2 Difference between Urban and Rural Populations on Physical Activity

According to Godycki (2018), a research investigation in rural Poland found that patients' efforts for preventing inactivity were linked to their location, with locals placing a lower value on physical exercise eventually due to proximity. This was a similar case with rural KZN, South Africa as Puone and Mciza (2016) found that distance from facilities affected the interest of members in partaking in physical exercise.

In her study where she investigated the perceptions regarding rural people's inherent challenges to physical activity, Brownson (2015) discovered that rural women are less likely to be involved in workout routines if they cite a lack of personal control, time, or motivation as an obstacle, implying that they struggle to prioritise fitness activities for themselves. Initiatives focused on boosting physical activity among female participants should take these factors into account. According to Wilcox et al., (2018), one potential approach is to promote facilities that make physical exercises routines the most suitable option, eliminating the need to participate in regular exercise as a distinctive element of one's life.

Recent studies have revealed that obesity is partly determined by an individual's geographical location and risk lifestyle behaviours (Puone and Mciza, 2016), (Godyki, 2018) (Tucker, Nelson, 2002). In their study, Jason (2014) found a link between obesity and geographic location in Mexico. Their study pointed out that people living in Greater Mexico were more prone to obesity due to the high consumption of soda drinks and less physical activity (Jason, 2014). Similarly, in another study in England, obesity was again driven by sedentary lifestyles, as Gillen (2017) explains. Gillen (2017) also points out that in England, most people residing in London were more obese compared to those in Southampton. Thus, obesity can be said to coexist together in many countries (Gillen, 2017).

In South Africa, similar trends have been witnessed in the past decade, where urban-based people were more likely to be obese and have metabolic conditions than rural-

based people (Manyema, 2015). Mainly due to lifestyle in the two geographical locations (Manyema, 2015). In addition, people in rural areas work in farms, which is a form of exercise, while those in urban areas mainly utilise gyms or simple aerobics (Manyema, 2015).

A recent review by Kinsman (2015) on the significance of socio-economic position and the physical environment as aspects impacting physical activity was found in the causes of obesity in black South African urban environments. A study conducted in rural South Africa found that lower socio-economic class was linked with a lower inactive lifestyle, greater walking for transportation, and decreased gradual and higher levels of physical activity (Manyema, 2015).

Negative external factors include increased criminal activities and congestion in metropolitan areas, which might also promote a sedentary lifestyle, according to Puoane and Mciza (2015). They went on to say that in black South African contexts, cultural considerations in rural areas can operate as significant limitations to the capacity to workout activities. The constraints include the unacceptability of wearing tight-fitting clothes sportswear while being involved in sports and the perspective that getting involved in leisure-time physical activity diverts time away from domestic duties (Puoane and Mciza, 2015).

Schrauwen, Smith, Sparks (2014) stated that it would be a worthy practice to develop desirable and positive information regarding healthy weight and body image of rural people challenged with mutually different ideas of what is regarded as attractive and otherwise. If they are involved in regular exercise routines or slim, they might be mocked for being less well fed or healthy, so even if they are obese, they might be contrasted to baboons or scoffed at for having large buttocks. Previous research on physical appearance among South African Women Kinsman has revealed such conflicting interpretations (2015).

Puoane et al. (2015) discovered that in Black rural culture, a woman is loved and respected if she is reletively overweight; however, women subjected to beauty standards depict slim women as aesthetically pleasing become conflicted (p. 14). As a result, it is understandable that they want to be both. On the contrary, they desire to be whom they are expected to be based on their social traditions, in the opposite they desire to adhere to the norms of other ethnic groups (Puoane et. al., 2015).

The core outcome of the research (Puoane and Mciza, 2015) indicates significant variations regarding regular exercises based on gender, age group, and province. In their findings, there are differences in residential location based involvement, rural males have been indicated to have higher physical activity levels than urban males. However, on the other hand, black and white urban students were considerably more involved in physical activities than other ethnicities, whilst younger students were more involved in workout routines than older students (Puoane and Mciza, 2015). Overall, Gauteng had increased physical activity levels than other provinces, though these were not distinguishable from KwaZulu-Natal (Puoane and Mciza, 2015).

An additional illustration is that compared to men, females involved in demanding exercise routines are not always inspired or commended by society, while some cultures value sports more than others. Puoane and Mciza (2005) discovered that SA males aged 5-18 years managed to accumulate more workout prevalence per week than their female peers in a similar position in a significantly broader urban-based study. Their findings promote and adhere to gender differences in physical activity degree among South Africans living in similar areas.

According to scholars who have thoroughly researched exercise (Springer et al., 2006; Liu et al., 2008; Albarwani et al., 2009; Ismailov and Leatherdale, 2010), it has been commonly suspected that people residing in cities are less involved in physical activities than people living in rural areas, and thus have reduced rates of workout routines and higher rates of overweight and obesity.

An investigation directed on the impact of urbanisation on regular exercise, has been inconsistent in understanding the problems that are an obstacle to regular exercise (Cicognani et al., 2008).

According to Puoane and Mciza (2015), health aspects linked with urban-rural living differ across geographical areas, such as North Europe, Mediterranean countries, North America, Latin America, and Asia. In the United States, rural school youth have increased rates of overweight and obesity than urban school youth (Ismailov and Leatherdale, 2010).

Regular exercise statistics suggest more variable distinctions, with youth from rural communities more likely to be categorised as fit and healthy, particularly in

cardiovascular fitness, when contrasted to urban youth in Oman (Albarwani et al., 2009). Distinctions in different motor fitness forms and somatic features between rural and urban Belgian youth, on the other hand, were insignificant (Taks et al., 1991). The researcher attributes the findings to a constant process of conurbation in Belgium, a geographically less densely populated country.

Furthermore, new technological and advancement activities may also conflict with parenting styles; for instance, mothers with increased education scale may have different parenting styles and have a high likelihood of engaging in health-promoting behaviours in urban settings (Sherar et al., 2009). Among other important aspects from Padez and colleagues (2014) is to show us the differences and comparisons in physical activity, regular exercises, and effort committed to sedentary on screens and cardiovascular wellness in rural and urban teenagers in the Portuguese Midlands

2.4 THEORETICAL FRAMEWORK

2.4.1 Health Belief Model

The Health Belief Model (HBM) is a psychological health behaviour shifts model that was created to illustrate and understand health and environmental behaviours (Dumith, 2015). It can be employed to direct health interventions and people's behavioural reactions to health-related circumstances dictated by seven personal perspectives about obesity and where it occurs (Simfukwe, 2017). These seven variables, which include anticipated vulnerability, perceived seriousness, anticipated challenges, perceived advantages, cues to action, and individual competence, serve as the foundation of the HBM (Burns & Bush, 2001).

HBM was chosen for this study since it illustrates health-related behaviour at the scale of personal decision-making in both rural and urban settings (Simfukwe, 2017). When anticipated risks are investigated, the theory illustrates various preventive health behaviours (Burns & Bush, 2001). The majority of the framework's main elements are appropriate for this study. The HBM theoretical model shapes this study and its arguments. The HBM is a theoretical framework engaged in investigating overall adults' understandings of obesity, perceptions regarding the state, and the medical conditions they experience in their daily lives. This approach is the justification

that will guide the study's course and allow the researcher to connect the research results to knowledge in the health geography field (Burns & Bush, 2001)

The Health Belief Model, according to Simfukwe (2017), is also noted to be a familiar guide in health geography biosocial processes with the responsibility to analyse obstacles such as price and availability are overcome by focusing on supportive elements such as community members' interest in quality of life, family protective measures, and interactions with the land.

2.4.1.1 The Model and Theory Relationship

The relationship between the biosocial health geography theory and the Health Belief Model is common but not frequently used (Rosenheck, 2018). According to Simfukwe (2017), the health belief model is a social psychological health behaviour change model that was advanced to predict and explain health and environmental health behaviours. Similarly, according to Prior et al. (2019), the biosocial health geography theory is the relational geography and the biosocial and environmental process, which allows for investigating biologically plausible mechanisms to understand environmental health geographies of place.

In this study, understanding the biological mechanisms (BHGT), such as barriers to positive health behaviours like exercise and eating healthy, requires psychological health behaviour change (HBM). Consequently, the seven key constructs of the HBM according to Burns & Bush (2001) The HBM's bases, which includes anticipated vulnerability, perceived seriousness, anticipated challenges, anticipated advantages, cues to action, and self-efficacy, are also a joint factor from the BHGT.

2.4.2 Biosocial Health Geography Theory

In this study, the researcher uses the biosocial health geography theory to link to the health belief model structure as a chosen theoretical framework to clarify perceptions, factors, and barriers facing BCMM communities challenging them not to exercise. The biosocial health geography, according to Prior, Manley, Clive (2019), is composed of the relational geography and the biosocial process, which allows for Researching specific biological modalities for the manifestation of a specific situation, which is a critical pathway for advancing health geographies of place (Prior, Manley, Clive, 2019).

According to Rosenheck (2018), broadening knowledge of bio-processes that includes issues like genetic factors offers a framework for acknowledging the dynamics involved of interpersonal interaction in bodies over the life course and exploring the origins of these embedding is also the imbalanced related to wellness.

Frequently in this context, researching is emphasised in particular in both alternative and spatial senses – issues that create vulnerabilities, toxins, or social features, with a focus on green space, this or that place, service distribution, or community linkages (Clark, Espy and Wakschlag, 2016).

There is a knowledge imbalance regarding how individuals understand and interpret the mechanism through which physical spaces diffuse to communities and people and the interaction of these activities over time (Rosenheck, 2018). Nonetheless, there has been gradually limited efforts to combine biosocial notions with opinions and views from health and physical space studies, implying geographic experts have vital ideas (Clark, Espy and Wakschlag, 2016).

More explicitly, while biosocial concepts relate to the plasticity of biological evolution and the permeation of bodies, there is a mixture with improvements in place theory, particularly in work on relational geographies. Underneath, we briefly explore the prevailing interconnections suggested in the health and place publications, illustrate the latest developments, and reconsider the advancements in place theory. This study investigates the impact of a specific setting and healthy linkages that have surfaced in the geographic and epidemiological studies far enough. According to Rosenheck (2018), this integration is being used to consider additions to exposomic geographies and the employment of the exposome as a comprehensive perspective through which the complicated "how" and "when" of wellness and location connections can be discussed.

Health and place studies illustrate and debate the importance of community framework in affecting health and quality of life, emphasising personal experience that recognises the conceptualisation and multi-scalar nature of life (Clark, Espy and Wakschlag, 2016). According to Prior et al. (2019), the variety of biosocial geography studies has presented specific clarification into possible approaches of Location and wellness interactions that are frequently exemplified as being connected with lousy health; limitations and poverty in relating to lesser value and availability of resources,

dysfunctional environmental conditions, low social capital, and unequal treatment are frequently exemplified as being connected with bad health. Moreover, they state that there are still opportunities to expand our knowledge and untangle the unattributed and enigmatic box of location and health (Prior et al. 2019). According to Rosenberg (2017), one of the major complaints of place-based health geography is the continued disregard for the theoretical perspectives that underlies research. More precisely, the dynamics that function at the permeable interaction of individuals and physical spaces; the evolving spatial-temporal form of links; and the mechanisms by which individuals get subjected to systems of vulnerability (Roux). (Roux and Mair, 2010; Rosenberg, 2017).

2.4.3 Theoretical Framework and Model

In this study, only one theoretical framework is described in detail that the researcher focussed on applying as a structural guide, the Health Belief Model; and the theories in it assist in explaining specific important segments of the ideal model. The reason for doing that is that the Health Belief Model covers almost every aspect of perceptual physical activity while very few other aspects we are interested in involving the study belong to other theories. The health belief framework is a social psychological model for health behaviour modification created to identify and understand health and environmental behaviours (Simfukwe, 2017). The following are the topics it addresses: Vulnerability, intensity, rewards, obstacles, action cues, and self-efficacy are all factors to consider, and borrowed aspects are; perceived threat vulnerability from the Protection Motivation Theory and the stages of change from the Trans-Theoretical Model.

2.4.4 Socio-Ecological Theory

According to Bauman, Smith, Stoker, Bellew, and Booth (1999), environmental frameworks of health behaviour are theories that propose that social, social, policy and physical-environmental aspects affect behaviour. According to Sallis and Owen (2002), the environmental framework's primary goal is to uncover ecological causes of behavioural and environmental treatments that enhance health (McLeroy, Bibeau, Steckler, & G.

2.4.5 Biosocial Health Geography Socio-Ecological Context

According to Bauman, Smith, Stoker, Bellew, and Booth (1999), ecological frameworks of health behaviour propose that interpersonal, social, policy and physical-ecological issues influence behaviour. According to Sallis and Owen (2002), the environmental framework's primary goal is to find ecological causes of behaviour and environmental treatments to promote health (McLeroy, Bibeau, Steckler, and others).On a broader context among theories used to outline the nature of issues around physical activity and the biosocial health geography, the ecological context has been extensively used. It has been put to application in order to determine the correlates of physical activity. Ecologically, persons who live near the seaside indicated an increased physical activity scale, regardless of their socio-economic condition (Simfukwe, 2017). Closeness and distance to physical activity programs and places are significant for both youth and older persons, as highlighted by Booth, Owen, Bauman, Clavisi, and Leslie (2000). Adequate and Workout amenities that are easily accessible Even though these findings are not explained similarly in the instance of women, they are highly associated with regular exercise and significantly predicted strenuous exercise in men (Sallis, Bauman, and Pratt, 1998).

Hoehner, Brennan Ramirez, Elliott, Handy, and Brownson (2005) found significant linkage between the accessibility of proximity recreation centres and ten of the facilities, as well as between the use of the spaces and meeting the suggestions through leisure activities, in both areas affluent and poor neighbourhoods in St. Louis, depicting a low-income rural, and Savannah, portraying a high-income urban. Nevertheless, there was no apparent link between the availability of recreation centres and compliance with the suggestions. Furthermore, these data show that before an individual get involved in the necessary amount of recreational activity, individual-level characteristics and additional environmental aspects must be available. Furthermore, according to Arcury et al. (2006), boosting involvement in constant exercises has become a public responsibility in several developed nations. They say that therapies that improve and change the fundamental variables that drive physical activity have the relevant results (Arcury et al., 2006). Exercise is constrained by physical, individuals, and environmental factors, much like any other aspect of health care, which can pull in any direction (Arcury et al. 2006). In a recent study of the correlates of adults 'participation in exercise and general physical activity; Owen, Trost, Bauman,

Sallis (2002) `s study determined that being involved is significantly caused by several varieties of issues, comprising individual, social and ecological issues that might be described as causation issues overall

2.4.6 The Health Belief Model-Social Cognitive Context

In our current context, some researchers validate a need to use the social cognitive theory to analyse urban-rural behaviour and its impacts on exercise and exercise elasticity. The social cognitive context of the Health Belief Model came to the establishment and was advanced in the course of the 1980s by Albert Bandura (Nahas, Goldfine, and Collins, 2003). According to Bandura (2004), the social cognitive perspective clarifies an in-depth collection of causation. This strategy influences how they function, including transforming this understanding into comprehensive wellness measures. The main influence for wide health measures of personal might comprises understanding of health vulnerabilities and advantages of various health measures, outcome, expectations, anticipated individual competency and health outcomes individuals establish for the personal use and anticipated social and structural determinants. According to Bandura (2004), the adjustment in health behaviour needs a lot of self-drive and individual control.

Bandura (2004) also expands that people should learn to monitor their health or physical activity behaviour, set goals, motivate themselves and establish social support to sustain their effort. A recently conducted intervention study conducted on 62 undergraduate students by Ince (2008) employing the social cognitive framework described by Bandura (2004) and Nahas et al. (2003) resulted in essential enhancement in exercise behaviour as well as other benefits such as health commitment, nutritional, family protection, and managing of stress.

Furthermore, Bandura (2004) defines self–efficacy as a major construct of social cognitive concepts, which can be further explained as People's assessments of their competency to plan and carry out action plans necessary to gain specific results. It is not significantly focused on the abilities one possesses, but rather with assessments about what one can do with whatever competency one possesses (Bandura, 1997). When we trace back, we find that the founder of the social cognitive theory Bandura (1986) Earlier accomplishment and task accomplishment, verbal and social

persuasion, emulation and modelling, and mental state evaluations were all identified as sources of individual competency information. According to Schwarzer (1992), self-efficacy is a very significant behavioural variable, and its incorporation in health behaviour frameworks is indeed justified.

2.4.7 The Health Belief Model Self Determination Context

In a different contrast, Wayne (2019) proposed the self-determination concept of the HBM is generally viewed and understood as a macro-perspective of individual drive focused on the growth and the performance of the individual of social contest, further as shown by Deci and Ryan (1985), the model emphasizes on the level or the extent to which individual support their interaction and get involved in interaction through a complete feeling of autonomy. The model further recommends individuals as naturally concerned with exercising and physical activities, consisting of inherent qualities regarding mental maturity, who intends to accomplish current obstacles and combining their encounters within a developed feeling of self (McAuley and Blissmer, 2000).

They elaborate that to perform well and solve obstacles, individuals must be autonomously capable of reaching the three core mental demands of personal competence, independence and connectedness. According to Deci and Ryan (1985), to the amount to which the necessities are supplied, individuals will operate well and mature healthily, but to the degree that they are obstructed, people will reflect symptoms of limited functioning.

According to Schwarzer (1992), although often understood as a unique variable, motivation is influenced by various events and individual opinions. According to Ryan and Deci (2000), people can be driven since they place a high value on an activity or a comprehensive ecological force in the middle. They can be persuaded to act by an enticing motivation or a bribe, and they can act out of a feeling of individual dedication to succeed or out of worry about being seen. (Rosenheck, 2018). These scenarios arise in the context of having intrinsic or inborn motivation versus being externally or extrinsically motivated by another person or circumstance.

Self-determination context, according to Rosenheck (2018) It has been proposed that people feel more self-motivated sorts of motivation when the activities they engage in helping them gain competence (the capacity to do the behaviour competently),

connectedness, and independence. More individual-driven sorts of motivation are preferred since they are associated with desirable encounters and long-term drive to engage (Deci & Ryan, 1985).

Another study linked higher conforming to higher satisfaction and ability motives in Tae Kwan Do participants. Workout is more externally motivated than a sport in the exercise area. People are more inclined to stick to exercise programs that are not intrinsically attractive or pleasurable but have something to gain from them (Ryan, Williams, Patrick, 2009). An inadequacy of inherently drive to workout activity has been reported to contribute to low long-term compliance, whereas Chatzisarantis, Hagger, Biddle, Smith, and Wang (2003) discovered an averagely positive relationship between more individually driven motivators and indicators of purpose and expertise in a recent meta-analysis of the self-determination spectrum.

According to Ryan, Williams, Patrick, and Deci (2009), exercise behaviour is influenced by various elements, including individual or intrinsic mental processes to the environment. The aspects highlighted also range significantly across age groups, which is understandable given the paucity of study on determinants among rural older individuals. Physical activity programs that are especially suited to this unique group are incredibly challenging to produce (Ryan and Deci, 2000). Studies previously conducted have tried to highlight and illustrate these aspects using an underlying psychological theory.

There have not been many studies that incorporated all of the theories at once. Wilcox and colleagues (Wilcox, Castro, King, Housemann, & Brownson, 2000) employed one such technique to examine crucial characteristics in rural-urban older adults in South Carolina. Parks, Housemann, and Brownson (2003) discovered income as a major predictor of health in a comparative analysis of rural and urban older persons. Housemann and Brownson (2003) identified income as a consistent predictor of work-out and exercising, with poor households reflecting a reduced physical activity scale. They further illustrate that, when these issues have been indicated, they might be employed to establish workout and exercises programmes that are emphasized, especially on eliminating and removing the challenges and enhancing the rewards in this exceptional group.

Therefore, this research aims to establish the perspective of workouts and exercise activities by combining the essential perspective and conceptual assumption from these behavioural models with ecological and health-related issues that affect physical activity in BCMM district municipality rural and urban areas.

2.5 A General Overview of Exercising in South Africa

The factor in question about training and exercise is that, even though the advantages of constant and regular workouts and exercise are broadly understood, frequently notable is that many South Africans still do not exercise and remain sedentary (Banks-Wallace & Conn, 2002). There are also findings from other researchers in various parts of the world that regular exercise slows chronic illnesses' development and make them easier to manage (Banks-Wallace & Conn, 2002).

Not only are cardiovascular hazards and aspects that make individuals be vulnerably reduced by controlling blood pressure and other ailments such as low-density lipoprotein (LDL) and triglycerides, but high-density lipoprotein (HDL), insulin sensitivity, fibrinolysis, and arterial wall adherence are also increased (Puone and Mciza, 2016). Regular exercise, for instance, has been demonstrated to improve gait and balance in the elderly, resulting in a decrease in the rate of falls (Puone and Mciza, 2016).

Furthermore, constant training and exercise and physical activities begun later in life have lower risk aspects and mortality linked with a lack of exercise (Xu et al., 2017). Considering these advantages, the World Health Organization (WHO) prescribes moderately intense activity for at least 30 minutes per day,3-5 days per week or 150 minutes per week for the elderly to remain fit and healthy (World Health Organization, 2010). Nevertheless, notwithstanding the actual impacts of constant physical activities, data from abroad imply that several South Africans are not involved in constant and regular physical activities and that participation in workout routines steadily reduces with age (Census, 2011).

Sedentary lifestyles lead to significant health concerns in children and adults, and South Africa has one of the global's high inactive individuals (Banks-Wallace & Conn, 2002). According to Horne, Skelton, Speed, and Todd (2012), a sedentary lifestyle and failure to be active has risen to fourth place on the list of global causes of death, trailing only high blood pressure, smoking, and diabetes. It has been found through

research that around half (47%) inactive lifestyle is common among more than half of all South African people, which is more than higher than the world average of 23%, making South Africa one of the least active countries in the world, trailing only Colombia, Kuwait, Saudi Arabia, and Malaysia.

Sedentary behaviour refers to prolonged periods of inactivity – such as sitting at a work desk all day – and has been contrasted to smoking in terms of the devastating effect on one's wellbeing (Ardington & Case, 2009). According to a 2014 study, spending more time idle is associated with an elevated risk of some forms of cancer, as well as a spike in diabetes and obesity rates. As indicated by the World Health Organization adults are supposed to be involved in approximately 150 minutes of moderate exercise per week (or 75 minutes of intense activity) (World Health Organization, 2010).

2.6 CONCLUSION

This chapter discussed the literature on exercises and how they impact health conditions about obesity. In addition, theoretical frameworks informing this study were also discussed in this literature. The chapter also discussed the drivers of motivation that a person could choose to engage in. furthermore, the chapter gave an overview of exercising in South Africa.

The chapter clarifies the studies on obesity perception, beliefs, and issues, while thoroughly touching on a variety of results in literature accessible both in South Africa and worldwide, highlighting that obesity is a widespread condition in both wealthy and low-income nations (Puoane et al., 2002; Ettarch et al., 2013). Obesity is a high incidence in rural and urban regions, making it a major public health problem.

A healthy lifestyle, which includes avoiding obesity, has numerous advantages, including lowering the risk of developing no communicable diseases, fostering a positive self-image, and being healthier and more productive (Rosenheck, 2018). The adverse outcomes may comprise a higher chance of developing obesity-related ailments, being unable to fit into old clothes, and being less productive (Simfukwe, 2017). The different talks of active lifestyle theory revealed that individuals are predisposed to obesity due to their behaviour choices and the circumstances in which they live (Banks-Wallace & Conn, 2002). Obesity is prevalent among people of all races because of the good connotations, such as being attractive, wealthy, and

progressive. These attitudes impede the employment and importance of health interventions related to and aimed at reducing obesity (Holdsworth et al., 2004; Puoane, Tsolekile & Steyn, 2010; Ettarh et al., 2013). Since this model works with health-related behaviour at the individual decision–making level, the study and its organization are driven by the HBM theoretical framework (Simfukwe, 2017). As a connection to the health belief model structure, the biosocial health geography theory was selected as a theoretical framework to explain perspectives, circumstances, and challenges confronting BCMM populations and preventing them from exercising.

CHAPTER 3
RESEARCH METHODOLOGY

3.1 INTRODUCTION

There should be a methodology and design for every research undertaken to guide the researcher when conducting the study. This chapter discusses the research philosophy/paradigms that informed this study's methods and design and data collection methods. It covers the following topics: research methodology, research design, data gathering strategies, sample approaches, data analysis, and questions of validity and reliability in quantitative studies. Additionally, this chapter discusses sample strategies, research tools, the utility, and arguments for selecting this approach over others.

3.2 STUDY DESIGN

This study followed an exploratory research design, where the aim was to explore the barriers and reasons for exercise among the two populations (rural vs urban). An exploratory research design is usually used to investigate a problem which is not clearly defined. In this case, the reseacher wanted to gain a better understandingof the barriers and reasons for exercise between these two populations.

3.3 STUDY AREA

The study area is situated in the Buffalo City Metropolitan Municpality (BCMM) centrally located in the Province of the Eastern Cape, situated towards the southeast near the Indian Ocean coastline. The Eastern Cape Province is the second-largest province in South Africa and it covers 169,580 square kilometres, constituting 13,9% of the total land area in South Africa (BCMM 2012/2013:19) (Manyema, 2017). The province has two major metropolitan municipalities, which are the Buffalo City and Nelson Mandela Metropolitan Municipalities. Buffalo city is the main urban hub of the eastern areas of the province. It comprises of an urban corridor stretching from East London and Mdantsane up to Dimbaza in the West. On both sides of the urban corridor, there is a vast stretch of rural areas. Data was collected from both rural and urban areas. Specifically, the study gathered data from the following areas in the BCMM: Nxarhuni (a rural community) and Nahoon (an urban community).

3.3.1 Nxarhuni

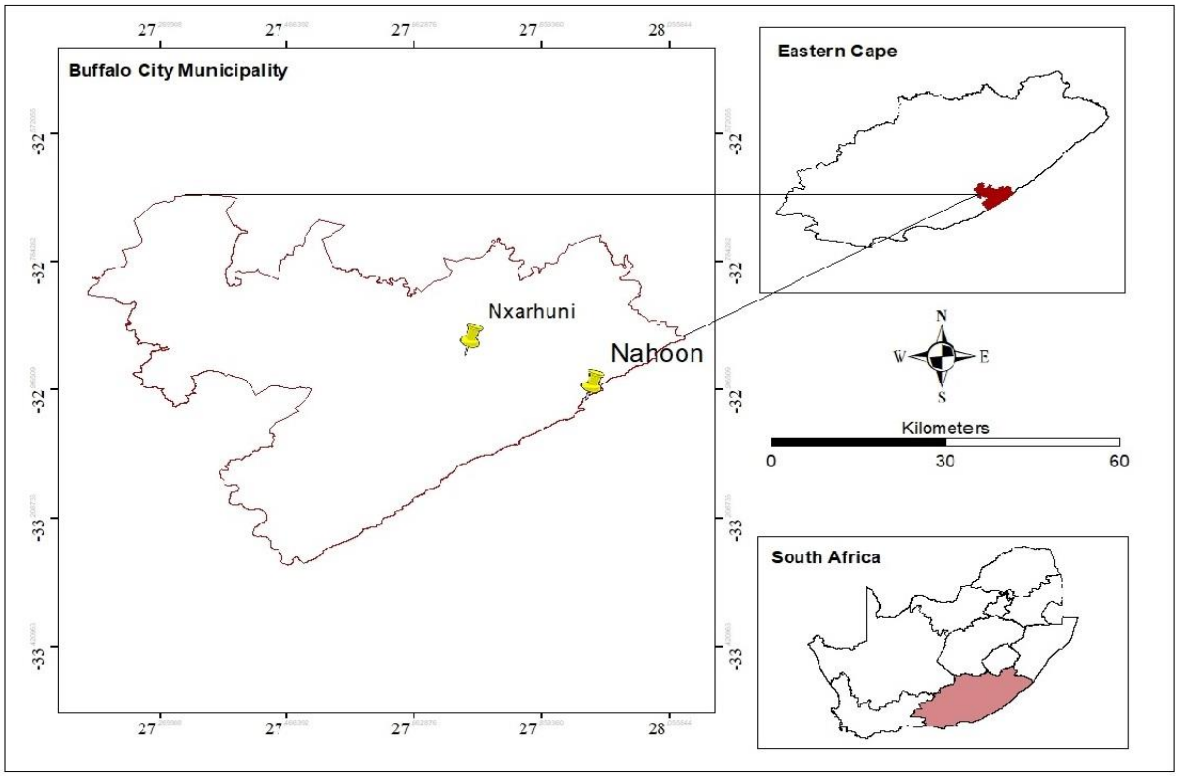


Figure 3.1 Study Area: Nxarhuni Source: map data @2019 Afri GIS (pty) ltd.

Nxarhuni is located near Nahoon Dam, a village about 26 kilometres from East London. Nxarhuni is dominated by a lot of bushy areas and no formally designed playgrounds or sport facilities. According to Puoane et al. (2015), there is a shortage of usable facilities in the Buffalo City rural setting, which in the current case leads to programs of physical activity and exercise like sport preparation games being challenging to establish. People are not accessing well-structured shopping centres to buy quality food and there is no proper community layout with proper streets and spaces to allow people to get active (Puoane et. al., 2015).

3.3.2 Nahoon

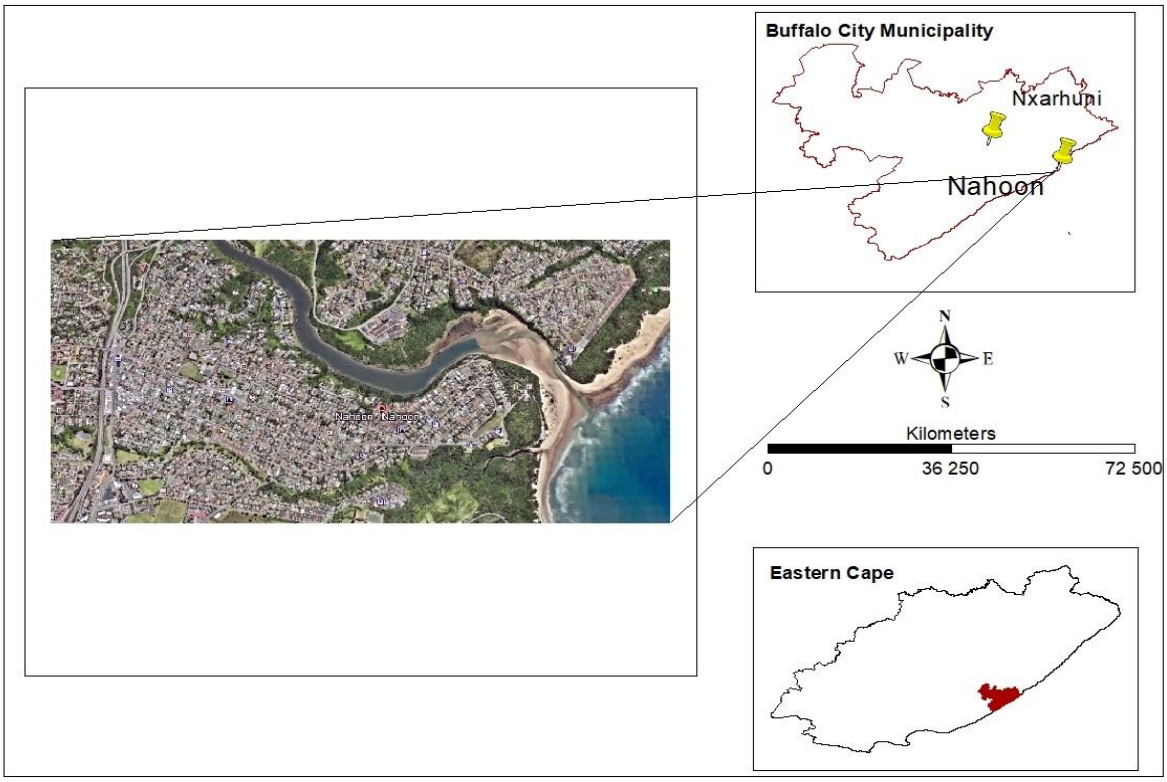


Figure 3.2 Study Area: Nahoon Source: map data @2019 Afri GIS (pty) ltd.

Nahoon is located at the river mouth of the Nahoon River and the estuarine of Eastern Beach. It is the co-host of the Iron man race held in East London annually and hosts several races and physical activity festivals, such as the aerobics carnival. Nahoon is surrounded by three commercial gymnasiums that engage the communities every month, recruiting members to join and partake in the gymnasium. Members also have access to well-paved walkways, which are used for jogging and recreational activities such as sports.

3.4 Research Approach

Research ought to follow a particular strategy of collecting and analysing data. These strategies are known as research approaches. These strategies can be classified into either a qualitative or quantitative research approach (Krauss & Putra, 2005). Another approach that can be used and followed in research is a mixed-methods approach or a triangulated research approach, simply a mixture of quantitative and qualitative research approaches (Sekaran & Bougie, 2010). Choosing a suitable approach relies

on the type of data and nature of knowledge that a researcher aims to gather from respondents or participants (Burns & Bush, 2013). This study made use of a quantitative approach.

3.4.1 The Quantitative Approach

The quantitative approach refers to a research strategy that involves gathering data from large samples and quantifying data through statistical tools. Quantitative research is a research approach that depends on statistics, measurements, and calculations (Proctor, 2012). It is guided by the scientific approach to research as a framework. This approach is highly structured compared to a qualitative approach. The large size of the sample used in quantitative research allows findings and results from the study to be generalized to the targeted population (Krauss & Putra, 2005). However, the requirement of a random selection of participants is not always met, which would be a limitation of a quantitative study utilizing a non-probability sample selection, such in the case of this study.

3.5 Sample Selection

A purposive sample of 80 participnats was selected for this study. A purposive sample is a non-probability sample chosen, because it has similar characteristics to the population and the study's objectives (Burns & Bush, 2013). This particular study selects the relevant people based on demographics such as age, BMI, and residence.

The study population is people residing in the BCMM, both from Nahoon and Nxarhuni. A purposive sampling technique was employed to select 80 overweight and obese participants from the mentioned areas. The sample consisted of 40 participants each from the rural and urban areas. Thus, 40 participants from the rural area, Nxarhuni, which included 20 participants who were exercising and 20 who were not exercising, were obese and were invited to be involved in the study. Likewise, in the urban area, 40 obese participants from Nahoon, 20 were exercising and 20 were not exercising, were invited and assessed to participate in the study.

3.6 Inclusion Criteria

According to Burns and Bush (2013), inclusion criteria are characteristics that the prospective subjects need to have if they were to be included in the study. In this study, the selection basis was relevant to setting the target's tone and contrast.

The following inclusion criteria were used:

- The participants included were from both genders and aged between 20-50 years, since people who are beyond those ages may be inactive;
- Participants height and weight (BMI = weight/height^2) was used to measure their BMI. Participnats with a BMI between 25 and 30 was categorised as overweight, while those with a BMI larger than 30 were categorised as obese. Only participants with a BMI of 25 and larger were included in the study.

3.7 Data Collection: Research Instrument

Questionnaires are the most popular way to collect data from respondents. In survey designs, questionnaires can gather information from large groups of people. This study used closed questions in the questionnaire to solicit input. On the closed-ended questionnaire, respondents selected responses aligned with their characteristics and views on barriers and reasons to exercise. Some questions needed respondents to tick statements that they agreed or disagreed with, while others ticked “yes” or “no”. The questionnaire provided anonymity and privacy and had the benefit of being distributed to a large number of participants throughout a vast physical space, allowing for time and financial savings, and it frequently delivers a greater proportion of acceptable results (Best & Khan, 1993; Cohen, et al., 2000; Tuckman, 1978).

The research questionnaire comprised of two sections. Section one included parts of the International Physical Activity Questionnaire (IPAQ) (Hagstromer, Oja, and Sjostrom, 2005) that gatherd information on the characteristics of the sample and their exercise behaviour. The second section included two questionnaires to assess the barriers and reasons to exercise, namely the You and Exercise Barriers Questionnaire (YEBQ) (Biddle, Kirjonen, Mutrie & Sorensen, 2007) and the Reasons to be Active Questionnaire (RAQ) (Biddle et al., 2007). The following questionnaires in this study served as vital tools to gather the information that can be used for comparison at the global scale regarding health-related physical activity:

- The IPAQ (Hagstromer, Oja, and Sjostrom, 2005), is a global benchmark for measuring physical activity and was established in Geneva in 1998, with an extensive reliability and validity measurement conducted within 12 nations in 2000. The ultimate findings reflect that such benchmarks consisted of adequate characteristics that can be adopted in several contexts and within several

languages and appropriate for a large demographic-based prevalence empirical study relating to physical activity and health (Heinemann, 2016). The reliability of the tool was sufficient and because of the repeatability of it, it becomes a useful tool also for assessing Physical Activity (Puone and Mciza 2015).

The biographical section of the IPAQ composed of the body mass index assessment to determine if subjects were overweight or obese, while the third and last section of the IPAQ was on physical activity involvement and frequency. Only these two sections of the IPAQ were used in this study.

- The You and Exercise Barriers Questionnaire (YEBQ) (Biddle, Kirjonen, Mutrie & Sorensen, 2007), were used to assess theparticipants' barriers to exercise. The YEBQ consists of 15 items, which elicit responses on a 4-point Likert scale, namely 1 – Strongly Disagree, 2 – Disagree, 3 – Agree and 4 – Strongly Agree. Items are introduced to participants as statements about the barriers they could encounter to exercise. The are instructed to select their agreement to the statement on the 4-point Likert scale provided that suits their situation best. Van Niekerk (2010) found acceptable reliability on the YEBQ (Cronbach's Alpha = .778).
- The Reasons to be Active Questionnaire (RAQ) (Biddle et al., 2007), which assessed reasons for exercise consists of 25 items that elicit responses on a 4-point Likert scale. Van Niekerk (2010) found high reliability on the RAQ (Cronbach's Alpha = .827). Items are introduced to participants as statements about their reasons to exercise. The are instructed to select their agreement to the statement on the 4-point Likert scale provided, namely, 1 – Strongly Disagree, 2 – Disagree, 3 – Agree and 4 – Strongly Agree, that suits their situation best.

3.7.1 Data Collection: Process

Participants in Nahoon and Nxarhuni were requested to respond to the questionnaire as the method of data collection. During recruitment of participants in both areas, thewere inforedof the date, time and venue for data collection at a venue tha was convenient and accessible to all participants. Participants were invited to report on the

day of data collection, at the soccer field in Nxarhuni and to the Oxford Striders Runningclub house for Nahoon members, for data collection.

On arrival, information sessions were held with the participant and information documents were presented to them. All the participants were given time to read the information leaflet and a chance to ask questions if they were not clear about the data collection to decide if they wanted to participate in the study or not.

Those who were available to participate in the study were given informed consent forms to complete, asked to complete the questionnaire and their anthropometric measurements (weight and height) were taken.

3.8 DATA ANALYSIS

Petersen and Maree (2012) highlighted that data analysis often starts with descriptive statistics analysis in quantitative research studies. One can define descriptive statistics as that form of statistical approach which intends to briefly provide a summary regarding the sampling from where the information was gathered. Descriptive statistics help analyse demographics and other information such as sample size and response rate (McMillan, & Schumacher, 2014). In this study, biographical data such as age, gender, location, perception, BMI, and respondents' employment status were analysed.

SPSS Version 23.0 was used for data analysis. Descriptive statistics, including frequencies, percentages, means and standard deviations were calculated to analyse the data collected for this study. Pearson Chi-square analysis was used to test associations between socio-demographic profiles, body mass index and level of physical activity. The WHO recommended guidelines for physical activity was used to determine the level of physical activity of the participants (Physical activity guidelines, 2008).

3.8.1 Factor Analysis

All the items from the YEBQ and RAQ were subjected to Exporatory factor analysis to determine the factors in the underlying structure of the questionnaires. Given the sampkle size of 80 participants, the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett’s test of sphericity were used to assess the factorability of the

data. A cut-off point of 0.6 was set for the KMO of sampling adequacy and a significance value of less than 0.05 for Bartlett's test of Sphericity. Both indicators were used to determine whether the data in the sample was adequate to conduct a factor analysis.

Factors were extracted using principal component analysis. The Eigenvalues of the factors and the scree plot were employed to decide on the number of factors to retain for further analysis in each of the two questionnaires, namely YEBQ, as an indication of barriers for exercise and the RAQ, as an indication of reasons to extercise for the participants. An orthogonal rotation matrix (using Varimax rotation) was extracted to determine the best fit of items to the factors retained in the YEBQ and the RAQ. The internal consistency (Cronbach's alpha coefficient) was calculated as a measure of reliability of each factor. Preferably, according to Pallant (2011) the scales of the Cronbach's alpha coefficient should be higher than 0.7 to indicate acceptable to strong reliability. Independent samples t-tests were conducted to determine group differences on all the factors identified for the YEBQ and the RAQ.

3.9 Ethical Considerations

Ethics are categorized as "expected norms that guide moral choices about the behaviour of a researcher during the research process" (Cooper & Schindler, 2006:48). Before collecting data, ethical clearance to conduct the research was attained from the University Research Ethics Committee (UREC) (Annexure A). Ethical considerations that were central to this study included:

- Before the study commenced, the respondents were told of the study's objectives, purpose and aim, to understand what they would be doing and asked to sign an informed consent form;
- Data was protected and kept locked in a cabinet to secure confidentiality and anonymity was achieved by not collecting any identifyable information from the participants in;
- Every participant was made aware of their rights before participating through a concent form by explaining that the study is voluntary and participants have a right to stop if uncomfortable;

3.10 CONCLUSIONS

The primary purpose of this chapter was to present a comprehensive discussion regarding the methodology that guided the research process. In this context, the chapter has provided and explained why the researcher used the quantitative research strategy. In addition, the chapter has also provided a detailed presentation of the research design, the target population, the sampling technique, the data collection tool, issues regarding validity and reliability and finally, the ethical issues in the study.

CHAPTER 4

RESULTS AND DISCUSSIONS

4.1 INTRODUCTION

Chapter four mainly focused on presenting the results derived from data collected from the research participants. The data was analysed using frequencies and percentages (for categorical variables) and means and standard deviations (for continuous variables) to respond to the research questions posed in this study. Charts and tables were used to illustrate the results of the study. The chapter is structured as follows; the first section discusses results based on biographical information of the respondents and their exercise behaviour. The following section discusses data collected on the reasons and barriers for exercise, through factor analysis, for rural and urban populations in Buffalo City Metropolitan Municipality (BCMM) in the Eastern Cape Province. The last section report on the group differences between rural and urban populations in BCMM.

4.2 BIOGRAPHICAL CHARACTERISTICS OF THE SAMPLE

This section focuses on presenting the results of the data collected regarding the respondents' biographical characteristics. This study's biographical characteristics were age, gender, and the area from which the respondents were drawn.

4.2.1. Age of the Respondents

A total of 79 respondents involved in this study reported their age.The research investigated the age distribution of the respondents that were involved in this study. The The age distribution of respondents are illustrated in Table 4.1.

Table 4.1 Age of respondents

	N	Minimum	Maximum	Mean	Std. Deviation
Age	79	19	62	35.05	8.808

Based on the findings shown in Table 4.1, the youngest of the participants was 19 years old. This was in line with the ethical consideration, which outlines that a person can participate in a study on his/her consent when age 18 or above. The results showed that the oldest participants were aged 62 years. In addition, the results show that the mean

age for the participants was 35.05 years, with a standard deviation of 8.80 years. The study included participants in a wide range of age groups from 19 to 62.

4.2.2. Area from which respondents are drawn

The research also sought to establish the distribution of respondents by area of residence. Respondents were from either the rural or urban areas in BCMM. Results from the analysis of information gathered from the respondents in this regard are shown in Table 4.2.

Table 4.2 Area where respondents reside

	Frequency	Per cent
Rural	40	50.6
Urban	39	49.4

Table 4.2 shows that a majority of 50.6% (40) respondents were from the rural areas, while the remaining 49.4% (39) were from the urban areas, which indicated a fair distribution of participants according to the areas they represented. Getting samples from rural and urban areas was appropriate, because this would allow an effective comparison of people's obesity levels from the two areas.

4.2.3 Gender of the Respondents

In the course of collecting data, the participants were enquired about their gender in the questionnaire. The respondents had to indicate whether they are male or female, with no option to identify with any other gender group. Results of data collected with regards to the gender distribution of the participants are indicated in Table 4.3.

Table 4.3 Gender of Respondents

Gender	Frequency	Percent
Male	33	41.8
Female	46	58.2

Table 4.3 shows that 41.8% (33) of the respondents were males, while 58.2% (46) were females. This shows that more women than men took part in this study.

4.3 BODY COMPOSITION

The research also sought to determine the respondents' body composition by measuring their weight and height, to determine their body mass index (BMI). According to Lam, Kho, Chen, Wong and Fallows (2015), BMI measures body fat based on weight and height (BMI = Weight/Height squared or kg/m^2), where kg represents a person's weight in kilograms and m^2 their height in metres squared. Results concerning the body composition of the respondents are shown in Table 4.4.

Table 4.4 Body composition

Variable	N	Minimum	Maximum	Mean	Std. Deviation
Stature (Meters)	79	1.24	1.89	1.70	.104
Weight (Kilograms)	79	60	130	85.73	14.08
BMI	79	21.38	65.04	29.80	6.19

Table 4.4 shows that the shortest respondent was 1.24 metres tall, while the tallest was 1.89 metres tall. The respondents had an average height of 1.70 (SD = .104) metres. Regarding weight, the results indicate that the respondent with the lowest weight weighed 60 kilograms while the heaviest respondent weighed 130 kilograms. The average weight for the respondents was 85.73 (SD = 14.08) kilograms. When the BMI was calculated (BMI = weight/ (height) ^{2}), results showed that the participants' BMI was between 21.38 and 65.04, with an average BMI of 29.80 (SD = 6.19). This is an indication that the participants were primarily overweight and obese.

4.3.1 BMI Categories

The research also sought to determine the BMI categories of the participants. BMI categories considered in this study included underweight, normal weight, overweight, and obese categories. According to Fargerland (2012), categories for BMI of adults aged 20 years and over are classified as follows; BMI less than 18.5 is categorized as underweight, a BMI that is between 18.5 to 24.9 are classified as normal weight, BMI of 25 to 29.9 is classified as overweight, while a BMI that is 30 or more is categorised as obese. The results of the BMI categories established in this study are shown in Table 4.5.

Table 4.5 BMI categories

BMI Category	Frequency	Percent
Normal weight	13	16.5
Overweight	32	40.5
Obese	34	43.0

The results shown in Table 4.5 indicate that 16.5% (13) of the response had normal weight, 40.5 % (32) of the respondents were overweight, while 43% (34) of the respondents were obese. These results show that most of the participants were overweight or obese, representing the study's target group.

4.3.2 Geographical Group Differences for BMI

The research also sought to determine if there were differences between rural and urban-based respondents regarding BMI. To achieve this, an independent sample t-test was performed, the findings of which are indicated in Table 4.8 below. Only overweight and obese participants were included in this analysis (n = 66). While 16 rural and 16 urban participnats were overweight, 16 rural and 18 urban perticipants were obese. The mean scores for the BMI of the two groups were used to determine whether there were any significant differences between urban and rural populations.

Table 4.6 Geographical group differences for BMI

	Area	N	Mean	Std. Deviation	Std. Error Mean	Sign
BMI	Rural	32	31.03	6.84	1.20	.889
	Urban	34	31.24	4.95	.849	

Results presented in Table 4.6 show no significant differences between urban and rural respondents in terms of BMI. The p-value from the results shown in Table 4.8 was .889, which is above the alpha level set at 0.05, thus confirming no differences between rural and urban groups for BMI. Both groups had a BMI of more than 30, which is the threshold for obese populations.

4.3.3 Relationship between Age and BMI

A Pearson product-moment correlation was done to understand whether there was a significant relationship between age and BMI for rural and urban populations. A Pearson Correlation Coefficient is a parametric test used to establish a substantial relationship between two variables and the correlation direction (Fargaland, 2012).

Table 4.7 Relationship between age and BMI

Area			Age	BMI
Rural	Age	Pearson Correlation	1	.314*
		Sig. (2-tailed)		.048
		N	40	40
	BMI	Pearson Correlation	.314*	1
		Sig. (2-tailed)	.048	
		N	40	40
Urban	Age	Pearson Correlation	1	.186
		Sig. (2-tailed)		.256
		N	39	39
	BMI	Pearson Correlation	.186	1
		Sig. (2-tailed)	.256	
		N	39	39

*. Correlation is significant at the 0.05 level (2-tailed).

Based on the findings shown in Table 4.7, there was a substantial moderate positive correlation (r = .314, p = .048) between age and BMI for the rural population. This indicated that the older the participants were the higher their BMI for the rural population. On the other hand, the results indicated no significant correlation between age and BMI for the urban population (r = .186, p = .256). Age was recognized as a important predictor of BMI in a study by Ajayi (2019). In this study, age was found to correlate with BMI amongst the rural population group. It seems that the BMI for participants in the urban community is high regardless of their age, indicating that obesity might be prevalent from a younger age among urban populations.

4.4. EXERCISE BEHAVIOUR AND PREFERENCE

The first objective of the study was to assess the exercise behaviour of rural and urban obese communities. To achieve the objective, a number of questions were included in the questionnaire to test the exercise behaviour and exercise preferences of the participants. This section presents the research on the data collected from

participants categorised according to their BMI as overweight or obese regarding their responses to these questions.

4.4.1 Importance of exercise

The respondents were asked in the questionnaire to indicate how important exercise is. Results of data collected in this regard are shown in Table 4.18. The results presented in Table 4.8 show that 16% (11) of the respondents indicated they perceive exercises as extremely important, and 54.5% (36) of the respondents indicated that exercise is very important. In addition, 16.7% (11) of the respondents indicated that they consider exercising to be moderately important, while 10.6% (7) of the respondents indicated that they consider exercise as slightly important. Only 1,5% (1) of the respondents considered exercise as not important. These results show that the majority of the participants regarded exercise as an important activity, a cumulative total of 71.2% of total respondents indicated that they consider exercises to be extremely or very important.

Table 4.8 Importance of exercises

Importance	Frequency	Percent	Valid Percent	Cumulative Percent
Extremely important	11	16.7	16.7	16.7
Very important	36	54.5	54.5	71.2
Moderately important	11	16.7	16.7	87.9
Slightly important	7	10.6	10.6	98.5
Not important	1	1.5	1.5	100.0

4.4.2 Level of Fitness

Participants were also asked to estimate their level of fitness. Consequently, participants were asked to share their subjective view regarding their level of fitness. The results of data collected in this regard are shown in Table 4.9.

Table 4.9 Level of fitness

Fitness level	Frequency	Percent
Perfect	2	3.0
Very good	17	25.8
Good	14	21.2
Average	12	18.2
Below average	6	9.1
Unfit	15	22.7

The results in Table 4.9 show that 3% (2) of the respondents indicated that they rate their level of fitness as perfect, 25.8% (17) of the respondents rate their level of fitness as very good, while 21.2% (14) of the respondents rate their level of fitness as good. Additionally, 18.2% (12) of the respondents indicated that they rate their level of fitness as average, 9.1% (6) of the respondents rate their level of fitness as below average, while the other 22.7% (15) of the respondents indicated that they rate their level of fitness as unfit. A cumulative percentage of 50% of the sample of overweight and obese participants perceived they had better than average fitness levels, which could be an overestimation of their fitness levels.

4.4.3 Frequency of Exercise

Participants were asked to indicate the frequency with which they exercise per week (in days). The results from data collected in this regard are shown in Table 4.10.

Table 4.10 Frequency of exercise

Exercise frequency	Frequency	Percent
Never	9	13.6
1-2 days per week	24	36.4
3-4 days per week	21	31.8
5-6 days per week	8	12.1
Everyday	4	6.1

Table 4.10 illustrates that 13.6% (9) of the respondents indicated that they never exercise during the week, 36.4% (24) of the respondents indicated that they exercise for 1-2 days per week, while 31.8% (21) showed that they exercise 3-4 days per week. Additionally, 12.1% (8) of the respondents indicated that they exercise 5-6 days per week while 6.1% (4) of the respondents indicated that they exercise every day.

4.4.4 Time Exercising

Respondents were also requested to indicating the amount of time they spend exercising per day. Results of the information collected in this regard are shown in Table 4.11.

The results presented in Table 4.11 show that a majority, 51.5% (34) of the respondents who took part in this study, indicated that they exercise for 30 minutes, 19.7% (13) of the respondents indicated that they exercise for 45 minutes while the other 19.7% (13) of the respondents indicated that they exercise for an hour. The results also show that 4.5% (3) of the respondents indicated that they exercise for 1hour 30 minutes, 1.5% (1) indicated that they exercise for 2 hours, another 1.5% (1) indicated they exercise for 2 hours 30 minutes while the other 1.5% (1) indicated that they exercise for 3 hours 30 minutes. Most of the participants in the study do not seem spend much time exercising.

Table 4.11 Time spending exercising

Time exercising	Frequency	Percent	Valid Percent	Cumulative Percent
30 min	34	51.5	51.5	51.5
45 min	13	19.7	19.7	71.2
1 hour	13	19.7	19.7	90.9
1 hour 30 min	3	4.5	4.5	95.5
2 hours	1	1.5	1.5	97.0
2 hours 30 min	1	1.5	1.5	98.5
3 hours 30 min	1	1.5	1.5	100.0

4.4.5 Getting Enough Exercise According to WHO

Based on the information provided by the paticipants, the researcher caculated the number of participants who were getting enough exercise as prescribed by the WHO. The WHO recommends between 150 – 300 minutes of moderate physical exercise per week for adults (WHO, 2020) The results of data collected in this regard are illustrated in Table 4.12.

Table 4.12 Getting enough exercise according to WHO

Amount of exercise	Frequency	Percent
Not enough exercise	43	65.2
Enough exercise	23	34.8

Results presented in Table 4.12 show that a majority of 65.2% (43) of the respondents did not get enough exercise as recommended by WHO. On the other hand, only a minority of 34.8% (23) of the respondents get enough exercise as prescribed by the WHO.

4.4.6 Comparison of Who Get Enough Exercises between Urban and Rural Population Groups

The research also sought to compare the extent to which the two population groups differ in getting enough exercise as recommended by WHO. The results of the data collected in this regard are shown in Table 4.13.

Table 4.13 Comparison of who get enough exercises between urban and rural population groups

			Area		Total
			Rural	Urban	
Exercise	Not enough exercise	Count	25	20	45
		% within Exercise	55.6%	44.4%	100.0%
		% within Area	62.5%	51.3%	57.0%
		% of Total	31.6%	25.3%	57.0%
	Enough exercise	Count	15	19	34
		% within Exercise	44.1%	55.9%	100.0%
		% within Area	37.5%	48.7%	43.0%
		% of Total	19.0%	24.1%	43.0%
Total		Count	40	39	79
		% within Exercise	50.6%	49.4%	100.0%
		% within Area	100.0%	100.0%	100.0%
		% of Total	50.6%	49.4%	100.0%

The comparison illustrated in Table 2.13 shows that 62.5% of the rural population did not get enough exercises as prescribed by WHO compared to 51.3% of the urban population who did not get enough exercise. Additionally, the results showed that fewer people (37.5%) from the rural areas get enough exercises compared to 48.7% of the urban population who get enough exercise. The results indicate that more people in the urban areas get enough exercises compared to their rural counterparts. Although some differences were observed in Table 2.23, a Pearson Chi-square test (with continuity correction) indicated no association between the area participants were from and whether they got enough extercise (1, n = 79) = .608, p = .436, phi = .113).

In summary, the exercise behaviour of the participants seems to indicate that although a large proportion (71.2%) of the participants acknowledge the importance of exercise, only a few of the participants (34.8%) get enough exercise per week. This could be due to an overestimation of their subjective assessment of their fitness levels, as 50% of them indicated that their fitness level is higher than average. The exercise behaviour of the participnats could be explained by their reasons and barriers for exercise, which will be explored next.

4.5 Reasons and Barriers for Exercise

The second objective of the study was to explore barriers and reasons for exercise among urban and rural overweight and obese communities. To achieve the objective the two questionnaires that were included in the survey were subjected to exploratory factor analysis. The items of the You and Exercise Barriers Questionnaire (YEBQ) (Biddle, Kirjonen, Mutrie & Sorensen, 2007) were subjected to exploratory factor analysis to identify the barriers for exercise, while the items of the Reasons to be Active Questionnaire (RAQ) (Biddle, Kirjonen, Mutrie & Sorensen, 2007) were subjected to exploratory factor analysis to identify the reasons for exercise among the participants.

4.5.1 Reasons to Exercise

The researcher performed an exploratory factor analysis on the items of the RAQ (Biddle, Kirjonen, Mutrie & Sorensen, 2007) to determine the respondents' reasons for exercising. The first results of the factor analysis considered for this study was the

Kaiser-Meyer-Olkin (KMO) benchmark of sample adequacy and Bartlett's Test of Sphericity. The KMO is used to measure the sampling adequacy, which has to be higher than 0.6 for satisfactory factor analysis to be conducted. Kaisen (1974) suggested 0.5 as a minimum (barely accepted), and values between 0.7-0.8 as acceptable, and values above 0.9 as superb. In addition, Bartlett's test of Sphericity reflects the significance of the correlation among variables, and should be significant for factor analysis to continue. Results of the KMO and Bartlett tests performed on the 25 itmes are presented in Table 2.14.

Table 4.14 KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.829
Bartlett's Test of Sphericity	Approx. Chi-Square	1321.907
	Df	406
	Sig.	.000

In Table 4.14, KMO was .829, which is higher than the recommended 0.6 required for items to meet the satisfactory threshold for factor analysis to be conducted. In addition, from the table, Bartlett's test of sphericity is significant (p = .000), with reflects a probability of less than 0.05. The two results suggested that the correlation matrix is not an identity matrix, hence the factor analysis could proceed.

4.6 FACTORIAL STRUCTURE OF THE REASONS TO EXERCISE

Factors were extracted using principal component analysis. The Eigenvalues of the factors and the scree plot were employed to decide on the number of factors to retain for further analysis. All 25 items in the RAQ (Biddle, Kirjonen, Mutrie & Sorensen, 2007) were subjected to an exploratory factor analysis.

Table 4.15 shows that 8 factors extracted through factor analysis for reasons to exercise had an Eigen value larger than 1. An inspection of Cattell's scree plot (see Figure 4.1) suggested though that only 7 factors can be identified before the curve flattened out. It was decided that a 7-factor solution would be explored from the analysis. The seven factors explain 69.24% of the cumulative variance. .

Table 4.15 Total Variance explained for the reasons to exercise.

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	10.307	35.541	35.541	10.307	35.541	35.541	4.593	15.838	15.838
2	2.458	8.477	44.018	2.458	8.477	44.018	4.228	14.579	30.417
3	1.964	6.772	50.790	1.964	6.772	50.790	3.022	10.420	40.837
4	1.581	5.451	56.240	1.581	5.451	56.240	2.661	9.175	50.013
5	1.336	4.607	60.847	1.336	4.607	60.847	2.207	7.609	57.622
6	1.281	4.418	65.265	1.281	4.418	65.265	1.699	5.858	63.479
7	1.152	3.973	69.237	1.152	3.973	69.237	1.670	5.758	69.237
8	1.023	3.529	72.766						
9	.833	2.872	75.638						
10	.746	2.574	78.212						
11	.732	2.524	80.735						
12	.603	2.081	82.816						
13	.580	2.000	84.816						
14	.531	1.831	86.647						
15	.511	1.762	88.410						
16	.429	1.480	89.889						
17	.408	1.406	91.295						
18	.358	1.235	92.531						
19	.346	1.192	93.722						
20	.288	.992	94.714						
21	.276	.952	95.666						
22	.227	.784	96.450						
23	.201	.692	97.143						
24	.186	.643	97.785						
25	.168	.578	98.363						
26	.140	.482	98.846						
27	.137	.471	99.317						
28	.109	.376	99.692						
29	.089	.308	100.000						

Extraction Method: Principal Component Analysis.

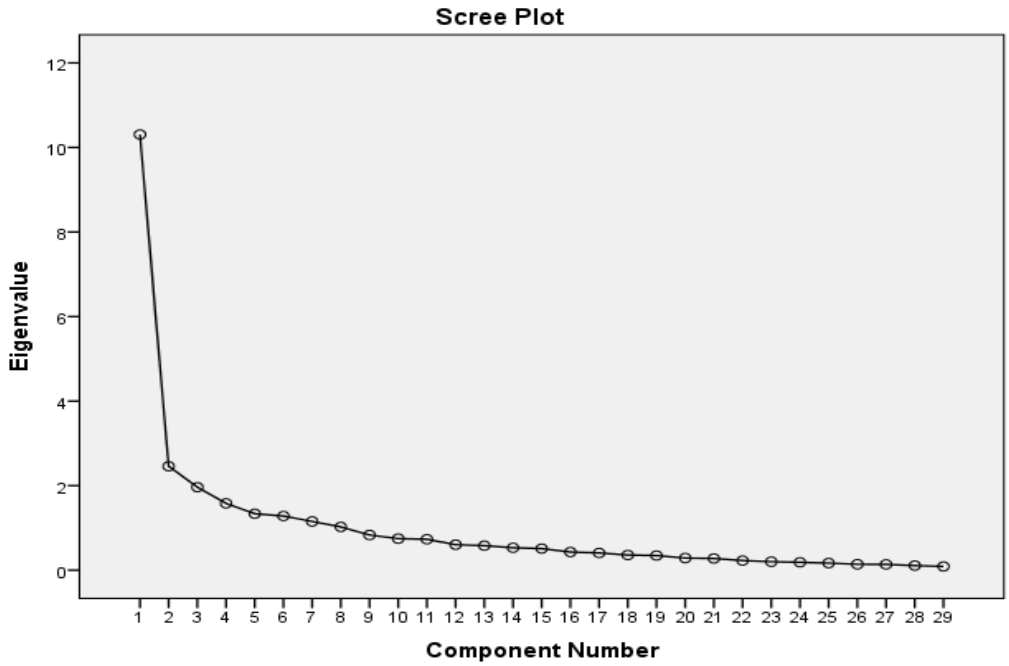


Figure 4.1 Scree plot for reasons to exercise

An orthogonal rotation matrix (using Varimax rotation) (see Table 4.16) was extracted to determine the best fit of items to the seven factors. The higher the absolute value of the loading, the more the item contributes to the variable. Items with factor loadings of less than 0.5 was suppressed.

Table 4.16 Rotated component matrix

Item	Component						
	1	2	3	4	5	6	7
Q32RA	.757						
Q31RA	.704						
Q41RA	.700						
Q26RA	.684						
Q43RA	.622						
Q23RA	.605						
Q8RA	.541						
Q15RA		.792					
Q13RA		.792					
Q22RA		.737					
Q34RA		.727					
Q20RA		.719					
Q29RA		.653					
Q2RA			.740				
Q3RA			.735				
Q1RA			.622				
Q10RA			.571				
Q27RA				.807			

Q36RA	.659				
Q35RA	.558				
Q7RA	.537				
Q18RA		.655			
Q17RA		.634			
Q5RA		.626			
Q30RA			.728		
Q11RA			.686		
Q25RA					
Q39RA					.871
Q38RA					.639

Items are coded as follow: Q = Question, RA = Reasons to be Active
Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 10 iterations.

4.7 DISCUSSION OF THE FACTORS IDENTIFIED

After factor loadings of the variables were examined, the various factors were labelled in line with the main theme of the items that loaded under the same factor.

The first factor was named *General well-being*, and included 7 items, such as item 32: “Exercising improves my self-concept”, item 31: “My physical endurance is improved by exercising”, item 41; “Exercise improves overall body functioning for me “, item 26: “Exercising helps me sleep better at night”. General well-being includes the presence of positive experiences of both physical and psychological benefits from exercise.It had a high reliability (alpha = .87) and rendered a mean score of 3.25 (sd = .463) (see Table 4.17).

The second factor was named *Physical health* and included 6 items, such as item 15: “Exercising increases my level of physical fitness”, item 13: “Exercising will keep me from having high blood pressure”and item 22: “Exercise increases my stamina”. Physical health refersto the physical benefits one achieve when doing physical activities. The factor had a high reliability (alpha = .88) and rendered a mean score of 3.24 (sd = .411) presented in Table 4.17.

The third factor was leballed *Psychological health* and included 4 items, of which item 2: “Exercise decreases feelings of stress and tension for me”, item 3: “Exercise improves my mental health”, item 1: “I enjoy exercise” and item 10: “Exercising makes me feel relaxed”. Psychological health refers to the psychological benefit one can gain from

physical exercise, such as relaxation and mental health and joy. The factor had a high reliability (alpha = .81) and rendered a mean score of 3.27 (sd = .511) (see Table 4.17).

Factor 4 was named *Quality of life and work.* The factor included 4 items, namely item 27: “I will live longer if I exercise”, item 36: “Exercise improves the quality of my work”, item 35:” Exercise allows me to carry out normal activities without becoming tired” and item 7: “Exercise increases my muscle strength”. Quality of life and work refers to the general benefit of an improved ability to live and work better when doing physical exercise. The factor had a high reliability (alpha = .79) and rendered a mean score of 3.15 (sd = .510) (see Table 4.27).

Factor 5 was labelled *Cardiovascular health* and included 3 items, of which item 18: “Exercising improves functioning of my cardiovascular system”, item 17: “My muscle tone is improved with exercise” and item 5: “I will prevent heart attacks by exercising”. Cardiovascular health refers to the benefit of an improved functioning of the cardiovascular system as a result ofphysical exercise. The factor had a high reliability (alpha = .75) and rendered a mean score of 3.30 (sd = .483) presented in Table 4.17.

Factor 6 included 2 items and was labelled *Social benefit.* The two items loading on the factor was item 30: “Exercising is a good way for me to meet new people” and item 11:” Exercising lets me have contact with friends and persons I enjoy”. Social benefit refers to the contact a person has with others such as friends and meeting new people through physical exercise. The factor had a low reliability (alpha = .58) and rendered a mean score of 3.08 (sd = .498). The low reliability could be due to the few items loading on the factor presented in Table 4.17. However, an iter-item correlation of .418 was large enough to still interpret the factor as a reason for exercise.

Lastly, factor 7 was named *Entertainment,* and it included two items, item 39: “Exercising increases my acceptance by others” and item 38: “Exercise is good entertainment for me”. Entertainment refers to the entertaining value from physical exercise that leads to the increase of acceptance from others. The factor also had a low reliability (alpha = .55) and rendered a mean score of 2.96 (sd = .485). The low reliability could be due to the few items loading on the factor (see Table 4.17). However, an iter-item correlation of .383 was large enough to still interpret the factor as a reason for exercise.

Table 4.17 List of reasons to exercise and reliability of variables

Variable	N	Minimum	Maximum	Mean	Std. Deviation	Reliability
Cardiovascular Health	79	1.67	4.00	3.30	.483	.75
Psychological benefit	79	2.00	4.00	3.27	.511	.81
General Well-being	79	1.00	4.00	3.25	.463	.87
Physical benefit	79	2.14	4.00	3.24	.411	.88
Quality of Life and Work	79	2.00	4.00	3.15	.510	.79
Socialize	79	1.50	4.00	3.08	.498	.58
Entertainment	79	2.00	4.00	2.96	.485	.55

The reasons for exercise (factor 1-7) were ranked according to their mean scores. These results (see Table 4.17) indicated that cardiovascular health, psychological benefit, general well-being, physical benefit, quality of life and work, socialising, and entertainment are significant reasons for exercising among the overweight and obese rural and urban population groups included in this study. The reasons for exercising identified above concur with those in literature, including improved physical fitness, improved mental health, development of muscle strength, feelings of wellbeing, reduced tension and stress, improved cardiovascular function, improved sleep and enjoyment (McGuire, 2014).

4.7.1 Geographical Group Differences for Reasons to be Active

The third objective of the study was to determine group differences for the barriers and reasons for exercise and their correlation with BMI of obese geographical groups (urban and rural comunities).

Overweight and obese (n = 66) rural and urban population groups were compared for their reasons to exercise. Overweight and obese participants were included in the analysis according to their BMI. The results of the statistics that were computed to achieve this are shown in Table 4.18. Independent samples t-test were used todetemine the geographical group (urban and rural) differences for reasons to exercise for overweight and obese participants.

Table 4.18 Group differences for reasons to be active just for overweight and obese participants

Reason to exercise	Area	N	Mean	Std. Deviation	Std. Error Mean	Sign
Physical benefit	Rural	32	3.16	.409	.072	.400
	Urban	34	3.24	.384	.065	
General Well-being	Rural	32	3.19	.372	.065	.945
	Urban	34	3.20	.538	.092	
Psychological benefit	Rural	32	3.25	.483	.085	.520
	Urban	34	3.16	.528	.090	
Quality of Life and Work	Rural	32	3.14	.478	.084	.590
	Urban	34	3.08	.532	.091	
Cardio-vascular Health	Rural	32	3.16	.508	.089	.087
	Urban	34	3.36	.405	.069	
Socialize	Rural	32	2.90	.482	.085	.094
	Urban	34	3.10	.456	.078	
Entertainment	Rural	32	2.89	.453	.080	.850
	Urban	34	2.91	.451	.077	

The results presented in Table 4.18 showed no geographical group differences were found between rural and urban participants in relation to their reasons for exercise. All p-values were above the recommended 0.05, which means that there were no significant differences in why overweight and obese people from rural and urban areas engage in exercises. Overweight and obese populations from rural and urban areas seem to agree on reasons to exercise in this sample.

4.7.2 Correlation between BMI and Reasons for Exercise

Further analysis to determine if there was an association between BMI and reasons for exercise. To achieve this, Pearson correlation tests were performed. Results obtained in this regard are shown in Table 4.19.

Table 4.19 Correlation between BMI and Reasons for exercise

Variables		BMI	PhB	GW	PsB	QLW	CH	Soc	Ent
BMI	Correlation Coefficient	1.000	-.173	-.162	-.330**	-.168	-.302**	-.267*	-.293**
	Sig. (2-tailed)	.	.128	.154	.003	.140	.007	.017	.009
Physical Benefit	Correlation Coefficient	-.173	1.000	.693**	.547**	.707**	.593**	.253*	.146
	Sig. (2-tailed)	.128	.	.000	.000	.000	.000	.025	.200
General Well-being	Correlation Coefficient	-.162	.693**	1.000	.506**	.578**	.549**	.227*	.186
	Sig. (2-tailed)	.154	.000	.	.000	.000	.000	.044	.101
Psychological Benefit	Correlation Coefficient	-.330*	.547**	.506**	1.000	.476**	.574**	.327**	.237*
	Sig. (2-tailed)	.003	.000	.000	.	.000	.000	.003	.004
Quality of Life and Work	Correlation Coefficient	-.17	.71**	.58**	.47**	1.00	.53**	.32**	.15
	Sig. (2-tailed)	.140	.000	.000	.000	.	.000	.004	.180
Cardio-vascular Health	Correlation Coefficient	-.30**	.59**	.54**	.57**	.52**	1.00	.29**	.23*
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.	.008	.044
Socialize	Correlation Coefficient	-.26	.253*	.22*	.32**	.32**	.29**	1.00	.32**
	Sig. (2-tailed)	.017	.003	.004	.003	.004	.008	.	.003
Entertainment	Correlation Coefficient	-.293**	.146	.186	.237*	.154	.220*	.327**	1.00
	Sig. (2-tailed)	.009	.020	.101	.035	.176	.004	.003	.

PhB – Physical benefit, GW – General Wellbeing, Psychological Benefit-PsB, Quality of Life and Work-QLW, Cardio-vascular Health-CH, Socialize-Soc, Entertainment-Ent

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

Results in Table 4.19 show significant negative correlations between BMI and four reasons for exercising, which yielded p-values less than 0.05, namely, psychological benefit, cardiovascular health, socialize and entertainment reasons. This means that the higher the BMI, the less motivated the participants were to exercise for psychological benefit, cardiovascular health, socialize and entertainment reasons. This could be due to a loss in motivation to exercise the higher a person's BMI becomes. On the other hand, the results also showed no statistically significant correlation between exercising for quality of life and work, general wellbeing and physical benefit and BMI.

4.8 Barriers for Exercise

The researcher performed an exploratory factor analysis on the items of the YEBQ (Biddle, Kirjonen, Mutrie & Sorensen, 2007) included in the survey to determine the respondents' barriers for exercise. The KMO and Bartlett tests were computed to determine whether it was acceptable and satisfactory to proceed with the factor analysis. Results of the KMO and Bartlett tests are shown in Table 4.20.

Table 4.20 KMO and Bartlett's tests for barriers to exercise

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.776
Bartlett's Test of Sphericity	Approx. Chi-Square	413.013
	Df	91
	Sig.	.000

The results depicted in Table 4.20 show that the KMO value is .776, which is above the acceptable threshold of 0.6 and Bartlett's Test of Sphericity yielded a statistically significant value of .000. This meant that factor analysis could continue.

4.8.1 Factorial structure of the Reasons to Exercise

Factors were extracted using principal component analysis. The Eigenvalues of the factors and the scree plot were employed to decide on the number of factors to retain for further analysis. All 15 items in the YEBQ (Biddle, Kirjonen, Mutrie & Sorensen, 2007) were subjected to an exploratory factor analysis.

The results presented in Table 4.21 show that three factors were extracted through the principal component analysis with eigenvalues that were larger than one. However, the scree presented in Figure 4.21 show that four factors could be extracted before the flattening of the curve. The inspection of Cattell's scree plot (Figure 4.2) thus supported the appropriateness of retaining four factors for analysis, which was done. The four factors extracted explained a total of 64.25% of the variance.

Table 4.21 Total variance explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings[a]
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	4.949	35.347	35.347	4.949	35.347	35.347	4.136
2	1.773	12.663	48.010	1.773	12.663	48.010	2.315
3	1.399	9.990	57.999	1.399	9.990	57.999	2.980
4	.876	6.260	64.259	.876	6.260	64.259	1.119
5	.828	5.917	70.176				
6	.808	5.769	75.945				
7	.700	4.997	80.942				
8	.598	4.271	85.214				
9	.530	3.783	88.996				
10	.482	3.442	92.438				
11	.366	2.617	95.055				
12	.274	1.956	97.011				
13	.224	1.599	98.609				
14	.195	1.391	100.000				

Extraction Method: Principal Component Analysis.

a. When components are correlated, sums of squared loadings cannot be added to obtain a total variance.

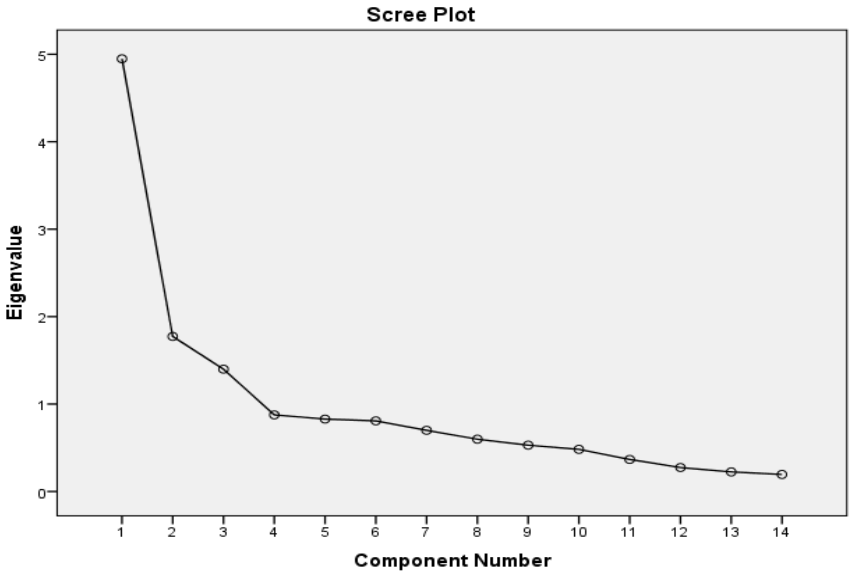


Figure 4.2 Factor components

4.8.2 Discussions of the factors identified

An orthogonal rotation matrix (using Varimax rotation) (see Table 4.22) was extracted to determine the best fit of items to the four factors. The higher the absolute value of the loading, the more the item contributes to the variable. Items with factor loadings of less than 0.5 was suppressed.

Table 4.22 Rotated component matrix

Item	Component			
	1	2	3	4
Q12BA	.829			
Q14BA	.706			
Q24BA	.620			
Q21BA	.614			
Q42BA		.755		
Q37BA		.733		
Q28BA		.617		
Q33BA		.528		
Q6BA			.784	
Q40BA			.674	
Q19BA			.634	
Q4BA			.487	
Q16BA				.609
Q9BA				.574

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 18 iterations.

After factor loadings of the variables were examined, the various factors were labelled in line with the main theme of the items that loaded under the same factor.

Factor 1 was labelled *Lack of social engagement and support* and included 4 items, namely item 12: “I am too embarrassed to exercise”, item 14: “It costs too much to exercise”, item 24: “Exercise takes too much time from family relationships” and item 21: “My spouse (or significant other) does not encourage exercising”. Lack of social engagement and support refers to both internal and external social barriers that could prevent someone to do physical exercise. Table 4.23 report the acceptable reliability (alpha = .77) and a mean score of 2.29 (sd = .656) for the factor.

Factor 2 was named *Lack of accessibility and encouragement*. The factor included four items, namely item 42: “There are too few places for me to exercise”, item 37: “Exercise takes too much time from my family responsibilities”, item 28: “I think people in exercise clothes look funny” and item 33: “My family members do not encourage me to exercise”. Lack of accessability and encouragement refers to barriers that prevents a person to have access to facilities and discourage physical activity. The factor had acceptable reliability (alpha = .75) and rendered a mean score of 2.44 (sd = .618) (see Table 4.23).

Factor 3 included 4 items, namely item 6:” Exercise tires me”, item 40: “Exercise is hard work for me”, item 19: “I am fatigued by exercise Exercising takes too much of my time” and item 4: “”, which contributed to labelling the factor *Too much time and effort.* Too much time and effort refers to the effort and time required to do physical exercise as a barrier. The factor had acceptable reliability (alpha = .65) and rendered a mean score of 2.50 (sd = .584) (see Table 4.23).

Lastly, factor 4 was labelled *Inconvenience* and included two items, item 16: “Exercise facilities do not have convenient schedules for me” and item 9: “Places for me to exercise are too far away”. Inconvenience included aspects like distance and time schedules that creates some inconvenience for a person to do physical extercise. The factor had a low reliability (alpha = .43) and rendered a mean score of 2.53 (sd = .636). The low reliability could be due to the few items loading on the factor presented in Table 4.23. However, an

iter-item correlation of .275 was large enough to still interpret the factor as a barrier for exercise.

Table 4.23 Descriptive statistics

Barrier for exercise	N	Minimum	Maximum	Mean	Std. Deviation	Reliability
Inconvenient	79	1.00	4.00	2.53	.637	.431
Too much Time and Effort	79	1.00	3.75	2.50	.584	.652
Lack of Accessibility and Encouragement	79	1.00	4.00	2.44	.618	.755
Lack of Social Engagement and Support	79	1.00	4.00	2.29	.656	.779

4.8.3 Geographical Group Differences for Barriers

Overweight and obese (n = 66) rural and urban population groups were compared for their barriers to exercise. Overweight and obese participants were included in the analysis according to their BMI. The results of the statistics that were computed to achieve this are shown in Table 4.24. Independent samples t-test were used to detemine the geographical group (urban and rural) differences for barriers to exercise for overweight and obese participants.

The results in Table 4.24 show no statistically significant differences regarding barriers for exercising based on whether participants are rural or urban residents. This is because the p-values obtained above were all larger than 0.05, which means that two population groups perceive barriers to exercising the same way. Participants from rural and urban areas perceived similar barriers for exercise.

Table 4.24 Geographical group differences for barriers

Variable	Area	N	Mean	Std. Deviation	Std. Error Mean	Sign
Lack of Social Engagement and Support	Urban	39	2.31	.783	.125	.826
	Rural	40	2.28	.513	.081	
Lack of Accessibility and Encouragement	Urban	39	2.36	.680	.108	.254
	Rural	40	2.52	.548	.086	
Too much Time and Effort	Urban	39	2.51	.648	.103	.849
	Rural	40	2.48	.521	.082	
Inconvenient	Urban	39	2.55	.666	.106	.870
	Rural	40	2.57	.615	.097	

4.8.4 Correlations between BMI and Barriers to Exercising

The research also sought to determine the relation between BMI and barriers to exercising. To achieve this, Pearson Correlation tests have performed the results of which are depicted in Table 4.25.

Table 4.25 Correlations between BMI and barriers to exercising

Area			BMI	Lack of Social Support	Lack of Accessibility	Too much Time and Effort	Inconvenient
Rural	BMI	Pearson Correlation	1	-.130	-.010	-.280	.090
		Sig. (2-tailed)		.430	.932	.080	.568
	Lack of Social Support	Pearson Correlation	-.12	1	.68**	.62**	.62**
		Sig. (2-tailed)	.430		.000	.000	.000
	Lack of Accessibility	Pearson Correlation	-.014	.681**	1	.61**	.60**
		Sig. (2-tailed)	.932	.000		.000	.000
	Too much Time and Effort	Pearson Correlation	-.280	.624**	.606**	1	.662**
		Sig. (2-tailed)	.080	.000	.000		.000
	Inconvenient	Pearson Correlation	.093	.621**	.602**	.662**	1

		Sig. (2-tailed)	.568	.000	.000	.000	
Urban	BMI	Pearson Correlation	1	.019	-.113	.354*	.104
		Sig. (2-tailed)		.907	.494	.027	.530
	Lack of Social Support	Pearson Correlation	.019	1	.535**	.167	.522**
		Sig. (2-tailed)	.907		.000	.311	.001
	Lack of Accessibility	Pearson Correlation	-.113	.535**	1	.260	.260
		Sig. (2-tailed)	.494	.000		.090	.110
	Too much Time and Effort	Pearson Correlation	.35*	.167	.260	1	.530**
		Sig. (2-tailed)	.027	.311	.090		.000
	Inconvenient	Pearson Correlation	.104	.522**	.260	.530**	1
		Sig. (2-tailed)	.530	.001	.110	.000	

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

The results presented in Table 4.25 show that the only significant relationship is between BMI and Too much Time and Effort for the urban group. A significant positive correlation (r = .354, p = .027) means the higher their BMI is the more time/effort is a barrier to exercising. This suggests that people who are overweight and obese often struggle to engage in physical activities because they might perceive that exercise take too much of their time. Besides that, there was no other statistical evidence to show a significant relationship between BMI and the other barriers to exercising.

On the other hand, there was a significant moderate positive correlation (r = .314, p = .048) between age and BMI for the rural population. This indicated that the older the participants were the higher their BMI for the rural population. On the other hand, the results indicated no significant correlation between age and BMI for the urban population (r = .186, p = .256). Age was identified as a significant predictor of BMI in a study by Ajayi (2019). In this study, age was found to be significantly correlate with BMI amongst the rural population group. It seems that the BMI for participants in the urban community is high regardless of their age, indicating that obesity might be prevalent from a younger age among urban populations.

4.9 CONCLUSION

The chapter focused on presenting and analysing data that was collected in the study. The results show that both urban and rural population groups have positive views of exercises as a health tool for managing obesity, but that they often lack the motivation to do so. The research also established that inconvenient, too much time and effort, lack of accessibility and lack of social support are perceived as barriers to exercises. In addition, the research established that cardiovascular health, psychological benefit, general wellbeing, physical benefit, quality of life and work, socialising and entertainment were significantly perceived as reasons for exercising. Furthermore, the research also discovered that there were no significant differences between rural and urban groups regarding either barriers or reasons for exercise in the study. The correlation between BMI and the reasons and barriers for exercise indicate that increases in BMI could also contribute to decreases in the reasons and increases in the barriers for exercise among overweight and obese participants.

CHAPTER 5
DISCUSSION AND RECOMMENDATIONS

5.1 INTRODUCTION

The study's objectives were (i) to assess the exercise behaviour of overweight and obese communities from rural and urban areas, (ii) to explore barriers and reasons for exercise among overweight and obese communities from rural and urban areas and (iii) to determine group differences for the barriers and reasons for exercise and their correlation with the BMI of overweight and obese geographical groups (urban and rural comunities).

This chapter discusses the study's findings to contribute and add vital arguments to the literature regarding the perspective, beliefs, and impediments regarding exercise to address obesity in Nahoon and Nxarhuni respectively. It concludes by providing recommendations and suggestions of where future research can be done on the same topic.

5.2 BODY COMPOSITION OF URBAN AND RURAL COMMUNITIES

Most overweight and obese people both rural and urban find it challenging to interact physically with their peers because of psychological reasons like the lack of social support, and their perception of themselves, which could beskewed due to their appearance. Some of the participants' body size in this study could limit their mobilityand ability to do some of the daily activities they want to do due to their large BMI. This was consistent with Agne's (2012) finding that attributed weight gain among Hispanic people with the occurrence of several physical constraints. These constraints included compromised body image, a distorted body composition, reduced bio-motor ability, and susceptibility to injuries. Furthermore, Cafasso (2020) suggests that in a worst-case scenario, obesity can cause deteriorating muscle mass and bone density (osteosarcopenic obesity), which can lead to fractures, physical disability, postural defects

5.3 EXERCISE BEHAVIOUR OF OVERWEIGHT AND OBESE URBAN AND RURAL COMMUNITIES

The first obejective of the study was to assess the exercise behaviour of overweight and obese communities from rural and urban areas. The results from two

communities, Nahoon (urban) and Nxarhuni (rural) were considered for this discussion. Rural and urban members who lead a healthy lifestyle have been motivated and are determined to manoeuvre around their daily activities easily physically. In a similar vain, most overweight and obese participants in this study indicated that they view themselves as fitter than average. The findings can be compared to the results from earlies research conducted in South Africa (Mvo & Steyn, 1999; Puoane et al, 2005; Puoane et al, 2012; Dalais, 2013) that found that physically active members whether from the rural setting or urban, understand and perceive themselves as healthy. However, their view of an above average fitness level might be an overestimation and would most likely have an influence on their exercise behaviour, as the amount of exercise they are doing is too little. It has been notable that only a few get enough exercise in line with WHO standards and norms. Only a small component of the participants did enough exercise to gain the physical and psychological health benefits from exercise.

This study also reported that participants from both Nahoon and Nxarhuni view exercise as very important and would thus regard keeping fit and perceiving themselves as achieving good general well-being important. This would be consistent with Agne's (2012) results that Latinos see weight loss as a method to strengthening their well-being. Simfukwe (2017) and Puone et al., (2015) found similar factors as well. They further add that the benefits of these attributes can be reflect in the manner exercising members portray specific behavioural patterns both in their professional and home environment, as some change the way they walk, the way they dress, and their overall body image of themselves (Simfukwe, 2017; Puone et al.,2015). The fact that the participants in this study viewed exercise as important, and overestimate their fitness levels, yet, they do not match their perceptions with the amount of exercise they do, is indicative of the barriers and reasons for exercise they might hold.

5.4 Reasons and Barriers for Exercise

The second objective of this study was to explore barriers and reasons for exercise among overweight and obese communities from rural and urban areas.

5.4.1 Reasons for exercise

The research sought to determine the reasons for exercise amongst the participants. To that end, the study identified that participants exercise to achieve cardiovascular health, psychological benefit, maintain general well-being, physical benefit, improve quality of life and work, socialise and as a form of entertainment. These findings partly correlate with several previous studies (Dumith, 2015; McGuire, 2014; Petridou, Siopi, Mougios, 2019) that established that exercise is a necessity for an individual to be healthy, hence people exercise for health reasons. Several organizations such as the American College of Sport Medicine (2019), the American Heart Association (2018), Diabetes South Africa (2018), and the World Health Organisation (2020) have advocated for exercise citing that it reduces the likelihood of lifestyle diseases. Among the most prevalent of these medical conditions is obesity (Rosenheck, 2018).

There were seven identified reasons to exercise both common in the rural and urban settings in this study. The most important reasons for exercise among rural and urban participants was cardiovascular health, psychological and general well-being, physical benefits, improving quality of life and work, socialising, and entertainment. These reasons are discussed in detail in light of existing literature on the reasons for exercising.

The research established that the strongest reasons for engaging in exercise by participants were to manage cardiovascular health. This means that the participants do exercise to reduce diseases related to heart diseases. These findings agree with previous studies that indicate that people exercise to reduce the risk of diseases such as hypertension, diabetes mellitus, stroke, and cardiac arrest (Cavanagh et al, 1998; Bean et al, 2004; Ussher et al, 2007). The belief is that exercising indirectly decreases deaths, hence reducing the demand on services and medical institutions.

Participants also exercised to improve their psychological health. Hence the study reported that the second strongest reason for exercising is psychological benefits they could gain from it. Cavanagh et al.,
(1998) established that constant workouts and exercise can bring significant , cognitive, and social health advantages to the elderly It is generally established that there is a high association between the physical and cognitive benefits of exercising

and the regularity with which it is performed (King et al, 1998).. It can help extend active life expectancy by improving general physical-psychological well-being and standard of life (Bean et al, 2004).

The research also established that the third strongest reason for exercising is for their general well-being. Participants exercise for the reason of achieving balanced general wellbeing. These results concur with a study by Bean, Vora, and Frontera (2004) whose study to determine the benefits of exercising established that the participants also exercise to maintain general wellbeing. The difference with this study is that the researchers reported that maintaining general well-being was the second strongest perceived benefit of exercising in the previous study. Dergeance et al. (2003) found in a related research that a bigger percentage of the public reports that LTPA (Leisure Time Physical Activity) boosts their conviction, self-esteem, and endurance, and lowers loneliness and anxiety, which is comparable with the results of this research.

The research also reports that physical benefit is the fourth strongest reason for exercising. Here the intention and goal of exercising are to achieve physical fitness. These findings corroborate previous research conducted by Dergeance et.al., (2003) who found that most of the participants exercise because they feel that exercising improves stamina and physical appearance. This shows that exercising for physical fitness is a significant reason for people as confirmed by the present and previous studies.

The research established that the participants report that exercising improves their quality of life. This result concurs with an existing study conducted by Chaudhury et al., (2016) to investigate the motivators and barriers of exercising amongst adults. The research established that the participants exercise to achieve an improved quality of life. The participants reported that if one exercises, their lives improve because it reduces stress, depression, and health issues related to sedentary life.

This research also reports that the sixth strongest reason why participants exercise is to socialise. Socialising involves meeting new people, forming support groups and networks. The findings can also be compared to the study results by Lavizzo-Mourey et al., (2001), who established that the participants exercised to socialise. The majority

of the participants reported that they join and participate in exercise because it helps them establish contact with friends and persons they enjoy associating with.

The research also reports that the participants do exercise for entertainment reasons. This means that participants exercise for leisure purposes. These results agree with previous studies by Atkinson and Davenne (2007) and Lavizzo-Mourey et al (2001) on the same topic. According to Davenne (2007) exercise contributes to entertainment because it stimulates the secretion of serotinine, thereby increasing alertness that leads to interest, which could be one of the causes for the significant experience of workout as a beneficial component. Similarly, Lavizzo-Mourey et al. (2001) advances that exercise causes mental satisfaction hence it is considered a benefit.

5.4.2 Barriers for Exercise

Some barriers identified to predict reasons for lack of exercise are lack of time, lack of motivation, family duties, absence of close relatives and support, the perception that physical activities are strenuous and more demanding thus not enjoyable, exhaustion and tiredness, unavailability of close gym infrastructures, bad weather, climate, and humiliation and shame with one physical body structure (Puoane et al., 2015). Personal impediments such as health issues, exhaustion, boredom, and other factors have been documented. The drive to engage in exercise is significantly high among African-American women and higher motivation for African American women (Iwuala, 2015).

In this study, the barriers for exercise identified to affect exercise negatively are in order of their strength, were inconvenience, too much time and effort, lack of accessibility and encouragement, and lack of social engagement and support. These results concur with those of a previous study conducted by Crowley and Kennedy (2009) who conducted a study to investigate the barriers to exercise in rheumatoid arthritis patients. It was found that a lack of motivation, time and perceptions of physical activities were some barriers to physical activities. This relates to someof the barriers identified in the current study.physical activities are strenuous and more demanding thus not enjoyable, were the key barriers that restricted patients fropm partacking in exercise routines (Crowley and Kennedy, 2009).

The strongest barrier to exercise reported by the participants was inconvenience. This means that the participants are highly convinced that their intentions to exercise are impeded by the inconveniences associated with setting aside time to exercise. These results contrast those of a study conducted by Grubbs and Carter (2012) that investigated association between anticipated advantages and impediments to indicated physical activities patterns among university undergraduates. They established that pain associated with exercise was the strongest predictor for not exercising.

The research also notes that the second strongest barrier reported in this study is too much time and effort. This shows that the participants view exercise as an activity that requires and consume too much time and effort to an extent that the participants end up not engaging in exercises. This result concurs with the results of a study conducted by Jack et al. (2010) whose study revealed that lack of time was one reason why people end up not participating in exercises. This suggests a need to encourage people to follow exercising regimes that are convenient and less demanding to suit their lifestyles and daily responsibilities.

The research also established that lack of accessibility and encouragement is the third strongest barrier to exercising. If access to exercising space is limited or unavailable, people will not go for exercise. This can be seen in research conducted by Dominski and Brandt., (2020) which suggests that during the covid-19 pandemic lockdown, rules and regulations created stronger barriers for exercise due to lack of access to exercising facilities such as exercise facilities and swimming pools. A similar outcome was achieved in this study were partcipants claimed that a lack of physical activity facilities was a conttributing barrier for physical activity. This was more prominent for those participants who resided in the rural areas than those in urban areas..

The fourth strongest barrier reported by the participants was lack of social engagement and support. This means that the participants were not motivated to do exercise as they might feel hesitant to go and don't have support from friends and family. People who needed to exercise required support in the form of motivation, material support, and helping them create time for them to be able to engage in exercises. This finding

is consistent with those of other studies (Ebben & Brudzynski 2008; Lovelle et al., 2010).

5.5 GEOGRAPHICAL GROUP DIFFERENCES

The third objective of this study was to determine group differences for the barriers and reasons for exercise and their correlation with the BMI of overweight and obese geographical groups (urban and rural comunities).

The research demonstrates that there was no significant difference reported by overweight and obese participants in both the barriers and reasons for exercising by their geographical locations. It means that urban and rural obese participants feel equally strong about the reasons to be active. As a result, similar recommendations should be made for obese people in rural and urban areas as there are no differences in important variations between the groups from the two geographies. Puone and Mciza (2015)`s research study included 304 adults (mean age 31–39 years) from a variety of ethnic groups, including whites, African Americans, American Indians, and Latina Americans, who participated in a focus group study to evaluate ecological, legislative, and cultural aspects connected to regular exercise. They concluded that some Limitations to regular exercise involvement are rather stable among ethnic groups at the same level of adoption, although they vary among phases for all populations except Native Americans (Puone and Mciza., 2015). Similarly, no substantial variations by geographical spaces were found in this investigation.

Studies conducted by Puone and Mciza (2015) established that there was a challenge in the pre-contemplation phases among racial communities in all groups with the exception African Americans, while caregiving duties and lacking a safe place to carry exercises or physical activity were obstacles for ethnicities in the contemplation stage (Puone & Mciza (2015). In the South African context, in Kwa Zulu- Natal, the anticipated ecological and individual challenges impediments to physical activity and health-promoting activities have been investigated in examinations of people living in rural locations (Simfukwe, 2017). Again, the most commonly stated hurdles in rural KZN were time constraints, exhaustion, bad weather, a lack of desire, a lack of energy, a hatred of workout, traffic, work-related exercise, and an absence of people or partners to engage in workouts.

5.6 SUMMARY

The research indicated that participants living in both urban and rural areas understand the importance of a healthier lifestyle, however the level of physical activity applied is less than required to obtain the healthy lifestyle. Perhaps this is because of their daily activities which involve high intensity activities. Regarding urban dwellers, the researcher concludes that they have to change their lifestyles and follow a lifestyle in which they have to engage in some physical activities so that they can enjoy the benefits of exercise.

The research found seven significant reasons to exercise, commonly in rural and urban settings. These are cardiovascular health, psychological well-being, general well-being, physical benefit, improving quality of life and work, socialising, and entertainment. These reasons are discussed in detail in light of existing literature on the reasons for exercising. The participants seem to be convinced that the most important reason for them to exercise is cardiovascular health.

The research also found that participants do not exercise due to four main reasons or barriers. These are namely inconvenience, too much time and effort, lack of accessibility and encouragement, and lack of engagement and social support. These results largely suggest that the barriers are linked to the shortage of time. As such, the study recommends a need for innovations that promote exercises in a convenient way for both rural and urban dwellers.

This study explored factors and barriers of exercise for rural and urban obese populations in Buffalo City Metropolitan Municipality, Eastern Cape. A description of these aspects related to community members may be vital in developing guidelines for the Department of Health (DOH) to empower BCMM community members on proper wellness conduct and adopting a healthy lifestyle.

Even though most members are aware of the impact and issues causing overweight and obese, it is challenging without important support from the institutions. Organizations and community health promoting related programmes emphasizing expanding chances for regular exercise and accessibility of healthier food consumption are supposed to be developed to encourage long-term commuter wellness. There is a need to build regular exercises, workouts, and gym resources to

accommodate all BCMM community members. This includes building health workouts with the institutions and public sport facilities and these resources have to be convenient in terms of access. A summary of these characteristics pertaining to community members may be critical in establishing recommendations for the Department of Health (DOH) to empower BCMM community members on correct wellbeing activity and the adoption of a healthy lifestyle.

5.7 CONCLUSION

It was established that both poulations in urban and rural areas have a positive perception of exercise as a health tool for managing obesity. The study noted that lack of social support, lack of accessibility, and inconvenience are some of the barriers to exercises. Meanwhile, the participants health, psychological benefit and general wellbeing were some of the reasons for exercisisng. The study noted that they were significant differences in correlation of BMI and age, days of exercising and other factors. Furthermore, they was a significant difference between urban and rural participants in physical activity due to the fact that rural participants are involved in physical jobs such as farming and so on. Meanwhile, urban participants live sedentary llifestyls hence they lack exercicing.

They struggle with similar barriers with other people and geographical difference doen=s not make much difference. They have similar types of reasons, and the fact that they live near the exercise facility does not imply the assurance that the people will exercise. Also that the awareness of the benefits of exercise is in high regard but does not mean they will act to obtain the benefits.

5.8 LIMITATIONS OF THE STUDY

This study was limited to the Buffalo Metropolitan Municipality out of all the municipalities in the Eastern Cape Province. Although the study was limited to BCMM, only one rural and one urban location were considered for participants' sampling. For the urban area, data was collected from participants residing in Nahoon while for the rural area, data was collected in Nxarhuni.

Furthermore, the sample was a non-probability sample and the size was too small to be generalisiable to a bigger population.

The other major limitation was to get people who were both overweight/obese and exercising.

Lastly, data was collected from people who are obese and overweight who cannot account for everyone in the Buffalo City Metropolitan Municipality.

5.9 FUTURE RESEARCH

This study focused on two areas in the Buffalo Municipality both urban and rural obese population. New studies can focus on other provinces with different physical and geographical characteristics than the two chosen areas. For example, a study of similar nature can be done in a province like Limpopo, which offers a different environment and climate compared to the Eastern Cape Province. Climate and geology may have a huge effect on factors like being overweight and obesity. Therefore, future studies can focus on that area.

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ETHICS CLEARANCE
REC-270710-028-RA Level 01

Project Number:	VAN011SMRW01
Project title:	**The perception of exercise as a healthcare intervention for rural and urban population in Buffalo City Metropolitan Municipality in the Eastern Cape, South Africa.**
Qualification:	Masters in Environmental Studies
Principal Researcher:	Thembani Mrwebi
Supervisor:	Prof L van Niekerk
Co-supervisor:	N/A

On behalf of the University of Fort Hare's Research Ethics Committee (UREC) I hereby grant ethics approval for VAN011SMRW01. This approval is valid for 12 months from the date of approval. Renewal of approval must be applied for BEFORE

- Any material changes in the conditions or undertakings mentioned in the document;
- Any material breaches of ethical undertakings or events that impact upon the ethical conduct of the research.

The Principal Researcher must report to the UREC in the prescribed format, where applicable, annually, and at the end of the project, in respect of ethical compliance.

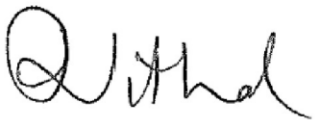
The UREC retains the right to

- Withdraw or amend this approval if
  - Any unethical principal or practices are revealed or suspected;
  - Relevant information has been withheld or misrepresented;
  - Regulatory changes of whatsoever nature so require;
  - The conditions contained in the Certificate have not been adhered to.
- Request access to any information or data at any time during the course or after completion of the project.

Your compliance with DoH 2015 guidelines and other regulatory instruments and with UREC ethics requirements as contained in the UREC terms of reference and standard operating procedures, is implied.

The UREC wishes you well in your research.

Yours sincerely



Professor Renuka Vithal
UREC-Chairperson

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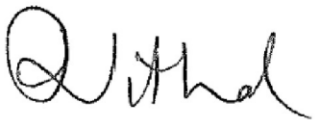

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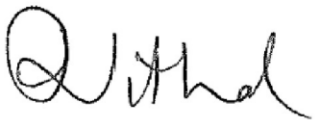

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APPENDIX A: International Physical Activity Questionnaire

Data collection form

Data sheet

NAME…… Age……

GENDER…….

RURAL/ URBAN…….. DATE OF ASSESSMENT……

Physical and perceptual activity Questionnaire-Short Form

Section (a) Anthropometric profile

General Fitness tests	**Type**	**Result**
	ANTHROPOMETRY	
Stature		
weight		

Physical activity questions: Mark your answer with an X

How important is exercise to you?

Extremely important	
Very important	
Moderately important	
Slightly important	
Not all important	

Q2. How would you describe your current level of fitness?

- Perfect
- Very Good
- Good
- Average
- Below average
- Unfit

Q3.How often do you exercise?

- Never
- 1-2 times a week
- 3-4 times a week

- 5-6 times a week
- Every day

Q3. What form(s) of exercise do you currently participate in?

(Please select all that apply)

- Walking
- Running
- Gym
- Hiking
- Swimming
- Surfing
- Yoga
- Pilates

- [ ] Dance
- [ ] Lifting weights
- [ ] Team sport
- [ ] Other, please specify:

Q8. On the day you exercise, how long do you spend exercising?

- ○ 30 minutes
- ○ 45 minutes
- ○ 1 hour
- ○ 1 hour and 30 minutes
- ○ 2 hours
- ○ 2 hours and 30 minutes
- ○ 3 hours

- 3 hours and 30 minutes
- 4 hours+

DIRECTIONS: Below are statements that relate to ideas about exercise. Please indicate the degree to which you agree or disagree with the statements by circling SA for strongly agree, A for agree, D for isagree, or SD for strongly disagree.

Statement	Strongly Agree	Agree	Disagree	Strongly Disagree
1. I enjoy exercise.	SA	A	D	SD
2. Exercise decreases feelings of stress and tension for me.	SA	A	D	SD
3. Exercise improves my mental health.	SA	A	D	SD
4. Exercising takes too much of my time.	SA	A	D	SD
5. I will prevent heart attacks by exercising.	SA	A	D	SD
6. Exercise tires me.	SA	A	D	SD
	SA	A	D	SD
	SA	A	D	SD

	SA	A	D	SD
	SA	A	D	SD
	SA	A	D	SD
	SA	A	D	SD
	SA	A	D	SD
	SA	A	D	SD
	SA	A	D	SD
	SA	A	D	SD
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	SA	A	D	SD
	SA	A	D	SD
	SA	A	D	SD

	SA	A	D	SD
	SA	A	D	SD
	SA	A	D	SD

Strongly Agree

Agree

Disagree

Strongly Disagree

SA A D SD

SA A D SD

SA A D SD

SA A D SD

SA A D SD

SA A D SD

7. Exercise increases my muscle strength. SA A D SD

8. Exercise gives me a sense of personal accomplishment. SA A D SD

9. Places for me to exercise are too far away. SA A D SD

10. Exercising makes me feel relaxed. SA A D SD

11. Exercising lets me have contact with friends and persons I enjoy. SA A D SD

12. I am too embarrassed to exercise. SA A D SD

13. Exercising will keep me from having high blood pressure. SA A D SD

14. It costs too much to exercise. SA A D SD

15. Exercising increases my level of physical fitness. SA A D SD

16. Exercise facilities do not have convenient schedules for me. SA A D SD

17. My muscle tone is improved with exercise. SA A D SD

18. Exercising improves functioning of my cardiovascular system. SA A D SD

19. I am fatigued by exercise. SA A D SD

20. I have improved feelings of well being from exercise. SA A D SD

21. My spouse (or significant other) does not encourage exercising. SA A D SD

(Continued on reverse side)

Strongly Agree

Agree

Disagree

Strongly Disagree

22. Exercise increases my stamina. SA A D SD

23. Exercise improves my flexibility. SA A D SD

24. Exercise takes too much time from family relationships. SA A D SD

25. My disposition is improved with exercise. SA A D SD

26. Exercising helps me sleep better at night. SA A D SD

27. I will live longer if I exercise. SA A D SD

28. I think people in exercise clothes look funny. SA A D SD

29. Exercise helps me decrease fatigue. SA A D SD

30. Exercising is a good way for me to meet new people. SA A D SD

31. My physical endurance is improved by exercising. SA A D SD

32. Exercising improves my self-concept. SA A D SD

33. My family members do not encourage me to exercise. SA A D SD

34. Exercising increases my mental alertness. SA A D SD

35. Exercise allows me to carry out normal activities without becoming tired. SA A D SD

36. Exercise improves the quality of my work. SA A D SD

37. Exercise takes too much time from my family responsibilities. SA A D SD

38. Exercise is good entertainment for me. SA A D SD

39. Exercising increases my acceptance by others. SA A D SD

40. Exercise is hard work for me. SA A D SD

41. Exercise improves overall body functioning for me. SA A D SD

42. There are too few places for me to exercise. SA A D SD

43. Exercise improves the way my body looks. SA A D SD