

Online health communities' portrayal of obesity on social media platforms in South Africa



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Master of Public Health

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Declaration

I **Natasha Mazonde** declare that this research report is my original work. Any research conducted by other persons has been properly referenced. The research report is submitted in partial fulfillment of the requirements for the Degree of Master of Public Health (MPH) with the University of the Witwatersrand, Johannesburg, South Africa. This work has not been submitted for any other degree or examination in this or any other University.

Signature:  _____

Date: 7 June 2021

Dedication

“The fight is against obesity not obese people.”

This research report is dedicated to all those championing the fight against obesity, to all those battling obesity or any form of non-communicable disease, and to all those who have succumbed to the Coronavirus (Covid-19) pandemic as a result of other comorbidities that did not afford them a chance to fight the pandemic.

Abstract

Background: The rapidly increasing prevalence of obesity in South Africa, intertwined with extensive changes in diet, life expectancy and nutritional status has led to a complex framing of obesity on social media. This has prompted prioritisation of treatment and prevention interventions. To leverage social media for obesity prevention, we need to understand how discourse on obesity is presented in the media. This study was conducted to understand how obesity is constructed and represented on social media in South Africa.

Methods: A cross sectional mixed methods study design with qualitative and quantitative content analysis of Facebook and Twitter platforms in South Africa, from 1 July 2019 to 31 December 2019. The study used Meltwater software for data collection and data were extracted by the researcher yielding 13 500 posts and tweets. Data were cleaned and coded in Microsoft Excel. The study utilised both quantitative content analysis and qualitative framing analysis to add insight into the nature of obesity discourse on social media.

Results: Social media portrayals of obesity in South Africa suggest a complex health issue. The discourse varies with evidence of stigmatising portrayals of obesity largely blaming individuals for unhealthy lifestyles and poor diets leading to obesity. Sentiment on the messages is mixed, with evidence of positive, neutral and negative reactions to obesity. Engagement with obesity messaging is both passive and interactive. There is a mix of voices creating obesity content on social media including health advocacy groups, health experts, researchers and media personalities.

Conclusions: This study documented media portrayals of obesity. With social media intricately embedded in the social lives of South Africans, there is a high likelihood that obesity prevention efforts will turn to social media to reach out to the public. Future research and media-based prevention efforts need to leverage social media to fully understand the discourse around obesity.

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Nomenclature

BMI-	Body mass index
Covid-19-	Coronavirus disease
MLP -	Meltwater Language Processing tools
NCD-	Non-communicable disease
NDoH-	National Department of Health
NPL -	Natural Language Processing tools
SSB -	Sugary-sweetened beverage tax
WHO-	World Health Organisation

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CHAPTER 1: INTRODUCTION AND LITERATURE REVIEW, AIMS AND OBJECTIVES

1.1 INTRODUCTION

In this chapter, obesity is defined and a global context of the obesity pandemic is provided. A review of obesity in the context of South Africa's growing non-communicable diseases (NCDs) burden is also provided. Social media is also defined and its role as a revolutionary modern communication channel in obesity messaging. The published literature on media portrayals of obesity is reviewed and a justification of the current study is provided. The chapter also details a description of the study aim, research objectives and conceptual framework guiding the data analysis process.

Obesity can be defined as abnormal or excessive fat accumulation that presents a risk to health, with a crude population measure referred to as the body mass index (BMI), calculated as a person's weight (in kilograms) divided by the square of his or her height (in metres) (1).

Globally, obesity is considered a major public health concern and the World Health Organisation (WHO) has estimated that it affects 500 million people worldwide with this burden projected to increase to one billion globally by 2030 (2). Obesity is associated with major health risks and comorbidities such as diabetes (type 2), cardiovascular disease, and various cancers.

In recent years, the continent of Africa has witnessed a rapid increase in overweight and obesity prevalence as well as associated co-morbidities (3-5), while Sub-Saharan African countries' experiences of obesity vary by country. The prevalence of obesity is high in South Africa, with an estimated 70% women and 31% men in South Africa considered obese in 2016 (1). This is intertwined with South Africa's experience of extensive changes in diet, life expectancy and nutritional status. The change in diet and physical activity patterns has become known as the nutrition transition (6), and such changes in dietary patterns are noticeably impacting health outcomes in a large portion of South Africa's population. Findings about how obesity is represented on social media can have the potential to inform policy makers and public health practitioners' decisions in the development of food-related policies and media-based strategies for control and prevention of obesity in South Africa. Evidence from previous studies is

suggestive of the need for multipronged and comprehensive approaches to potentially curb and in future reverse global obesity (7, 8).

The current study aims to utilise data from social media platforms in South Africa to understand how obesity is constructed and presented through an analysis of the messaging on obesity, its sentiment, social media engagement, and sources or voices generating and sharing the content.

1.2 BACKGROUND

The media has, in the past, been frequently accused of contributing to the rise in obesity prevalence, particularly among children through its links with advertising of unhealthy foods and beverages, sedentary behaviours, the promotion of unrealistic body images and other mechanisms (9). However, there is evidence that through selective representation and framing, media has the potential to influence policy-makers and even the public's perceptions about the causes of and solutions to health issues (9).

Media portrayal of obesity has long been identified as one of the most influential sources in contributing to the development and maintenance of weight stigma attitudes and discriminatory behaviour (10). The general media often reports obesity as a lifestyle issue (11). Literature on the impact of stigma on overweight or obese individuals found that experiences of weight stigma were associated with poorer eating behaviours and reduced or lack of physical activity (12). Portrayal of obesity in the media has now become a topical issue in several countries in the world, particularly during the Coronavirus (Covid-19) pandemic, with evidence of stigmatising media portrayals impacting on the physical and mental health of people living with obesity (10).

Media analyses of obesity have noted a shift from stigmatising and individual behavioural causes portraying obesity to more societal and structural causes, which may suggest a leaning towards a call for governmental policy interventions to address obesity. Hilton and colleagues (13) observed a shift in media framing of obesity to more societal frames, away from victim blaming which might have been an indicator to policymakers of a growing public discourse on the need for regulatory interventions to address obesogenic environments. Similarly, Holmes (14) observed that obesity was framed as an epidemic which required collective national efforts to address the health issue. In the context of South Africa, obesity is disproportionately higher among females, with a prevalence of 39.2 % as opposed to 10.6 % among males as a result of

lifestyle, urbanisation, cultural and environmental factors which act as key determinants of increased obesity levels in the country (15). This coupled with reports that South Africa has the highest obesity prevalence on the African continent and identified as a risk factor for major non-communicable diseases (4), has made obesity a complex issue requiring urgent public health attention.

1.3 PROBLEM STATEMENT

With high prevalence rates in South Africa, the control and prevention of obesity has become one of the key public health priorities for South Africa's National Department of Health (NDoH) through its most recent strategic plan for prevention and control of non-communicable diseases (2013-2017) (16). Research suggests that social media plays a significant role in influencing the public's perception of obesity, as individuals are increasingly accessing social media platforms for health advice and information (17). Social media's representation of obesity plays a critical role in influencing public discourse about obesity, impacting people's attitudes towards it as a health issue. Understanding media representations of obesity is crucial in developing holistic approaches for the control and prevention of obesity while engaging multiple stakeholders in government, industry, academia, and civil society organisations. Monaghan and colleagues (18) observed that the current framing of obesity in the media has been found to contribute to weight stigma posing negative consequences for both the individuals living with obesity and the public health sector, and efforts to control and prevent obesity will require in depth analysis of how the health issue is constructed and represented in the media.

1.4 JUSTIFICATION

Several media analyses have been conducted on obesity (10, 11, 15, 19) however South Africa's social media portrayal of obesity remains unexplored, particularly on social networking sites such as Facebook and Twitter. Findings in health communication studies suggest that a sizable majority of social media users visit online health platforms in search of health information (20). In South Africa, obesity is not only prevalent among the adult population, but there is evidence of rapidly growing rates of childhood obesity coupled with malnutrition and stunting among children below the age of five (21). There are many other social media platforms such as Instagram, WhatsApp and blogs, but this study looked at Facebook and Twitter as these platforms have the highest user rates among the South African population (22).

1.5 STUDY AIMS AND OBJECTIVES

Research question

How do online health communities in South Africa portray obesity on social media?

Study aim

The overall aim of the study was to understand how obesity is constructed and represented on social media in South Africa.

Research objectives

The objectives of the study were:

1. To establish what messaging online health communities post about obesity
2. To explore the sentiment of the Facebook posts and tweets
3. To describe social media engagement on obesity messaging
4. To understand sources generating and posting content about obesity on social media.

1.6 LITERATURE REVIEW

1.6.1 Social media and obesity

Social media describes the online and mobile tools that people use to share opinions and experiences, information, images and video and audio clips, and includes websites and applications used for social networking (23). Examples of social media platforms include Facebook, a networking site reported to have over a billion users and Twitter, a micro-blogging service that enables its users to send and read text-based posts of up to 140 characters, known as ‘tweets’ (23).

Social media is intricately embedded in South Africans’ lives, with an expected 26.8 million Facebook users in South Africa in 2025 and 22.9 million Facebook users reported in 2020 (24), and approximately 3.4 million Twitter users in South Africa in 2021, with the number of Twitter users in South Africa expected to reach 4.4 million by 2025 (25). The media plays a significant role in influencing public opinion on health issues through use of text and image content that represents issues in a way that subtly (or not so subtly) supports a particular perspective (11).

This is particularly important for obesity where media emphasis on individual responsibility or causes and solutions can reinforce weight stigma, and distract attention away from structural determinants, governmental and societal responsibility, and societal-level solutions (26, 27).

Social media use has experienced exponential growth over the last decade. Nutrition and health professionals, government, and non-governmental health organisations try to leverage social media platforms to reinforce healthy food choices and nutrition-related behaviours, particularly in young adults (28-30). From a policy-making perspective, social media has remained a relatively untapped source of information to catalyse policy action and social change. There is evidence suggesting that social media's content on a health issue can provide timely information about the impact of policy interventions (31). Behavioural information such as health attitudes, eating behaviours and physical activity levels contained in social media messaging have a potential to inform food policies to address obesity and other diet related non-communicable diseases.

Media's role in affecting people's perceptions and attitudes toward obesity can be explained by framing, a process by which people develop a particular conceptualisation of an issue or reorient their thinking about an issue (32). Framing analysis aims to examine and make visible the processes through which frames emerge, are communicated, and then naturalised (33).

1.6.2 Determinants of obesity

Obesity is understood as a complex, multi-factoral chronic problem which requires medical attention (34). While infectious disease can be ascribed to microbial causes, causality in non-communicable diseases is more complex, with the agent of causality ill-defined as a result of several layers of influence (35).

Although the fundamental cause of obesity is an imbalance between calories consumed and calories expended (36), dietary behaviours, socio-economic status and culture as well as environmental factors are some of the key determinants of obesity. The dominant constructions and representations of obesity on social media tend to emphasise individual behaviours as a major determinant (37), ascribing poor nutrition and sedentary behaviours as some of the key drivers. The literature suggests that many South Africans have poor diets, many of which start in childhood (38).

The types of environments in which determinants of obesity appear can be divided into physical (what is available), socio-cultural (what are the attitudes and beliefs), economic (what are the costs) and political (what are the rules) (36). Research on obesity notes how food environments play a key role in influencing diets, nutrition and health in general, which contribute to increasing obesity prevalence, and further makes calls for policy makers to adopt diet-related fiscal measures such as the sugary sweetened beverage tax to prevent growing prevalence of obesity and other non-communicable diseases (39). The key cause of obesity according to public health submitters is the obesogenic environment, defined by Swinburn and colleagues as the sum of the influences that the surroundings, opportunities, or conditions of life have on promoting obesity in individuals or populations (40).

Construction of obesity on social media with an emphasis on the impact of food environments can have the potential to influence discourse around the role of diet-related policy measures in addressing obesity, and more often this discourse is driven by health experts and policy makers. In South Africa's urban settings, rates of obesity among children are increasing rapidly, with food marketing and advertising to children identified as one of the causes. In addition, South Africa has seen dietary shifts, growth of disposable incomes and an increase of ultra-processed foods readily available at low cost (38). This observation creates a framing contest of obesity between food and marketing industries and the public health sector, where industry frames obesity as a consequence of poor lifestyle choices attributed largely to knowledge, cultural or other character deficits (40). Industry further argues that a lack of physical activity and not increased food consumption is the major cause of obesity. Understanding how industry frames and represents obesity in the media is therefore key in obesity policy research, as not only does industry influence the food environment and dietary behaviours, but research has shown how powerful food and marketing industries can be such that they can exert considerable influence on policy makers and governments (40).

On socio-cultural beliefs and attitudes, the literature suggests that South Africa's black female population group stands as a key determinant of higher obesity risk (2) as a result of a number of layered factors ranging from a high prevalence of diet-related NCDs among this population group, increased rates of physical inactivity, poor diets and environmental factors such as urbanisation. Furthermore, there is also evidence of cultural perceptions of attractiveness of

larger body size amongst African females and poor socio-economic status impacting on the health of this population group (15). These cultural beliefs and attitudes about big body size have facilitated discourse about the emerging body-positive movement on social media, and the possible health outcomes of engaging with body positivity on social media (41).

The adolescent population in South Africa also stands at greater risk of obesity as a result of shifts in dietary patterns and eating habits, with evidence of an increased intake of energy dense foods, micronutrient poor diets and increased snacking behaviours amongst adolescent girls (42). These findings in South Africa are consistent with experiences in other contexts, where in 2014, 30% of US children and adolescents were overweight or obese, which increased their risk of becoming overweight or obese adults (43). High consumption of sugary-sweetened beverages and snacking of energy dense foods and foods with added sugars was identified as one of the major food consumption behaviours contributing to the growing obesity prevalence among adolescents. Coupled with poor diets and physical inactivity amongst adolescents, there is also evidence from obesity studies that habitual social media engagement or exposure to image-related content which can negatively impact body image and food choice is prevalent in healthy young adults aged between 18-30 years (19).

Furthermore, this population group is purported to be the highest consumers of fast food and sugary-sweetened beverages, and with low vegetables and fruit intakes. The literature also suggests that physical inactivity is increasing among children and adolescents in South Africa and may be contributing to the increasing prevalence of overweight and obesity (44). Physical inactivity has also been linked to sedentary behaviours such as high use of social media and other types of media such as television and online gaming. Construction and representation of obesity on social media with a focus poor eating behaviours as a major determinant of obesity largely draws from children and adolescents' unhealthy eating and sedentary behaviours.

1.6.3 Creators of obesity content in the media

Literature suggests a mix of voices constructing obesity in the media, ranging from creators, amplifiers, legitimators, supporters, and enforcers (45). Interest becomes a key factor influencing the variety of sources constructing and sharing obesity related information on social media. For example, scientists or researchers are likely to produce 'the facts' or scientific evidence of a health related issue which is then shared on the different social media platforms, while health

professionals might try to leverage social media as an information dissemination platform for health related information about obesity. Dieting and fitness industries will likely leverage social media to promote their weight-loss products (45). The literature further notes that creators of health-related messaging often use a neutral framing of the topic (45), with the intent of emphasising macro-social or even global level causes of a health issue. In the context of Africa, the evidence suggests advancements in developmental organisations' utilisation of social media interventions for social behaviour change communication (46). Such innovative media based health communication interventions have shifted current health communication approaches in Africa for example, in 2013, the South African National Department of Health and technology experts developed an E-health communication intervention using mobile phone and social media technology for maternal health education, bringing together content creators from the health and technology sectors (46).

CHAPTER 2: METHODOLOGY

2.1 STUDY DESIGN AND POPULATION

The study is a cross sectional mixed methods study design with qualitative and quantitative content analysis of Facebook and Twitter platforms in South Africa, from 1 July 2019 to 31 December 2019. Cross sectional mixed methods are well suited for examining studies that cross different sections by combining quantitative and qualitative approaches to make inferences about a population of interest at one point in time (47). Content analysis is a method that uses clearly defined criteria to analyse media material, providing useful insights into the content and context of media articles by exploring underlying meanings and framing of content, and the broader implications of the representation of an issue (48). The setting for this study is the Facebook and Twitter social media platforms in South Africa, as the two social media platforms have the highest user rates in the country (22). The study population is the actual Facebook posts and tweets from individuals and organizations, known as online health communities.

2.2 DATA COLLECTION

The study used Meltwater software for data collection. Meltwater is a global media monitoring company which utilises social media listening, social media management, public relations analytics and influencer engagement tools. The researcher was trained by Meltwater in social media monitoring, analysis of metrics, and how to use the Meltwater software for running searches on social media. Data extraction was conducted by the researcher who determined keywords that were used. These key words were; obesity OR obese, and the search was limited to South Africa. Data was retrospectively collected over a six-month period from 1 July 2019 to 31 December 2019. Key health days such as the National Obesity Awareness Month and National Nutrition Week, annually observed in South Africa every October fell within the data collection timeframe. The data were downloaded from the Meltwater software into an Excel spreadsheet for cleaning and coding by the researcher.

2.3 DATA CLEANING

The initial search yielded 13 500 Facebook posts and tweets. Data cleaning was conducted in Microsoft Excel. The initial step was to remove data that was duplicated on either Facebook or Twitter. After removing duplicates, posts and tweets were included if; (1) their pages were based and managed in South Africa and (2) if the pages were open groups or social media

accounts accessible to anyone. Posts and tweets were excluded if they; (1) made no mention or reference to South Africa, (2) were not written in English or if they were written in any of the other South African official languages (3) were duplicates of the original post or tweet, (4) were retweets or shares of an original post, and (5) were irrelevant posts or tweets containing the keywords but with no connection to obesity. Retweets, shares and likes on an original post or tweet were counted separately and presented as measures of social media engagement. Irrelevance was classified as the occurrence of some keywords ‘obese’ with connections other than the health issue. Examples of such posts included;

“I’m craving an obese bank account” (“Twitter”)

“Entering the new year with a fat bank account balance. It’s literally obese” (“Twitter”)

Misinformation about obesity identified on both social media platforms was coded in Excel and further analysed.

2.4 SAMPLING

The sampling strategy was purposive based on a diversity of voices creating obesity content on social media, types of obesity content and diversity of engagement including posts and tweets with both low and high user engagement. Purposive sampling is a technique widely used in qualitative research for the identification and selection of information-rich cases for the most effective use of limited resources (49). For the quantitative analysis, a final sample was prepared after undertaking the cleanup exercise that involved subjecting the posts and tweets to the inclusion and exclusion criteria. After the data cleaning process and exclusion of data that was irrelevant, duplicates or did not meet the set criteria for inclusion, 275 posts and tweets remained. For the textual analysis, 5%, that is a total of 15 posts and tweets were purposively selected based on diversity of voices, types of messages and messages that were both high and low engagement. In addition, 5 images from Facebook and Twitter was purposively selected also based on diversity of voice posting the images; types of messages communicated through the images and both images with high and low user engagement.

2.5 CONCEPTUAL FRAMEWORK

The study used framing analysis to understand how obesity is constructed and represented on Facebook and Twitter platforms in South Africa. Framing analysis explores the ways in which

issue presentations include or exclude certain information or viewpoints, to promote certain interpretations (50). Literature on the history of framing suggests that the framework provides a useful approach in tracing the contours of how topics are described and discussed within media texts.(51). To improve validity and reliability of social media data analysis, this study utilised Matthes and Kohring's (52) framing measurement procedures anchored around the definition of framing provided by Entam et al.(53), where he outlines the four interactive components of frames: problem definition, causal attribution, moral evaluation and treatment recommendation. For the current study, this approach facilitated inductive and deductive coding and analysis of data to enable deeper, richer, and more nuanced understanding of the ways in which obesity frames are constructed through the combination of text and visual meanings. The coding to frame components approach offered more precision in measurement during analysis as well as more transparency regarding the interpretation of obesity frames.

The analysis of images and illustrations related to Facebook posts and tweets about obesity was informed by criteria adapted in Gollust (2012) et al. which included the following variables for analysis; image type; activity level; activity type; physical activity; stigmatising behaviours and the presence of captions (54). Image framing is a key component of media framing as it has the ability to convey key messages in the text, elicit strong emotional responses from the audience, reinforcing stereotypes and guiding audience perceptions and understandings of an issue (54). Media discourse also suggests that image framing might be influential on public opinion as images tend to be accepted as reflective of reality, with media content reportedly better understood by the public through images rather than written text (26).

2.6 DATA ANALYSIS

This study utilised both quantitative content analysis and qualitative framing analysis.

2.6.1 Quantitative content analysis

Through a quantitative content analysis, the researcher sought to establish the frequency and types of messaging about obesity; frequency of user engagement on the messaging; quantify the sentiment on the messaging; and to classify the voices generating and posting content about obesity on social media. This data is presented in tables and figures and where relevant illustrative quotes are provided directly from the data on Facebook and Twitter.

2.6.2 Qualitative framing analysis

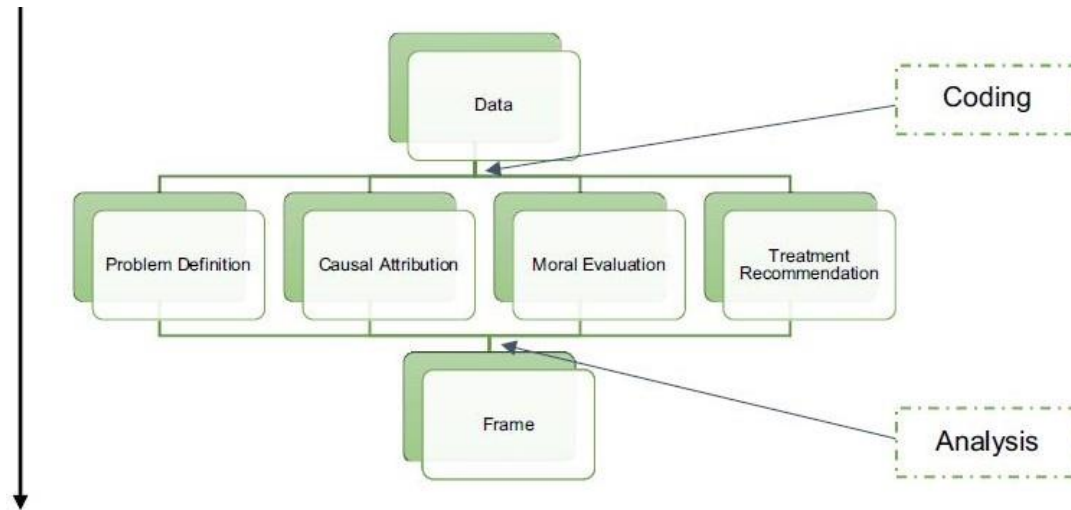


Figure 2. 1: Framing components for coding data and analysis, Foley et al. (2019) (51)

The study also utilised a qualitative framing analysis on 15 posts and tweets to get an in-depth understanding of media portrayals of obesity in South Africa. Framing is a strategy used by communicators, consciously or subconsciously, to select and promote certain facts or points of view, with the aim of increasing the salience of the content to the audience (53). For this study, the framing approach was used as a means to understand how online health communities in South Africa define obesity on social media, as well as how the causes and potential solutions to obesity were presented on social media. For the current study, problem definition was understood to be the process of identifying causal agents of obesity and causal attribution was understood to be the identification of forces creating the health issue. Treatment recommendation focused on the identification of solutions to the obesity pandemic and the likely effects of such solutions. Analysis of the text in the 15 posts and tweets included an examination of the language, common-meanings or understandings, any emotion-eliciting language, and devices such as metaphors and catchphrases used to generate frames about obesity.

2.7 ETHICAL CONSIDERATIONS

To maintain confidentiality of names on social media, the researcher generally referenced sources in broader categorisations such as “health professional”, “advocacy group”, “researcher”, and “government.” Where the researcher was unable to verify the voice or social media account

generating obesity messaging, the data was referenced broadly by source as either from “Facebook” or “Twitter”. Although all data is freely available on the two social media platforms, Ethical clearance (Reference: R14/49) (Appendix two) was obtained from the University of the Witwatersrand Human Research Ethics Committee (Medical).

CHAPTER 3: RESULTS

This chapter presents findings from the current study. The results are presented in the following order: a quantitative content analysis of the data to address the four study objectives, followed by a qualitative framing analysis of text on a small sample of obesity posts generated on social media. The chapter also presents findings from the analysis of selected images generated from both social media platforms.

3.1 QUANTITATIVE CONTENT ANALYSIS

3.1.1 Content

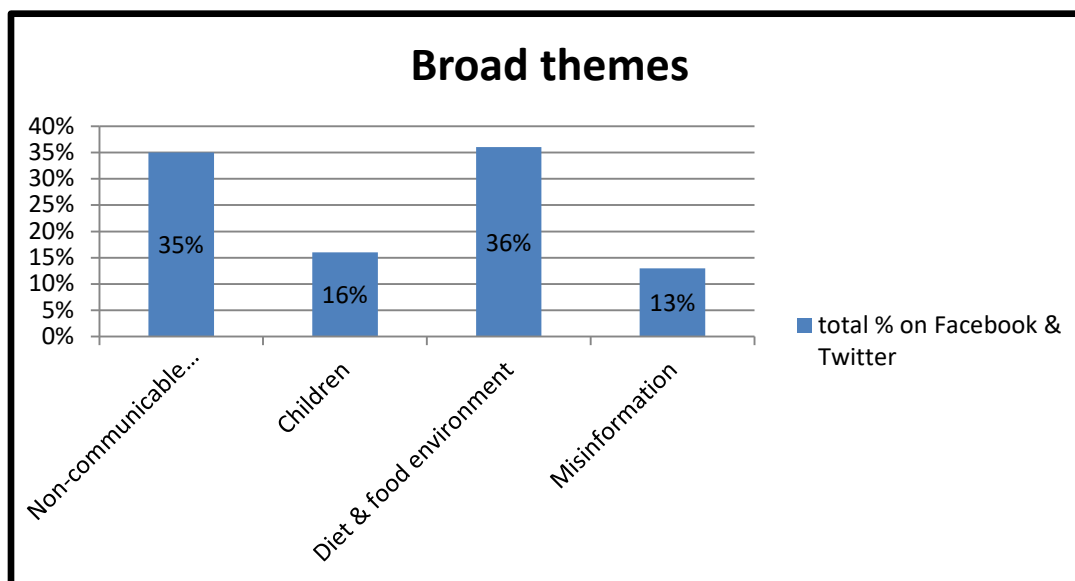


Figure 3. 1: Broad categories of emerging themes on Facebook and Twitter

Themes identified included non-communicable diseases, children, diet and food environment, and misinformation. Thirty-five percent (95 of 275) of the data focused on non-communicable diseases, while 16% (44 of 275) represented the theme of children. Diet and food environment emerged in 36% (101 of 275) of the data, while misinformation was 13% (35 of 275). Four frames were developed from the broad themes: individual and lifestyle frame, stigmatising frame, structural and societal frame, and children and obesity frame.

Non-communicable diseases (NCDs)

Posts that were categorised under the theme of NCDs' included the growing burden of obesity in South Africa, statistical evidence suggesting that South Africa had the highest obesity prevalence in sub-Saharan Africa, and reference to the sugary-sweetened beverage (SSB) tax as a policy measure to address obesity. Also dominating this broad theme was a growing concern of the increased risk of diabetes (Type 2) and hypertension and their cost implications on South Africa's healthcare system.

"South Africa ranks high globally among countries with the highest rate of obesity, and in Southern Africa, we rank the highest. #Obesity #ObesityMonth #BeatNCDs" ("Health Advocacy group")

"Fact of the day: Sugary drinks taxes reduce how much people buy and drink them. In Mexico, research showed that sugary drinks were being replaced by healthier beverages. The revenue from these taxes can be used to reduce obesity and diabetes. #SugarTax #BeatNCDs" ("Health professional")

Children

Under the broad theme of children, the following sub-themes emerged, the concept of hidden hunger or obesity paradox, school environments and the double burden of obesity and HIV. Messaging under this broad theme suggested that children in South Africa are currently facing both hunger and malnutrition, on the one hand, and obesity with associated non-communicable diseases on the other hand. This condition is what has become known on social media as hidden hunger or obesity paradox.

"SA children are obese but stunted. The 2019 SA Child Gauge Report noted an increase in both stunting and obesity in children suggesting that while children are overweight, they are undernourished. #RekordNews #PretoriaRekord" ("Academia/ researcher")

"SA children are overweight and lack vital nutrients - report: The prevalence of obesity in children in South Africa increased from 10.6% in 2005 to 13.3% in 2016 - more than twice the global prevalence of 5.6%." ("News/ journalist")

The data also revealed a growing trend of obesogenic environments in South Africa, particularly in school settings, contributing to childhood obesity. With fast growing rates of childhood obesity in South Africa, the results also suggest that children are further placed at risk of South Africa's health burden which combines communicable diseases such as HIV and tuberculosis, with lifestyle diseases such as obesity;

“Children of HIV positive mothers at risk of obesity, asthma: Children of mothers with HIV remain at higher risk of obesity and asthma-like symptoms, despite being uninfected, claims a recent study” (“Health professional”)

“the impact of school lunches and tuckshop food on obesity rates in children. South Africa is faced with an obesity epidemic, making it the most obese nation in Sub-Saharan Africa. 1.6 million South African children are considered obese and the condition is growing much faster” (Health Advocacy group”)

Diet and food environment

The theme of diet and food environment emerged on both Facebook and Twitter, with sub-themes including nutrition transition and sedentary lifestyle. The study timeline included the National Nutrition week and National obesity month, which might explain why diet and food environment emerged slightly dominant on both social media platforms. South Africa's experience of shifts in diet contributing to nutrition related NCDs and sedentary lifestyle emerged as key issues during the National obesity month and National nutrition week. A growing trend of unhealthy eating habits influenced by environmental factors such as the growth of obesogenic food environments in South Africa and sedentary lifestyle emerged from social media, suggesting that both the adult and youth population were impacted by this transition in diet. The narrative on social media suggests that the poorer communities in South Africa have a high exposure to obesogenic food environments coupled with food inequality, both identified as some of the leading causes of obesity in South Africa.

“South Africa has high exposure, especially among the poor, to undernutrition in the first years of life, followed by environments where unhealthy food choices are often the only choices: Obesity crisis threatens South Africa's health system.” (“News/journalist”)

“The types of foods that people are eating - that often contain hidden sugars, salt and fat - are a great contributor to obesity. #ObesityWeek #Obesity” (“Advocacy group”)

Physical activity

Physical activity was identified as a measure that health professionals and health advocates encouraged as one of the solutions that would address the growing obesity prevalence in South Africa.

“In summary cycling can help to protect you from serious diseases such as stroke, heart attack, some cancers, depression, diabetes, obesity and arthritis. Riding a bike is healthy, fun and a low-impact form of exercise for all ages. Cycling is easy to fit into your daily routine.” (“Health professional”)

“In his welcoming address at the NMT Indaba, Mr. Bongani Mnambo who is the Acting Divisional Head for Roads and Transport encourages people to walk and cycle in order to avoid obesity. #CarFreeFestival #OTM2019.” (“Twitter”)

Furthermore, the messaging emerging from social media suggests a growing trend of communities organising fun runs, walks and cycling activities as part of efforts to address sedentary lifestyles known to negatively impact on the health outcomes associated with obesity and other diet related non-communicable diseases.

Misinformation

Lastly, misinformation about obesity on social media emerged as a broad theme. Misinformation was defined as false, inaccurate, or incomplete health related information (55). Subthemes included fat shaming and misconceptions about obesity and its causes. Data classified under the theme of misinformation generally contained highly stigmatising comments towards overweight and people living with obesity.

“Breakfast cereals make you obese, so either eat eggs or have a cup of coffee/tea and fast. Either way, don't buy Kellogg's or any other boxed cereals no matter how nutritious they say it is” (Academia/researcher)

“SA has a high rate of obesity Nuh, most black people have more mass in certain body parts than other races which tips of the BMI scale” (Advocacy group)

“God is bigger than your obesity, accept God into your life and watch the fat melt away.” (“Twitter”)

3.1.2 Sentiment

Sentiment was defined as the overall slant of a post or tweet as generated by the Meltwater Language Processing (MPL) tools. In this study positive sentiment was defined as posts that gave impressions of favorable actions to address obesity without mentioning the harmful implications of the health condition. Figure 3.2 below shows the overall sentiment of both Facebook and Twitter data.

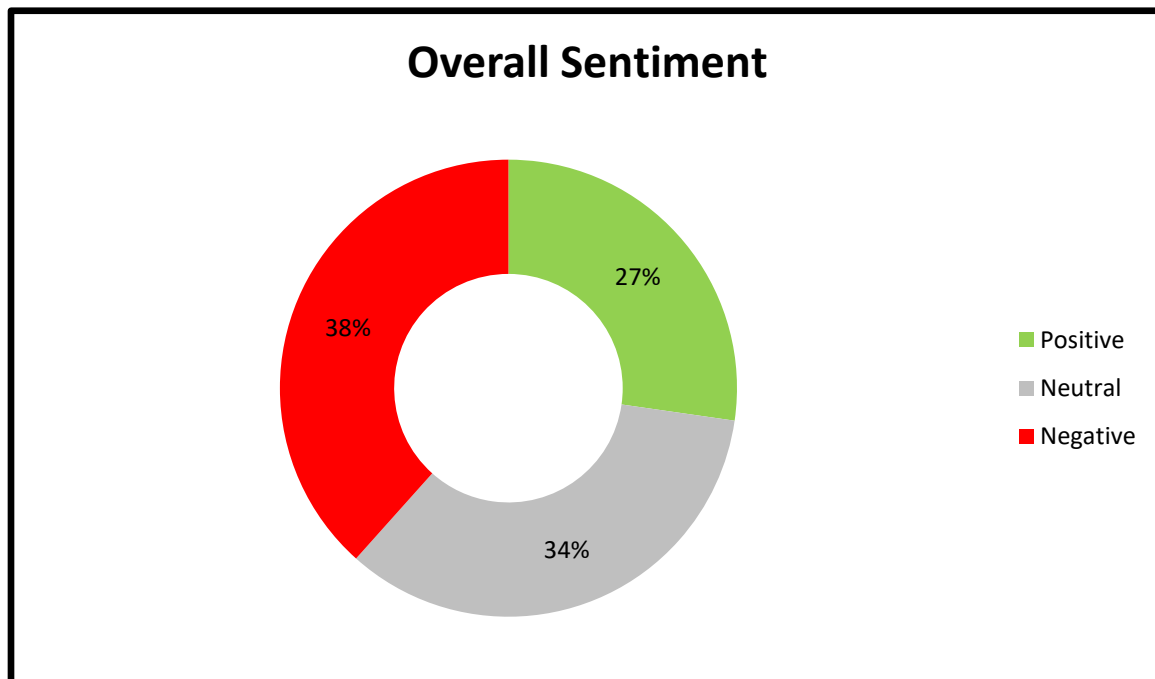


Figure 3. 2: Overall sentiment of Facebook posts and tweets

Data on both social media platforms were analysed together and about 27% of the messaging did not mention any harmful implications of obesity. Examples of posts and tweets with a positive sentiment towards obesity included;

“Hey TUT Fam! Being a plus size women does not warrant body shaming nor promote obesity.” (“Academia/ researcher”)

“All roads lead to Katlehong for the annual KIDS FUN WALK AGAINST OBESITY during the obesity awareness month. You're invited” (“News/ journalist”)

Neutral sentiment was defined as data not highlighting favourable or negative implications of obesity. Thirty-four percent of the data on both Facebook and Twitter were neutral. In most instances, this data provided statistical evidence about the prevalence of obesity in South Africa or posts and tweets seeking to present information about obesity without having any sentimental impressions;

“National Obesity Week is from 15–19 October; our relationship with food is ever-changing so is the health sector measurements to tackle obesity. #HealthProblems #iNovaPharmaceuticals” (“Health professional”)

“Did you know? South Africa has the highest percentage of overweight children under the age of 5 and among adolescents 10 to 19 years old. #UNICEF supports programmes that prevent obesity in school-age children and adolescents. #ForEveryChild” (“News/ journalist”)

Negative sentiment was defined as social media data having negative impressions about obesity. Thirty-eight percent of the data analysed had a negative sentiment towards obesity. Findings suggest the presence of negative sentiments on both social media platforms, with stigmatising comments about obesity, blaming of overweight or obese individuals and messaging highlighting the negative impacts of the health issue.

“There’s a difference between body positivity and borderline obesity, hit the gym fatty” (“News/ journalist”)

“More fat, more inflammation. How Excess Weight affects your condition. Nearly 2/3 of the people who have arthritis / related conditions are overweight or obese. Carrying extra weight increases your odds of heart disease, stroke, and other chronic problems.” (“Twitter”)

3.1.3 Social media engagement

The current analysis defined social media engagement as sharing, commenting, liking and exposure to image related content(19). Measures of social media engagement analysed for this study included number of comments, number of likes, number of shares, and number of images accompanying posts about obesity on both Facebook and Twitter. Table 3.1 below, provides an illustrative summary of social media engagement on obesity over the study timeframe.

Table 3. 1: Social media engagement on Facebook and Twitter

	Comments No. (%)	Likes No. (%)	Shares No. (%)	Accompanying images No. (%)	Total posts No. (%)
Twitter	241 (88)	660 (88)	313 (85)	80 (75)	231 (84)
Facebook	34 (12)	89 (12)	55 (15)	26 (25)	44 (16)
Total	275 (100)	749(100)	368(100)	106(100)	275(100)

Twitter stimulated slightly more engagement with 231 (84%) unique tweets than Facebook with 44 (16%). Across all the social media engagement measures analysed, Facebook appeared to have more images than twitter, with 26 images from a total of 44 posts, while Twitter had 80 images from 231 tweets. This might have been because Facebook can accommodate lengthy posts, whereas Twitter has a limitation of only 140 characters per tweet. Shares were almost proportionate on both social media platforms. From this analysis, Twitter also stimulated more engagement compared to Facebook as most unique tweets about obesity were first generated on Twitter then reposted on Facebook. Social media users who engaged with messaging about obesity most often did so by liking and retweeting the messaging.

3.1.4 Social media content creators

Source was defined as individuals or groups who generated and posted health related content about obesity on social media, also referred to in this study as online health communities. Online health communities are also understood as groups or individuals with an online presence that create and disseminate health related information that can be used to gain understanding about a

specific health issue (56). Figure 3.3 illustrates the broad categorisation of sources of data on social media.

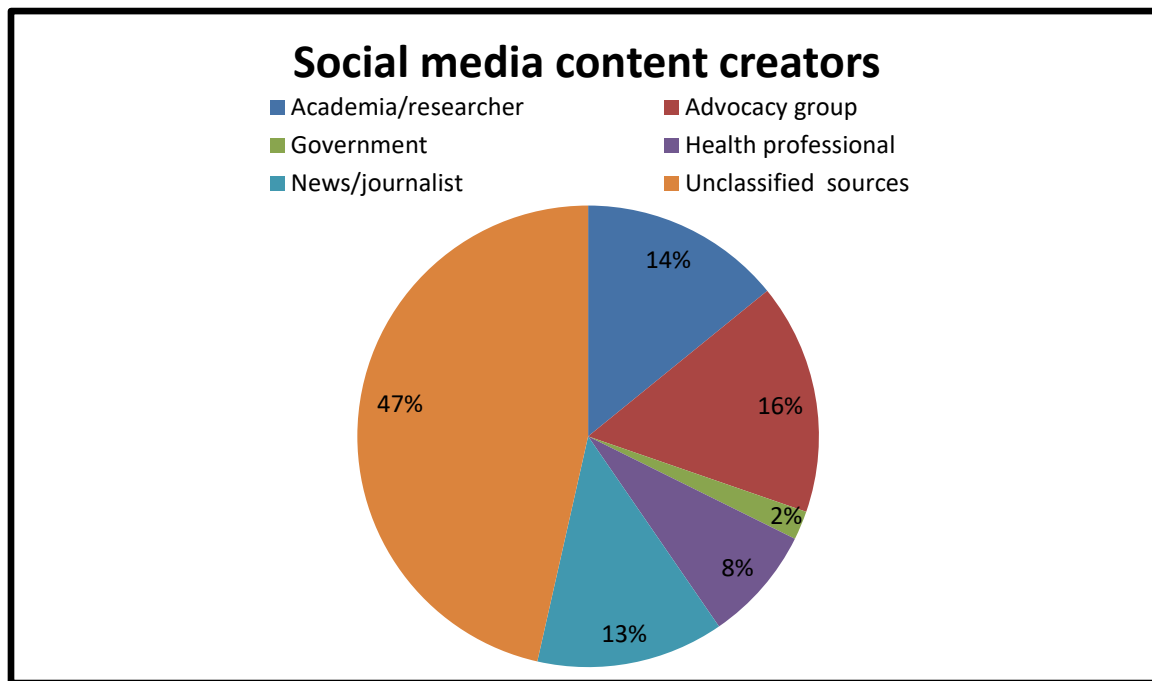


Figure 3. 3: Broad categorisation of social media content creators on Facebook and Twitter

Advocacy groups including those in the health and sports sectors represented 16% of the data sample, while Academia in the fields of public health and environmental health research made up 14% of the sample. Thirteen percent of the sources analysed fell in the category of news/journalist for example news anchors and radio disk jockeys. A small percentage of the posts and tweets represented voices from government with 2% and lastly social media pages or Twitter accounts whose names could not be classified in any of broad groups comprised of nearly half of the sample with 46%. These included individuals or groups of people such as social media influencers, celebrities, performing artists, farmers and authors.

3.2 QUALITATIVE FRAMING ANALYSIS

For the qualitative framing analysis, four frames were pre-selected inductively from an observation of broad themes that emerged in the content analysis. Qualitative data were deductively coded into the four frames which included: individual and lifestyle frame; stigmatising frame; structural and societal frame; and children and obesity frame. Textual framing analysis analysed the text from a sample of fifteen posts and tweets.

3.2.1 Individual and lifestyle frame

Individual and lifestyle frame defined obesity as a matter of individual choice, suggesting that lifestyle choices such as dietary options and individual lifestyle behaviours were among the major drivers of obesity and these had an impact on solutions to address obesity. Social media posts with an individual and lifestyle frame mainly depicted obesity as an individual responsibility, emphasising good diet and physical activity as potential solutions to the health issue. The adoption of unhealthy diets, particularly processed foods high in fat, salt and sugar were identified as key contributors to the growing increase in obesity prevalence in South Africa. Health professionals, advocacy groups and a smaller number of government representatives mainly used the individual and lifestyle frame, using emotion-eliciting language calling individuals to take action to adopt healthier lifestyles through good diets and engaging in physical activity.

“Team sports reduce obesity and increase overall health. Athletes who train with a team are healthier. Being part of a team enhances self-image. Competition improves endurance. Team sports increase long-term happiness. Team sports make you smarter”
(“Sports advocacy group”)

“This week marks National Obesity Week and the focus is on encouraging South Africans to eat a plant-based diet and minimally processed food” (“Dietician”)

The individual and lifestyle frame repeatedly emphasised the risk factors associated with poor diets and sedentary lifestyle, highlighting obesity and other non-communicable diseases as major health concerns.

“African foods or diet is not the reason we have high overweight or obesity statistics in South Africa especially among black people ... Poor diet/unhealthy diet is one of the major risk factors of overweight or obesity. African diet is not poor diet” (“Dietician”)

“#Itillsuggest that people should continue to be taught about hygiene, physical activities and healthy diet to reduce risk associated with some infectious disease (hygiene) and CVDs and obesity (physical activity and good diet)” (“Academia/researcher”)

3.2.2 Stigmatising frame

Stigmatising frame portrayed negative representations of obesity through fat and body shaming. Fat shaming is a behaviour that humiliates someone judged to have excess weight (34).

Representations of obesity used discriminatory language to fat shame individuals believed to be overweight. Misinformation and misconceptions about obesity were common in the data with stigmatising frames. Content creators of this messaging about obesity varied, from academia, researchers to individuals with an online presence. There was a recurring trend of messaging containing racial stigma and in some cases, stigma targeted at specific tribal groups in South Africa;

“Poverty has us calling obese black-men ngamla because having a bulged belly not only means you're eating, but also eating right.....” (“Academic/ researcher”)

“I love how big girls are getting comfortable with their bodies. #obesity if you're from Mthatha please be careful those Xhosa people will make you feel some way with their comments” (“Twitter”)

3.2.3 Structural and societal frame

Structural and societal frame highlighted a growing trend of obesogenic environments in South Africa as one of the major drivers of obesity, with a call for multi-sectoral approaches in addressing obesity. Food inequality in South Africa was also highlighted as a key contributing societal driver to the growing obesity pandemic. Structural and societal frames identified in the tweets and Facebook posts emphasised that South Africa was undergoing a public health crisis due to increasing rates of obesity and malnutrition, as well as other diet-related non-communicable diseases. Among the primary drivers identified were food inequality and obesogenic environments, particularly in South Africa’s schools setting, where unhealthy food

advertising to children was singled out as one of the contributing factors for childhood obesity. Health advocacy groups were the dominant voice creating social media content about obesity with a structural and societal frame. They called for policy makers to implement effective food policies such as the SSB tax to curb the growing rates of obesity in South Africa. Health advocates' use of emotion-eliciting language created a sense of urgency about South Africa's state of health, with calls for urgent interventions by policy makers;

The sugary drinks tax is one of the most effective ways to curb the ripple effect of obesity in South Africa, and while X appreciates the introduction of the sugary drinks tax in 2018, the current 11% tax is not enough," #BeatNCDs #HealthySchoolsNow" ("Health advocacy group")

"Increasing rates of obesity and malnutrition related non-communicable diseases are causing a public health crisis in South Africa. Food inequality is one of the primary drivers. Policy makers can do much more to ensure that there is effective policy and regulation of the food" ("Health advocacy group")

".....the impact of school lunches and tuckshop food on obesity rates in children. South Africa is faced with an obesity epidemic, making it the most obese nation in Sub-Saharan Africa. 1.6 million South African children are considered obese and the condition is growing much faster" ("Health advocacy group")

3.2.4 Children and obesity frame

The obesity paradox in South Africa's context highlighted a growing trend of an increase in undernourished and obese children below the age of five years. Obesity and its multiple causes were also identified as a contributor to the complex nature of the health issue. The complex nature of obesity has had a significant impact on children in South Africa; particularly below the age of five years who suffer from what is known as 'hidden hunger' or the obesity paradox, a condition whereby children are overweight and at the same time under-nourished. A key finding is that the prevalence of obesity among children in South Africa seems to be growing fast. Diverse voices highlighted the complex nature of obesity, including health researchers and media personalities. Obesity was framed as a ticking time bomb among children in South Africa, with

calls for parents and caregivers to take more responsibility in ensuring children have access to good diets as well as healthy eating and lifestyle behaviours;

“SA children are overweight and lack vital nutrients - report: The prevalence of obesity in children in South Africa increased from 10.6% in 2005 to 13.3% in 2016 - more than twice the global prevalence of 5.6%.” (“News/journalist”)

“SA children are obese but stunted. The 2019 SA Child Gauge Report noted an increase in both stunting and obesity in children suggesting that while children are overweight, they are undernourished.” (“Academia/researcher”)

“Why are our children so fat? We are world leaders in childhood obesity - undernutrition and over-indulgence are twin contributors to a ticking time bomb - are parents taking enough responsibility?” (“News/ journalist”)

3.3 IMAGE FRAMING ANALYSIS

The variables for image framing analysis included; image type, classified as either a photograph or an illustration; captions accompanying a photograph or illustration; activity level within the illustration which was classified as seated, standing still or active; activity type, which was classified into three categories, namely food consumption behaviours (eating, not eating, and unable to determine); beverage consumption behaviours (drinking, not drinking, and unable to determine); physical activity (exercising or not exercising). The last variable was the presence or absence of behaviours depicting stigma classified as either stigmatising images or illustrations. Five images from Facebook and Twitter were analysed using these variables;

3.3.1 Image type

A combination of photographs and illustrations were used to accompany messaging about obesity. Figure 3.4 is an infographic from Facebook with both images and text that depicted the hard facts of obesity. The text in the infographic was accompanied by supporting images to provide more detailed visual interpretations of some of the causes of obesity. Figure 3.5C is an illustration presented in the form of a painting. Although the illustration was not accompanied by any text, the visual interpretations sufficed in providing the context of the illustration, which was a representation of the negative impact of obesogenic environments. Figures 3.5A and 3.5B are photographs used to accompany posts and tweets reinforcing messaging about stigma and

sedentary lifestyles in children. Figure 3.5D is a drawing accompanying a tweet encouraging physical activity as a solution to addressing obesity by maintaining general fitness;

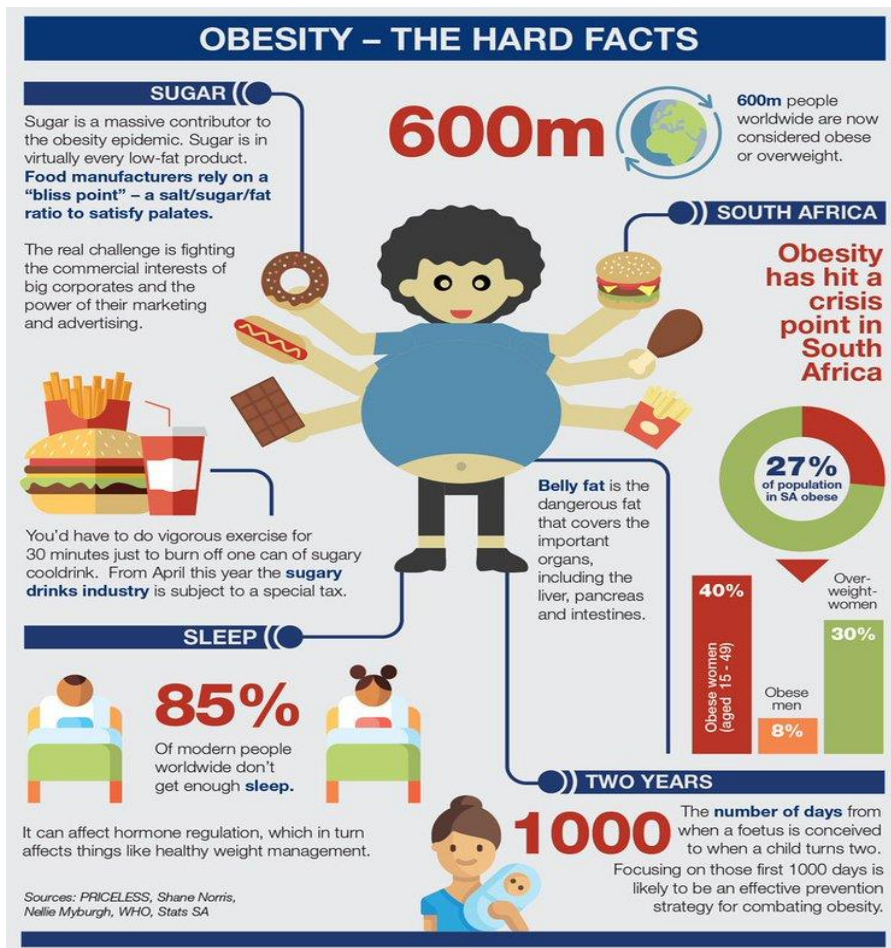


Figure 3. 4: Obesity facts (Source: Meltwater)



Figure 3. 5: Fat-shaming, Sedentary behaviour, Obesogenic environment and Physical activity
(Source: Meltwater)

A: Fat-shaming

B: Sedentary behaviour

C: Obesogenic environment

D: Physical activity

3.3.2 Captions

The analysis of the images suggests that captions did not play much of a role in communicating the messages. Figure 3.5D is the only image with a caption reinforcing the idea that healthy lifestyle behaviours such as exercising play a critical role in maintaining general fitness, while at the same time echoing the message in the visual representation of an individual walking up a flight of stairs. The rest of the images analysed did not have accompanying captions.

3.3.3 Activity level

Activity levels in the images were classified as seated, standing still or active. The presence of any of these activity levels depicted either healthy lifestyle behaviours or unhealthy lifestyle behaviours. Seated and standing still were considered inactive activity levels and therefore portraying an unhealthy lifestyle. Figure 3.5B depicted a boy seated and playing a video game with what looked like a sweetened beverage next to him. The visual interpretation of such activity level suggested a sedentary lifestyle among children, engaging in screen time activities with no physical activities included. In contrast, Figure 3.5D portrayed an active activity level, depicting a healthy lifestyle behaviour reinforced by the image of an individual walking up the staircase as a form of physical activity.

3.3.4 Activity type

Classification of activity types included food consumption behaviours, beverage consumption behaviours and physical activity. Figure 3.4 illustrated non eating behaviour but portrayed images of some examples of unhealthy foods including doughnuts, chocolates and hotdog rolls, which are high in sugar, salt and fat and contributing to the obesity pandemic. Similarly, Figure 3.5C did not portray any eating behaviour but depicted illustrations of fast food such as hamburgers and fried chips as examples of unhealthy foods also contributing to the obesity pandemic. Although Figure 3.5B depicted beverage consumption behaviour, the boy portrayed in the image was not drinking the beverage in the cup next to him, but visual interpretations suggest that he may have been consuming the beverage which was mostly likely a sugary- sweetened beverage, also perceived to contain excess sugar which contributes to obesity. From the sample of images analysed, Figure 3.5D portrayed physical activity behaviour, and depicted walking as a form of healthy lifestyle behaviour which positively contributes to individuals maintaining general fitness.

3.3.5 Stigmatising behaviours

Images were classified as either portraying stigmatising behaviours or non-stigmatising behaviours. From the sample analysed Figure 3.5A depicted a group of people pointing fingers at a woman who appeared to be overweight. Only the pointing fingers appear in the image and not the faces of these individuals, suggesting the potential negative impact of obesity stigma on people that are living with obesity or people who are overweight. In Figure 3.4, the illustration of an overweight individual emphasising a huge abdomen and holding different kinds of unhealthy foods in both hands could be stigmatising towards people that are obese or overweight. The image in Figure 3.4 is presented in the form of an infographic, emphasising the racial non-specificity that attempts not to stigmatise any race or gender, while at the same time passing across the messaging on obesity facts. Figure 3.5A and 3.5B present stigmatising behaviours in defining a specific race and gender.

CHAPTER 4: DISCUSSION

The aim of this study was to understand how obesity is constructed and represented on social media in South Africa. The findings suggest that social media largely frames obesity as an individual and lifestyle problem emanating from the adoption of unhealthy eating behaviours and physical inactivity. Social media's portrayal of obesity related to children and the link with other non-communicable diseases tends to perpetuate a complex framing of the factors causing obesity.

4.1 LIMITATIONS

In considering the findings of this study, it is important to consider the following technical limitations. The study timeframe was limited to a six month period which did not allow the researcher time to analyse data outside the stipulated study timeframe to ascertain whether portrayal of obesity might have been different at different times of the year. The study timeframe selected coincided with key health days in South Africa, both of which had a theme focusing on nutrition in 2019, which might suggest why themes around diet and food environment were frequent across Facebook and Twitter in South Africa. Language also presented another challenge as only posts and tweets written in English were included for analysis. With social media gradually becoming a valuable part of social life (57), there is a possibility that social media users in South Africa will be more expressive communicating in their home languages. The researcher came across posts and tweets in other South African official languages such as isiZulu and Xhosa, but this data was not included for analysis.

The search terms for the study were limited to obesity OR obese in South Africa. This excluded inclusion of other key terms around the topic of obesity which could have been included as part of the search strategy in combination with the keywords. Broadening of the search terms might have complemented the scope of the data collected on both social media platforms. Examples of search terms which could have been included in combination with the keywords include: diet, food environment, and non-communicable disease. The methods employed in this study do not account for closed social media groups, which might have provided deeper insights about obesity discourse on social media. Similar to other media analyses of health issues, the validity of information on social networks raises concerns of credibility (58). To ensure validity of information, data collection was limited to only open access social media pages and accounts.

Analysis of sentiment on the data was conducted through Meltwater Language Processing (MPL) tools which can be limiting when trying to ascertain sentiment of social media discourse. This observation is consistent with the literature that highlights challenges with analysis of text and image based sentiment generated from Natural Language Processing (NLP) tools (59) that are similar to the Meltwater Language Processing (MLP) tools, as these analysis tools are not able to accurately detect sentiment where there is no engagement between the content creator and the receiver.

4.2 INTERPRETATIONS

4.2.1 Causality, solutions and complexities

Messaging about obesity generated on social media mostly focused on the causes of obesity and possible solutions to address the issue in South Africa. On causality, South Africa's current experience of a nutrition transition coupled with a growing trend of obesogenic environments and unhealthy lifestyle behaviours seem to frame the discourse. Possible solutions to obesity emphasise addressing unhealthy lifestyle behaviours through measures such as engaging in physical activities and adoption of healthy eating behaviours. This messaging is evident in the posts, tweets and images accompanying the messages. Previous media analyses of obesity (60, 61) have highlighted an urgent need for obesity prevention interventions to be prioritised because of the link between obesity and the growing non-communicable disease burden.

While the results suggest that the individual and lifestyle frame is the most frequent of the causal frames of obesity, there is a fair amount of discourse suggestive of the complex and multi-faceted nature of obesity. For example, 35% of the data analysed framed obesity as a complex health issue with many layers linked to its causes. This finding is in line with the literature that suggests that media portrayals of obesity comprise of a mix of issues including: focus on broader environmental factors assigning blame towards industry for obesity with calls for increased government action to tackle the issue (62); stigmatising media portrayals (10, 12) assigning blame towards the individual; and positive sentiment countering weight-based stereotypes (61).

To heighten the complexity on the multiple causes of obesity, data on social media also suggests an increase in childhood obesity in South Africa, coupled with malnutrition, a condition known as the obesity paradox. This has also further complicated efforts to prevent and treat obesity

among children in South Africa. Efforts to explain causality, solutions and complexities of obesity on social media have in some instances led to the spread of misinformation about obesity because the social media landscape is not regulated and anyone can create and share content without sources and messaging being validated. Previous analyses of obesity found that the social media landscape creates an information ecosystem populated by opinion, false and inaccurate health information (55, 63), posing a challenge for health professionals when attempting to address this misinformation on social media. Findings from the current study suggest the presence of obesity misinformation particularly around factors causing obesity to purported solutions for treatment and prevention of obesity.

Recent literature notes a growing trend of obesity normalisation among black South Africans living in urban settings (64) due to a number of factors including; economic and nutritional transitions resulting in a growth of obesogenic environments in South Africa. The current study found a mix of media portrayals of obesity from stigmatising, messaging with positive sentiment and shifts from individual blame to environmental factors, which is in line with other existing literature pointing away from individual behavioural factors and toward medical and societal factors (34).

4.2.2 Mix of sentiments towards obesity

Sentiment represents an emotion expressed by a person based on their opinion about the subject (59). This study found a mix of sentiments towards obesity. Negative sentiment was often represented by messaging and images with derogatory language and body shaming of overweight individuals. This finding is consistent with the literature where Yoo and colleagues (32) highlight the prevalence of weight-based stigma on YouTube, another social media platform. It is evident from the current study that some of the messaging (38%) about obesity communicated through text and particularly images reinforces weight-based stigma. Stigmatising behaviours were also highlighted in images that portrayed eating and lifestyle behaviours deemed unhealthy and contributing to the obesity prevalence in South Africa. Furthermore, researchers in this field of study have begun gathering evidence on the negative consequences of stigmatising media portrayals of obesity (10, 65, 66).

Social media data with a positive sentiment towards obesity mostly focused on emphasising solutions to addressing the pandemic in South Africa and affirmation of individuals with big

bodies, which is also known as body positivity (41). Data that emphasised a solutions focus to obesity highlighted the need to push for individuals to adopt lifestyle and eating behaviours that would help them achieve wellness and not weight loss. The current study found that physical activity and adoption of healthy eating behaviours were among the broad themes emerging from obesity discourse on both Facebook and Twitter. Similarly, the posts and tweets with a body-positive sentiment emphasised wellness over weight loss through affirmation of individuals with big bodies, individuals who assumed the role of public figures in South Africa, known as celebrities and overweight individuals.

Neutral sentiment in social media content about obesity was highlighted through posts and tweets that mainly provided information about the health issue and statistical evidence on the prevalence of obesity. Some content also highlighting scientific evidence on the complexities, causes and possible solutions to address obesity carried a neutral sentiment. The mix in sentiments on both social media platforms highlights that it might be a challenge to ascertain content creators' actual sentiment when they generate messages and share them online as these online platforms merely provide virtual spaces for information sharing if user and creator engagement with the content does not take place.

4.2.3 Passive and interactive engagement

The social media engagement variables selected for this study suggest evidence of both passive and interactive user engagement with the obesity messaging. This is consistent with the literature that notes that information about social media engagement behaviours can be analysed through metrics such as likes and comments, which are a strong proxy for determining engagement (67). User engagement is passive when individuals can read content on pages, follow, like and share or retweet content, whereas interactive engagement would have suggested socialisation and participation among people, which is intrinsically and extrinsically motivated (68). The current study found 749 likes and 368 shares from obesity messaging, which was considered passive engagement. There were 275 comments on obesity posts and tweets, which was considered interactive engagement. From the data analysed, there were more likes, shares and retweets compared to the comments on both platforms. Twitter's figures were higher across all engagement variables analysed compared to Facebook, possibly because Twitter dominated the data sample analysed with evidence suggesting that some messages about obesity had first

been generated and shared on Twitter before being duplicated on Facebook. Although the literature found that text with accompanying images can induce high user engagement (69-71), this analysis found that although images might have played a role in engagement of obesity content on social media, captions on photographs were not a good predictor of user engagement with both image and text, as only one image from the sample of images analysed included a caption.

4.2.4 Voices generating obesity content on social media

This study found that the social media landscape comprises of different voices creating and sharing health related information about obesity. Nearly half of the data sample (47%) was generated from voices or social media pages which could not be categorised broadly in the groups of sources identified. This raises concerns about the credibility of the information. The literature confirms that social media content is poorly regulated, with beverage and food industries known to exploit young adults' social vulnerabilities using image-based marketing tactics, including peer ambassadors and celebrity endorsements designed to sell an illusion of health, beauty and success from products they are offering (72). On the other hand the voice of advocacy groups is present, giving obesity a structural frame, flagging broader structural and environmental issues in South Africa as possible causes of obesity. Health advocacy groups made numerous calls for the South African government to address obesogenic environments contributing to the rise in obesity prevalence through online campaigns aimed at pushing the government to increase the tax rate on the SSB tax. This study found that the voice of health experts such as dieticians and nutritionists was prominent in flagging an increase in obesity prevalence being caused by unhealthy individual lifestyles and poor eating habits. Academia and researchers from the public health and environmental health sector mostly sought to share scientific and statistical evidence and information about obesity, causality and possible interventions for treatment and prevention.

The literature also highlights the importance of disseminators not from health organisations or backgrounds who help disseminate health-related messaging on social media (73). This finding is consistent with the current study where local news anchors and radio disk jockeys made up 14% of the voices disseminating obesity related information on their personal and organisation's

social media pages. This information was mostly in relation to key events, news, and general notices about obesity events taking place in South Africa.

4.3 IMPLICATIONS

An analysis of how obesity is constructed and presented on social media has the potential to influence how treatment and prevention interventions are developed. This study builds on existing literature on how the media frames obesity and the impact this has on the public's perceptions. These observations are consistent with the literature, which notes how media framing of obesity can play a critical role in influencing public opinion and government policy(11). It is also useful to understand how obesity is constructed and framed by different voices on social media in order to effectively detect and address misinformation about the health issue. The results from this study therefore provide key insights on South Africa's social media landscape, how general health- promotional information about obesity is widely shared on social media, and the possible levels of user engagement with the health information.

The data also identifies a small number of posts and tweets affirming individuals with big bodies. This data counteracts the dominant discourse about obesity on social media which is characterised by weight- based stigma towards individuals who are obese or overweight. The literature notes that support oriented social media platforms create safe spaces where individual social media users who are obese or overweight can feel accepted, while at the same time allowing for reflective spaces for individuals to negotiate and in some cases reject stigmatising identities ascribed to them on the social media (74). Although findings depict stigmatising media portrayals of obesity, there is evidence of positive media portrayals of obesity, which aim to protect individuals from stigma and notes this supportive obesity discourse in the media as powerful and empowering (75).

The research methods employed in this study enriched the findings which clearly explicate the social media discourse around obesity in South Africa. Existing literature also notes that framing analysis of media discourse about health issues plays a significant role in how users or the audiences engage, perceive and utilise health information (76). Furthermore, there is evidence that framing analysis is perceived as a unique and innovative approach for public health media research, which allows for an in depth examination of media discourse in all dimensions, from the thematic and rhetoric structures of media texts (51).

CHAPTER 5: CONCLUSION AND RECOMMENDATIONS

This chapter aims to bring to conclusion the study conducted on online health communities' portrayal of obesity on social media platforms in South Africa. Also, in this chapter, recommendations have been made to inform future research and media based programme interventions aimed at control and prevention of obesity.

5.1 CONCLUSION

Media portrayals of obesity on social media in South Africa suggest a mix of causal frames. Obesity is framed as a complex health issue, presenting several determinants including individual lifestyle factors as well as environmental factors. South Africa is grappling with a growing trend of obesogenic environments contributing to shifts in diet to fast and ultra-processed foods, known to be energy dense and high in fat, sugar and salt. This shift has been known to contribute to South Africa's rapidly growing obesity prevalence.

Discourse about obesity varies on social media, with evidence of stigmatising portrayals of obesity which largely blame individuals for living unhealthy lifestyles and poor diets leading to obesity. Messaging about the health issue also lays emphasis on the complex causes of obesity as well as possible solutions to address obesity, including calls for multi-sectoral approaches involving various stakeholders in government, health sectors and industry.

There is a mix of sentiment on social media about obesity. Messaging with negative sentiment largely emphasises the negative implications of the health issue, while neutral sentiment reflects in discourse seeking to present scientific evidence on prevalence of obesity, news or general information and statistical data on obesity. There is a small portion of content generated and shared on social media affirming individuals with big bodies and seeking to address misconceptions and misinformation about obesity circulating in the media.

Engagement with the obesity discourse on social media is both passive and interactive. The nature of the platform on which messaging is communicated plays a key role in influencing social media user engagement. Twitter seems to have stimulated more conversation and engagement about obesity although the platform has specific limitations in the character

restrictions imposed when sharing content. Passive engagement through liking and retweeting was dominant on social media, particularly on Twitter.

With social media intricately embedded in the social lives of South Africans, there are high chances that voices creating and sharing messaging about obesity vary. The current study found a mix of voices generating content from advocacy groups in the health sector, health experts, media personalities and researchers in the fields of public health and environmental health. A large majority of voices creating content about obesity on social media are individuals with social media presence such as influencers and celebrity figures in South Africa.

5.2 RECOMMENDATIONS

Recognise the uniqueness of each social media platform

Future media analyses of obesity and media- based programme interventions aimed at addressing obesity need to consider the uniqueness of individual social media channels. This is prompted by an observation from the current study which suggests that Facebook and Twitter in some cases carried different conversations about obesity. Twitter's 140 character limit may have suggested a limitation in terms of obesity messaging that could be generated and shared per tweet, while Facebook had more capacity to include images and other features accompanying text based content.

Health sector should leverage social media for health-promotion

Researchers, health professionals, policy makers and public health practitioners need to acknowledge the potential of the social media landscape to act as a platform for disseminating health-promotion related information about obesity and the implications for future obesity research, programme and policy interventions with a media focus. As the social media environment is not regulated, negative sentiments about obesity may overshadow efforts by health professionals and public health practitioners to generate and share health messaging aimed at the prevention and control of obesity. The current study only found that 8% of the voices generating and sharing obesity related content on social media represented health professionals such as dieticians and nutritionists. This exposes a gap in the role that health experts could potentially play in capitalising on online platforms for health promotion and dissemination of health related information. There is a need for health experts to increase their online presence on

social media as the literature notes that users or patients facing barriers to healthcare access may resort to online health information seeking and online communication with health professionals (77).

Leveraging social media for media-based interventions in obesity prevention

Public health practitioners developing media- based strategies to address obesity need to acknowledge the potentially damaging impact of social media discourse with negative sentiments on obese and overweight individuals' psychological well-being. Programme designers can benefit from more in- depth analysis of social media engagement between creators and users of obesity messaging. These insights might guide and shape how media- based interventions are developed and presented in the media for different audiences.

The need for collective efforts in developing media based obesity prevention programmes

Future research needs to demonstrate the importance of stakeholder collaboration in obesity prevention programmes. There is a need for the public health sector (health experts, media personalities and researchers in the fields of public health and environmental health) to work with individuals with social media presence such as influencers and celebrity figures in South Africa, as these are the “voices” creating content about obesity on social media.

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APPENDICES

Appendix One: Plagiarism Declaration



PLAGIARISM DECLARATION TO BE SIGNED BY ALL HIGHER DEGREE STUDENTS

SENATE PLAGIARISM POLICY: APPENDIX ONE

I, NATASHA MAZONDE (Student number: 400324) am a student registered for the degree of MASTER OF PUBLIC HEALTH (MPH) in the academic year 2021.

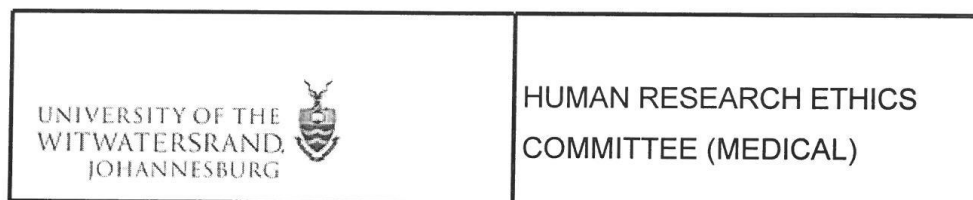
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- I am aware that plagiarism (the use of someone else's work without their permission and/or without acknowledging the original source) is wrong.
- I confirm that the work submitted for assessment for the above degree is my own unaided work except where I have explicitly indicated otherwise.
- I have followed the required conventions in referencing the thoughts and ideas of others.
- I understand that the University of the Witwatersrand may take disciplinary action against me if there is a belief that this is not my own unaided work or that I have failed to acknowledge the source of the ideas or words in my writing.
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FROM: Iain Burns
Human Research Ethics Committee (Medical)
Tel: 011 717 1252

E-mail: Iain.Burns@wits.ac.za

DATE: 06/01/2020

REF: R14/49

PROTOCOL NO: W-NN-200106-02 (This is your ethics application study reference number.
Please quote this reference number in all correspondence relating to this
study)

PROJECT TITLE: *Online health communities' portrayal of obesity on social
media platforms in South Africa*

Please find attached the Ethics Waiver Certificate for the above project. I hope it goes well and that an article in a recognized publication comes out of it. This will reflect well on your professional standing and contribute to the Government funding of the University.



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Online health communicators' portrayal of obesity on social media platforms in South Africa



Research Report submitted to the School of Public Health
University of Witwatersrand
In partial fulfillment of the requirements for the degree
Master of Public Health
Natasha Mazonde
Student Number: 400324
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