Obesity, Family Units, and Social Marketing Intervention: Evidence from Nigeria

Abstract

Purpose: Building on the social marketing theory, this study examines: (I) the relationship between family units and obesity in Nigeria; and (II) the social marketing interventions used to reduce and prevent obesity in the Nigerian society.

Design/methodology/approach: This study adopted a semi-structured interview research design with 42 obese individuals in Nigeria.

Findings: The study findings show that the family unit an individual grows up in influences their consumption behaviour, which drives their obesity. The findings reveal that obese Nigerian citizens are willing to live a healthier lifestyle due to the direct and indirect medical costs associated with obesity. Furthermore, the findings disclose the social marketing interventions—local celebrity endorsements, healthy lifestyle promotions, reduced gym membership and affordable access to healthy foods and services—used to prevent and reduce the rising obesity rates in the Nigerian society.

Practical implications: The study findings provide an avenue to guide government officials, policymakers, and social marketers in shaping their public policy and social marketing interventions to encourage healthier consumption and lifestyle behaviours among families and individuals in the Nigerian society.

Originality/value: This is the first research study to investigate how family units in the emerging market of sub-Saharan Africa drive obesity and the social marketing interventions used to reduce and prevent obesity. Theoretical and practical implications are discussed.

Keywords: obesity, family units, social marketing intervention, social marketing theory, Nigeria

1.0. Introduction

According to the World Health Organization (WHO), obesity entails a situation where an individual's body mass index (BMI) is 30 kg/m^2 or more (Witkowski, 2007; Ajayi *et al*., 2016). Obesity is often associated with diabetes mellitus, fatty liver disease, hypertension, ischemic cardiovascular disease and atherosclerosis, as well as certain types of cancer (Thaiss, 2018; Bryne and Targher, 2022). Consequently, there are direct and indirect medical costs associated with being obese (Wansink and Huckabee, 2005; Major *et al.,* 2014). The direct medical costs include preventive, diagnostic and treatment services (Wolf and Colditz, 1998; Wilborn *et al.,* 2005) while the indirect medical costs include morbidity and mortality costs (Chukwuonye *et al.,* 2013). On the one hand, morbidity costs refer to the value of income lost due to decreased productivity, being absent from work, restricted activity and increased hospital admission days – due to an individual being obese (Bakari et al. 2007). On the other, mortality costs refer to the value of future income lost due to premature deaths resulting from obesity (Stevens *et al.,* 2012; Cornil *et al.,* 2022).

Over the past three decades, there has been an upward continuous trend in the number of obese individuals worldwide (Wansink and Chandon, 2006; Adeloye *et al.,* 2021; World Obesity Report, 2021). To this end, obesity is now considered a major public health concern and has been classified as a global epidemic (Petersen *et al.,* 2019; Moore *et al.,* 2017; Cornil *et al.,* 2022). Presently, over 44% of the world's population are overweight while there are about 2 billion obese individuals worldwide (Thaiss, 2018; Petersen *et al.,* 2019). According to the Global Nutrition Report (2021), out of the 1.216 billion African population, 18.4% of women and 7.8% of men on the continent live with obesity. In Nigeria – the most populous country in Africa – estimates reveal that nearly 4 million Nigerian citizens between the ages of 5 and 19 years will be living with obesity by 2025 (Word Obesity Report, 2021). Due to the direct and indirect medical cost associated with obesity, health experts warn that failure to control the rising obesity rates will severely damage economic and commercial activities in Nigeria and further contribute to the rising unemployment rates, in turn, pushing more Nigerian citizens into poverty (Adepoju, 2021; Word Obesity Report, 2021).

Nevertheless, despite the rising rates, obesity in Africa – particularly in Nigeria – has failed to gain the required international audience, scholarly attention and affirmative action needed to control this public health concern because food crisis in Africa is usually associated with malnourishment, undernutrition, tribal and ethnic wars, and malnutrition (Chukwuonye *et al.,* 2013; Cronin *et al.,* 2014b; Adepoju, 2021). Johanna Ralston, the chief executive officer at the World Obesity Federation, states that the rising obesity rate *''has just not really been understood as a health challenge''* (Word Obesity Report, 2021). Notwithstanding this, with obesity now a critical public health concern, there is a growing interest by a significant number of stakeholders in addressing the obesity epidemic in Africa (Adepoju, 2021). Consequently, there are calls (Chukwuonye *et al.,* 2013; Cronin *et al.,* 2014b; Voola *et al.,* 2018 and Adepoju, 2021) for more research studies to investigate the institutional drivers and preventive mechanisms that should be adopted to reduce – and prevent – obesity rates, especially in the emerging markets of Africa.

The emerging market setting of Africa is particularly important for several reasons. First, emerging market societies in Africa have collectivistic cultures, whereby the extended family and community perform a substantial role in the lives of individuals (Acquaah, 2006). Accordingly, an individual's family unit is the determinant factor on the kind of the food they eat and lifestyle they live (Voola *et al.,* 2018). In these emerging market societies, familial units are critical sites and conduits of values, practices and food consumption (Davis *et al.,* 2016). For example, in Ghana – a country in the west of Africa – it is the local culture for parents to keep providing and determining the food consumption patterns for their children up to their university education and a child being overweight is often viewed as the parents (family unit) are correctly performing their parental responsibilities (Nyakotey *et al.,* 2020). However, to date, family food consumption literature has not focused on family units in emerging markets of Africa (O'Malley and Prothero, 2006; Kerrane *et al.,* 2014). Subsequently, when considering the role of the family unit in determining food consumption behaviour among individuals in such markets, it is paramount investigate how the family unit drives obesity in these markets – in turn, further extending the literature in obesity research.

Second, emerging markets of Africa are particularly suffering more from the severe effects of obesity than their developed market counterparts (Voola *et al.,* 2018). Emerging markets of Africa already suffer from institutional voids (Nwoba *et al.,* 2021) and the increasing trend in the number of obese individuals in these markets has a negative effect on economic and commercial activities. For example, in Nigeria (with a population of over 212 million), the number of overweight individuals ranges from 20.3%-35.1% while the number of obese individuals ranges from 8.1%-22.2% (World Obesity Report, 2021). Hence, there is a need to pay closer attention to understanding, identifying and combating the effects of obesity, to help with the development of the society and reduce the direct and indirect medical costs associated with obesity.

Third, emerging market societies in Africa are currently experiencing a surge in population and rapid urbanisation (Boso *et al.,* 2018; Nwoba *et al.,* 2021). Urbanisation comes with increased access to energy-dense foods, and less strenuous jobs is a risk factor. It is currently estimated that as much as 20–50% of urban populations in emerging markets of sub-Sharan Africa are classified as either overweight or obese (Adeloye *et al.,* 2021). For instance, in 2019, about 43.69% of Nigeria's population (this equates to about 92 million citizens, which is more than the population of the United Kingdom, France or Spain), were aged between 0 and 14 years and there are now more people living in urban than rural areas in the country (Adepoju, 2021; Nwoba, 2021). This surge in population and rapid urbanisation has led to a corresponding expansion of processed food outlets (Chukwuonye *et al.,* 2013). In Nigeria, the fast-food industry has become very popular and is receiving high levels of patronage, especially in the urban areas (Adeloye *et al.,* 2021). Accordingly, multinational fast-food companies are establishing a foothold in emerging markets of Africa, and this has contributed to the surge in obesity rates. With the rising rates, failure to control the obesity epidemic will not only be of a great harm to the Nigerian population but will also have dire consequences on the country's commercial and economic activities (World Obesity Report, 2021). Therefore, with the advances in technology and lifestyle behaviours among the middle and upper class in emerging markets of Africa (Amankwah-Amoah *et al.,* 2018; Boso *et al.,* 2018; Mogaji *et al.,* 2021), citizens of these markets are

becoming aware of the direct and indirect medical costs associated with obesity and have sort to engage in healthy lifestyles. On this note, it is paramount to examine and understand the social marketing interventions used to remedy the rising obesity rates in the emerging market setting of Nigeria.

Accordingly, this study answers calls (Chukwuonye *et al.,* 2013; Cronin *et al.,* 2014b; Voola *et al.,* 2018 and Adepoju, 2021) for more research studies to examine the institutional drivers and social marketing interventions used to reduce – and prevent – the rising obesity rates in emerging markets of Africa. To this end, we stand on the premise of the social marketing theory to argue that, due to the collectivist cultures existent in emerging markets in sub-Saharan Africa (Nwoba *et al.,* 2021), an individual's family unit influences their consumption behaviour which, in turn, drives their obesity. Furthermore, with obesity now recognised as a major public health concern on the African continent (World Obesity Report, 2021), we explore the social marketing interventions used to prevent and reduce the rising levels of obesity in the Nigerian society. To test our research aim, this study adopted a semi-structured interview research design with 42 obese individuals in Nigeria. Our findings contribute to the extant obesity and social marketing literature in three ways.

First, our study observes for the first time, as per the social marketing theory, that familial units in the emerging market setting of Nigeria shape the consumption behaviour of individuals, which, in turn, drives their obesity. We define the family unit as members of a household who are linked by marriage or bloodline (Pasley and Petren 2016; Igwe *et al.,* 2018). The Nigerian society is heavily religious (Nakpodia *et al.,* 2020), and the family unit mostly consists of the nuclear, polygamous and extended family members – in line with the accepted religious norms and beliefs in the country. Thus, these family units are identified as two-parent, one-parent, polygamous or 'living with neither parent' (e.g., adoptive families, grandparents or other relatives, foster care families, institutionalised children). Our findings show that the consumption behaviour of individuals, shaped by their family units, drives their obesity. Hence, this finding is in line with the social marketing theory which posits

that there are underlying social and institutional factors behind an individual's unhealthy consumption behaviour (Gordon *et al.,* 2018; Rundle-Thiele *et al.,* 2019).

Second, our study findings reveal the social marketing interventions used to prevent and reduce the rising obesity rates in the Nigerian society. According to McDermott et al. (2005, p. 545), *"social marketing is the application of marketing to the solution of social and health problems*." Social marketing employs tools, concepts and techniques used in commercial marketing to solve social and health problems (Hastings and Saren, 2003; Peattie and Peattie, 2009). As health problems have lifestyle and behavioural causes – and the aim of marketing is to influence human behaviour – social marketing aims to promote improvements in health and wellbeing (Dann, 2010). Our findings reveal that obese Nigerians recognise the direct and indirect medical costs associated with obesity. To this end, our findings disclose that the social marketing interventions used to reduce and prevent obesity rates in the Nigerian society include local celebrity endorsements, healthy lifestyle promotions, reduced gym membership, and affordable access to healthy foods and services**.** These findings are in line with the social marketing theory as these traditional commercial marketing mediums are employed to reduce and prevent the rising obesity rates while promoting healthier lifestyles in the Nigerian society**.**

Third, the current study is novel in extending the literature on social marketing theory to obesity research in an emerging market setting. Social marketing theory posits that social and health problems can be solved through applying marketing ideologies to change consumption behaviour (McDermott *et al.,* 2005). Proponents of the social marketing theory posit that understanding the underlying institutional and social factors behind unhealthy consumption behaviour is the benchmark needed to create social changes and solve health problems (Andreasen, 2002; Hastings and Saren, 2003; Wymer, 2011). Hence, standing on the premise of the social marketing theory, our study findings reveal that familial units are the institutional drivers of obesity in Nigeria, and the social marketing interventions – local celebrity endorsements, healthy lifestyle promotions, reduced gym

membership, and affordable access to healthy foods and services – used to prevent and reduce obesity in the Nigerian society.

The rest of this study is organised as follows: the next section presents the literature review showing where gaps exist. This is followed by the research methodology and findings. Next, the theoretical and practical implications of the research findings are discussed as well as the research limitations and future research direction.

2.0. Literature review

2.1. Food consumption and obesity

Over the past three decades, obesity has become a major public health problem concern – in both developed and emerging markets. As such, WHO characterises the increasing nature of obesity as a global epidemic and a neglected public health problem (Batch and Baur, 2015). For example, the incidence of overweight and obesity increased among children and adolescents from about 4% to 18% between 1975 and 2018 (Abarca-Gómez *et al.,* 2017). Obesity is often considered as an abnormal, risky (due to its health implications) condition that can lead to marginalisation of affected persons (Veer, 2009). The increasing health implications and the direct and indirect medical costs associated with obesity have sparked debates on how people can make informed choices and decisions on healthy foods (Guthrie *et al.,* 2015). The extant literature attributes environmental and social factors as the causes of unhealthy food choices and subsequent obesity. Specifically, obesogenic environments and conditions of life (see Wijayaratne *et al.,* 2018), such as social norms, commercial and marketing factors, and public policies (Goldberg and Gunasti, 2007; Voola *et al.,* 2018; Wijayaratne *et al.,* 2018) are some of the factors affecting food choices, consumption and obesity in recent times. Thus, research in consumer psychology points to how the food environment – including restaurants – can lead to unhealthy food choices, yet there are ways in which the environment can be changed to encourage healthier food choices (Roberto *et al.,* 2014). Accordingly, understanding the underlying factors behind food choices and consumption behaviours (e.g., Sobal and Bisogni, 2009;

Cronin *et al.,* 2014b), as well as the channels, approaches and interventions to encouraging healthy eating while reducing obesity, has gained attention in consumer, marketing and medical research (Smith *et al.,* 2019; Roberto *et al.,* 2014).

2.2. Food consumption and obesity within the Nigerian context

Nigeria – the most populous country in Africa – has a population of more than 212 million (Trading Economics, 2022). About 43.49% (more than 92 million) of Nigeria's population are between the ages of 0 and 14 years, making Nigeria's population one of the youngest in the world (Trading Economics, 2022). Nigeria is among the MINT and 'Next Eleven' countries, due to its favourable economic prospects, and demographics (Trading Economics, 2022). Subsequently, this has led to a surge in rural-urban migration. With globalisation and advances in technology in Nigeria (Mogaji *et al.,* 2021), this surge in population and rapid urbanisation has led to a corresponding expansion of multinational fast-food companies in the country – which see the large population as a favourable economic prospect (Chukwuonye *et al.,* 2013). Thus, researchers point out that the high obesity rate in the country is influenced by the rural-urban drifts, socio-economic changes, unhealthy diets (sold by the multinational food companies), consumption of processed foods and lack of physical activities – all of which adds up to an increase in sedentary lifestyle (Adeloye *et al.,* 2021). In addition, evidence shows that individuals within the low-middle and low-income brackets in Nigeria now have more access to western foods (including processed foods) with high calories (Adegoke *et al.,* 2021; Adeloye *et al.,* 2021; Ene-Obong *et al.,* 2012). Specifically, current statistics indicate that about 21 million Nigerians are overweight while there are more than 12 million obese individuals within the country (see Adeloye *et al.,* 2021). Thus, this shows that Nigeria has one of the highest numbers of obese and overweight individuals on the African continent.

In Nigeria, just like many African countries, the cultural setting, family structure and socio-economic background play a key role in households' consumption pattern and lifestyles. Early research in marketing and consumption points to consumer behaviour within family set-ups (Epp and Price, 2008) – including the roles of mothers and wives in determining what ought to be consumed

and expenditures on consumption (Strober and Weinberg, 1977). What someone eats is usually personal and dependent on their immediate household conditions, as certain food behaviours are within consumers' biographies, identities and their everyday living experiences (Cronin *et al.,* 2014a). Specifically, family characteristics such as family unit and identity, family composition and family rituals all function to influence family consumption pattern and behaviour (Kerrane and Hogg, 2013; Voola *et al.,* 2018).

Family set-ups and characteristics within developing economies are different from those within the western world. In emerging markets, gender roles and disparities, religion, and cultural values (which are mostly different from developed countries) have a significant impact on consumers' consumption behaviours. For example, in Nigeria, cultural factors (e.g., 'fatness' is associated with sexual beauty and social standing) and high socio-economic status are associated with high-calorie food consumption patterns and, by extension, obesity (Kandala and Stranges, 2014). Furthermore, within specific tribes and states in Nigeria, the role of women in feeding the family cannot be overemphasised – as women are expected to prepare and cook food (Ene-Obong *et al.,* 2017). To this end, Ene-Obong et al. (2017) argue that policy makers can design gender-sensitive interventions in dealing with malnutrition within localities in Nigeria. Again, in developing economies where most families are relatively poor – as in the case of Nigeria, where over 70% of the population are living below the poverty line – families may not be able to afford nutritious and healthy food for their children (Mcleay and Oglethorpe, 2013; Patel *et al.,* 2015). Thus, the dynamic and complex nature of African family structures, such as the case of Nigeria, makes it imperative for studies to consider these nuances and multi-faceted characteristics and develop appropriate interventions that take into account the genesis of obesity (Zimmerman, 2011) within an underexplored context.

2.3. The role of marketing in food consumption and obesity

The extant literature on marketing and consumer psychology documents the effect of various marketing strategies and advertising on healthy and/or unhealthy food consumption. Food marketing

is often designed to impact consumer attitude, purchasing and consumption behaviours (Qutteina *et al.,* 2019). Most often, very extensive and persuasive marketing tools and techniques – including television commercials, pricing strategies and packaging – are used to promote unhealthy food consumption among diverse customer segments (Smith *et al.,* 2019), with such consumption likely to lead to overweight and obesity. Indeed, research evidence suggests that the obesity epidemic is largely attributed to the increased marketing power of food manufacturers and providers (Zimmerman, 2011; Corvalán *et al.,* 2019). For example, the food industry uses billions of dollars to market their products through various platforms and mediums (Qutteina *et al.,* 2019). Advertising and marketing promotions increase the purchase and consumption of such foods – usually with low nutritional value, leading to consumer overweight and obesity (Kelly *et al.,* 2015). In recent times, the concept of celebrity endorsement has gained popularity in food promotion and advertising. Celebrity endorsement is one of the most used marketing strategies in promoting the sale and purchase of less nutritious and processed foods to children and adolescents (Zhou *et al.,* 2020). These celebrities or influencers promote certain food consumption through the many social media platforms. Though most countries have enacted laws that limit child-targeted food marketing (Corvalán *et al.,* 2019), the current marketing environments make some of these restrictions less effective.

The role of marketing in influencing consumption behaviours is not limited to only developed western economies. In most developing countries, marketing strategies are used to persuade consumers to purchase a particular brand or type of product (Wang *et al.,* 2019). For example, within the urbanised Nigeria, where there are changes in lifestyle and preferences for westernised and processed foods, companies now engage in various marketing activities, including the testing of new products and services before introducing them to other African markets (Mcleay and Oglethorpe, 2013). Consequently, recent studies have advocated for research that examines the role of social and contemporary marketing techniques and platforms such as social media, internet advertising and advertising in online games (i.e., pop-up advertisements promoting unhealthy food consumption) in the consumption of certain food products (Venturini, 2016; Smith *et al.,* 2019).

To this end, the extant literature establishes that there is a relationship between institutional structures, social norms, food consumption, marketing and obesity. In effect, an understanding of the nexus of food consumption, obesity and family units can help develop efficient, responsive, preventive and context-specific social marketing intervention models, especially in the emerging market setting – considering the rising obesity rates. However, as can be seen in Table I, extant research on obesity has failed to investigate this research gap, specifically in the emerging markets of Africa. Subsequently, this research aims to fill this gap and extend the literature on obesity research in emerging markets.

---Table I about here---

3.0 Methodology

3.1. Study design

An interpretivist, qualitative research design with obese individuals in Nigeria was undertaken to investigate the research aim of the study. This methodological approach was chosen because it draws out explanations in context by probing contextual factors and underlying motivations while bringing to the fore consciousness norms, values, attitudes and other factors lying behind unconscious routines (Miles *et al.,* 2013). With the vulnerability of the participants in mind, and as observed by Mogaji and Nguyen (2021) when interviewing disabled individuals, it was essential to take the research to the study participants, engage and ask them questions in their comfort zone – as this reduces any form of inconvenience which may discourage them from participating. This approach enables the researcher to gain a better understanding of the participants' experiences regarding the subject matter (Czanecka and Mogaji, 2021), and independently provides deeper insight into the research aim of the study.

Considering obese individuals are a unique set of samples, with psychological implications which may arise from being shy or intimidated and the need to have a BMI – Body Mass Index – check to confirm and verify their obese status, the authors of this research (henceforth the research team) worked with a research agency in Nigeria to source participants and carry out the data collection. The research agency has experience in collecting qualitative data in Nigeria, where they have various

research assistants across the country who work in the field, engaging with participants, collecting and transcribing qualitative data. The six geopolitical zones of Nigeria were targeted to recruit participants and each geopolitical zone was assigned a research assistant (RA) to collect data (six RAs). The six RAs all reported to the project's lead consultant – who works with the research agency. In turn, the lead consultant reported to the research team, providing updates on the data collection process. Considering the nature of the project and target audience, working with a research agency was the best approach as it made it possible to easily reach out to the target audience and collect reliable and generalisable qualitative data across Nigeria, in line with the research aim of the study.

3.2. Sample description

Following the rationale outlined above regarding the qualitative research methods, data was collected through semi-structured interviews with obese individuals in Nigeria. The research agency had connections with hospitals and health centres and were experienced in conducting research on health issues across Nigeria. To this end, the research agency approached respondents through health professionals to identify those who were suitable and willing to participate in the study. This invitation was done via email, visits, and personal contact. Participants were asked to contact the research agency to indicate their willingness to participate in the study. Participants were chosen based on the following criteria: a) were aged 18 or over; b) reside in Nigeria; c) volunteered and were willing to participate in the study; and d) were considered obese through verbal statement (participants saying they are obese) and BMI check (to confirm the verbal report).

Each participant's BMI was calculated and assigned to a class according to the United States Department of Health and Human Services' Centres for Disease Control and Prevention definition of adult overweight & obesity (CDC, 2021) – see Appendix 1. Participants' family units were contextualised according to the definition of Pasley and Petren (2016), where a family unit is defined as the members of a household who are linked by marriage or bloodline. In line with the culture and religious norm in Nigeria, these family units are identified as two-parent, one-parent and living with

neither parent (e.g., adoptive families, grandparent families or other relatives, foster care families, institutionalised children). After subsequent contacts and clarifications, 42 participants confirmed their interest to participate in the study. Participants were signed up with agreed dates and times for the interview. The participants were both male and female, and their ages ranged from 18 to above 60. In addition, the participants' level of education ranged from no formal education to PhD degree holders. Table II presents abridged demographic information for the participants while a detailed version is presented in **Appendix 1.**

-------Table II about here-------

3.3. Data collection

In addition to sourcing the research participants, the research agency was also responsible for conducting the research interviews. Data was collected through an interview guide and protocol (see appendix 2) developed by the research team. There was a pilot interview with seven obese participants who were not part of the final sample. The pilot study was beneficial for various reasons. First, it allowed the research team to better understand and capture the context of the informant's situation, helping clarify and establish their unique circumstances. Second, it allowed for a better working understanding between the research agency, lead consultant, the research assistants and the research team. Third, following on from the pilot study, the research team improved the wording of the interview questions and the order in which they had asked them – to reflect the observations made during the pilot study (Mogaji and Nguyen, 2021). These pilot interviews were conducted in the English language, as English is the official language in Nigeria (Mogaji *et al.,* 2021)

The updated and revised interview guide comprised a series of open-ended questions focusing on the participant's family unit, the relationship between their family unit and obesity, their recognition of being obese, and the role and influence of social marketing on their consumption behaviour and lifestyle (see Appendix 2 for the interview guide). These interviews were conducted and completed in August 2021 and were all carried out in the English language. The interviews were conducted face to face with the participants' prior consent. The participants were assured of their

anonymity and that the data collected would be used solely for academic purposes. Participants were also made aware that they could stop the interview at any time, if they did not wish to continue. Participants were compensated for their time with a mobile telephone credit. The recorded interview conversation and transcription across the fieldwork were saved on a shared drive which was accessible to the research agency and the research team. Accordingly, this allowed the research team to have a regular update of the collected data and for discussion and verification with the research agency. We used serial numbers for each participant, and we removed every piece of identifiable information such as age, place of employment or residence. The 42 interviews lasted from 28 and 43 minutes in length (median 31 min). Audio from the interviews was recorded and transcribed by the research agency and saved as PDF files ready for the thematic analysis.

3.4. Data analysis

Braun and Clarke's (2006) six phases of analysis were adopted for the data analysis. The first phase was concerned with the familiarisation with and immersion in data. This involved reading the interview transcripts repeatedly to become familiar with the data. Each of the interviews was considered a unit of analysis to reflect the personal, narrative accounts of the study participants (Mogaji and Nguyen, 2021). Second, the transcripts were imported into NVIVO, a qualitative analysis software tool, and initial codes identified the role of the family unit in driving obesity, the participants' recognition of their obesity and the social marketing interventions addressing obesity in the society. The third phase was concerned with the growing number of codes that were identified across the data set and arranging them into more meaningful themes. All the codes were subsequently collated and assigned to a relevant overarching theme, which qualitatively highlights the participants' psychological perspectives on obesity. The fourth phase involves revising and refining the themes to address the research objectives. During this stage, as adopted by Farinloye et al. (2019), some themes were further merged because of inadequate data to support them. Also, some themes were developed further.

The fifth phase was concerned with drawing a thematic map of the data, highlighting the participants' explanation of how their family unit drives their obesity, their recognition of obesity and social marketing inventions used to reduce their obesity. This phase of theme sorting and arrangement was carried out after detailed analysis and discussion within the research team. Table III presents the summary of 54 initial codes (first-order concepts, third phase of thematic analysis) which were later nine themes (second-order concepts, fourth phase of thematic analysis) and finally into three main themes addressing the research objectives (aggregate dimension, fifth phase of thematic analysis). These findings reflect a synthesised presentation rather than a detailed recount of individual narratives. The sixth and final stage involved a write-up of the report presented in the next section. This contextual data was the primary sources for developing the summary of findings presented within the findings section.

---- Insert Table III About Here ----

3.5. Credibility and authenticity

Considerable efforts were taken to ensure the credibility of the study. First, the research agency used an Open Data Kit (ODK) to collect data. ODK is an open-source suite of tools that allows data collection using Android mobile devices and data submission to an online server, even without an internet connection or mobile provider service at the time of data collection (Mogaji and Nguyen, 2021). ODK streamlines the data collection process by replacing traditional paper forms with electronic forms that allow text, numeric data, GPS, photo, video, barcodes and audio uploads to an online server (ODK, 2021). Tom-Aba et al. (2015) used this innovative technological approach to explore the Ebola virus disease outbreak response in Nigeria and considered it a relevant tool for research when participants' privacy concerns are to be respected, especially with health-related data. ODK also captures geo-location of the collected data, which allows the research agency and research team to know the location at which the interviews are being conducted and that the data is not being fabricated.

Second, as Miles et al. (2013) posit, our data credibility is bolstered by a rigorous peer debriefing process, check-coding, and the constant comparing of data across the research team, research assistants and the lead consultant. Third, the transcribed data was shared with the research participants to confirm and verify the information that has been collected. This is described as a 'member check'. Merriam and Tisdell (2015) describe the member check as a respondent validation procedure and it is considered the most critical provision that can be made to bolster a study's credibility. Fourth, as advised by Shenton (2004), we provided a detailed account of the methods, procedures and decision points in carrying out this study in the form of an 'audit trail'. The assurance of analytic rigour is to ensure that data was not selectively used. The researchers' position did not overpower the participants' voices, as evidenced by the audit trail. Fifth, the clustered and grouped themes are presented in Table III to show the different stages of the analysis and improve the trustworthiness and traceability of our data analysis. Lastly, we used a detailed description of quotes from the interviews to bolster each sub-theme.

4.0. Findings

Three key themes emerged from the data analysis: family unit, recognition of obesity and social marketing interventions. These themes are discussed in the next sections and buttressed with direct quotes from the study participants. The quotes are ascribed to anonymous individuals who are described by this code: participant's serial number/gender (male or female)/obesity class (class 1, 2 or 3). More detailed verbatim quotes are available in Appendix 3.

4.1 Family unit

The findings reveal that an individual's family unit shapes their psychological perspectives of obesity. Sub-themes were around the environment and the household (which includes the extended and nuclear family and friends).

4.1.1. The environment

These are features that supersede the immediate, nuclear or extended family and represent what is applicable within the society. The perception and attitude towards obese people within the society can also pose a psychological challenge, which drives obesity (Voola *et al.,* 2018). Participant P1/M/C1 noted, *"When I was growing up, obesity in Nigeria was not often considered negatively. People seem to understand when people are obese, and they even see it as a sign of good living. My siblings were even jealous of me then, as I was bigger than them*." The media portrayal of obesity is also of interest to the participants. The participants noted that seeing obese people on TV and social media made them feel good about themselves and gave them a sense of reassurance and hope of being accepted in society. Participants who grew up with their parents and siblings acknowledged that their parents and siblings rarely made them feel obese. According to participant P18/F/C1:

> *"My mother often tells me that I am not too fat, she shows me pictures of people on TV and pictures of people in the newspaper who are fat, and this often makes me feel assured that I am fine."*

4.1.2. The household

The cultural norms, values and attitudes within members of the family household towards food were presented as a key component contributing to participants' obesity. The participants recognised that eating together was a family bonding occasion, and they often ate whatever was available. One participant, who grew up with his parents and siblings, noted that:

> *"It's always a reuniting time to eat together as a family. You don't care about the portion you are eating, provided it's available. We believe food is to be eaten, and therefore you enjoy yourself once it is available."* (P7/M/C1)

Participant P32/F/C2, who grew up with her grandparent, also reiterated this notion, especially regarding how much her grandmother cared for her. She stated:

> *"I lived with my grandmother because my parents went to the city to work and study. My grandmother pampered and took good care of me. I was never hungry as I had access to all sort of food… My parents even said I looked chubby whenever they come visiting… I enjoyed my time with my grandmother but, upon reflecting, I think I should have been more cautious of the way I was just eating."*

With Nigeria being a male-dominated society (Hofstede *et al.,* 2005; Igwe *et al.,* 2020), the position of men and women within the family unit structure also came up as a contributing factor to obesity. This is especially relevant to women, who felt that they had been exposed to food shopping and cooking at a very early age, when compared to male children. The female participants acknowledged that it was a cultural norm when growing up that woman did all the cooking, and they mentioned this as a contributing factor to their obesity. Participant P24/F/C2, who lived with a single parent and siblings, stated:

> *"In my family, all the boys are slim while the girls are obese… my mother wanted to ensure we become strong women and [were] able to take care of the family… while the boys are often outside and playing with their mates, myself and my sister stayed at home cooking and eating."*

This was also corroborated by another female participant (P21/F/C1), who lived with a foster family:

> *"I lived with foster parents, and they placed a lot of responsibilities on me. I [would] do the food shopping and even do the cooking…I wanted to take care of myself, and I could eat anything I really wanted… I had no understanding about the implications of my actions and my foster parents didn't really say much, I guess they did not want to offend me."*

Lack of financial resources to buy healthy food and products was another contributing factor. Participants noted that buying healthy food when growing up was a struggle because their family unit could not afford it, contributing to their unhealthy eating behaviour and, in turn, their obesity. One of the participants, a female from Southwest Nigeria (P42/F/C3), noted that, *"We buy leftover food from the market. We overate starch growing up because my [mother] couldn't afford any of those healthy foods, and I am sure it may have contributed to my state now."* This was echoed by participant P12/M/C1:

> *"Going to my uncle's house over the school holidays exposed me to overeating. We were not very rich, so I [went] to my cousin's place during the holiday…they are more affluent, and food is always in abundance and most times. I ate a lot of everything that was available. Even when I wanted to go to university, I chose a university [near] them… I stayed with them during my undergraduate studies. They were very generous with food. Whenever I go back to my parents, they always talk about how my uncle feeds me. My love for food started when I was staying with them."*

In sum, these findings disclose how the family unit, consisting of the environment and members of the family unit household, shape an individual's consumption behaviour and, in turn, drive their obesity. This finding is in line with the social marketing theory, as we reveal the underlying factors behind the unhealthy consumption behaviour – which contributed to obesity – of the study participants (Peattie and Peattie, 2009).

4.2 Recognition

With obesity now a public health concern in Nigeria (Adepoju, 2021; World Obesity Report, 2021), our findings reveal that the participants are aware of their obesity. The findings show the psychological process obese individuals go through, before recognising that they need to change their consumption behaviour for a healthier lifestyle. The findings show that the participants usually start by not caring (*I don't care* stage, n=18, 42.8%), then they become more aware (*I know* stage, n= 15, 35.7%) and then subsequently choose to address their obesity (*I care* stage, n=9, 21.4%).

4.2.1 I don't care

This is the first stage of the recognition process. Eighteen participants within the sample were at this stage. They were predominantly male (n=11, 61.11%), lived with both parents and siblings (n=9, 47.3%) and classified as 'Class 2' obese (n=10, 52.6%). These participants acknowledge that they are fine (with their obesity) and do not care about what people say, as they are well accepted within the society. According to participant P10/M/C2, *"I owe nobody any explanation… I am fine like I am. My family likes me like this, and my friends have accepted me like this."* Among some of these participants, there is often the notion that their obesity is not their fault or something they could control. Some participants noted that it was their fate. Participant P20/F/C2 stated, *"It is my nature to be fat. Since I was a small baby, I have been fat. I have come a long way living with it. It's not a disability, and I am fine like this*." Furthermore, participant P19/F/C2 was of the opinion: "*Do you know how many people call me fat and other derogatory names a day? I don't care. This is who I am, and I can't change it. We*

are all different, and I am not sorry for who I am." In addition, Participant P18/F/C1 noted: "*People look at me differently, and they want me to fall and laugh at me… I know why but I am a strong, independent and focused woman, I don't really care about what they say*."

4.2.2 I know

This is the second stage of the recognition process. Fifteen participants within the sample were at this stage. Unlike the '*I don't care'* stage, participants in this stage were predominantly female (n=11, 73.3%), between the ages of 30 and 49 (n=5, 33.3%) and classified as Class 1 obese (n=7, 46.6%). At this stage, the participants are becoming more aware of the direct and indirect medical costs associated with obesity and are eager to live a healthier lifestyle. Participant P28/F/C1 shared her experiences during sporting activities at her child's school: *"I could not run as part of the parents' sports activities, I was ashamed of myself as I embarrassed my daughter. I knew I was fat, I reckoned I had a problem that needs to be addressed."* Participant P41/F/C1 noted:

> *"I have been watching my weight for many years now, I am over 60 [years] and I am aware of the health complications with my weight. I know I am obese, I am trying but you need to understand I have struggled with this for many years."*

This was further reinforced when they are shopping for clothes and are unable to find clothes in their size, and so they often have to make a customised dress, which can be very expensive. In a situation where they cannot afford to do so, this affects their self-esteem. Participant P28/F/C1 stated that:

> *"We were meant to buy Aso Ebi [uniform cloth material] for a party. I discovered that I had to buy an extra yard of fabric because my size was too big. I felt I had to start paying extra for my dresses. I knew I had to change."*

The participants at this stage revealed that it became a challenge sourcing their underwear because they could not get their size. Participant P40/F/C1 reiterated: *"This can be very embarrassing if you can't find your size in the market and [have to ask] a tailor to make your underwear. I kn3w I had to overcome this shame and work on my size."* There are also cases of social marginalisation. Participant P32/F/C1 noted that, *"…sometimes I have to take [an] Uber because I don't want to start struggling*

with people on the bus." This participant indicated the experience made her more aware and conscious of her weight and, in turn, she wanted to live a healthier lifestyle. Participant P33/F/C1 stated that: *"People call you Orobo (colloquial Yoruba word for obese in Nigeria)… often they don't mean harm… they want to stare at you, instead of having a face-to-face conversation... they would be looking at my chest. It can be distracting and embarrassing."* Thus, at this stage, the individuals are willing to make a change and live a healthier lifestyle.

4.2.3. I care

Nine participants within the sample were at this stage. Seven of them were female, and all the participants in this group were employed and had a university degree apart from one with secondary school education. At this stage, the participants have recognised the direct and indirect medical costs of obesity on their health and general well-being and thus are willing to act accordingly to address their obesity. Participant P23/F/C1 noted that she got to address her obesity "…*when I was pregnant and had to lose weight for the sake of my baby."* According to participant P36/F/C2:

> *"I care about my weight a lot now, and I try to reduce my food, do exercise, and seek medical assistance…. I have tried going to [the] gym, swimming and even walking; those things can be expensive, but I know there is a cost to pay for my wellbeing. I have a treadmill at home that I use, and I regularly measure my weight and I have been seeing results."*

In sum, participants at the *'I care'* stage of recognition genuinely care about their health and are eager to search for information to help them make better healthy lifestyle choices. Participant P13/M/C1 noted that: *"I am very mindful of what I eat now, I have been looking out for personal trainers and [a] gym, searching on the internet, and asking around. I need to act fast."* This is the last stage of the recognition process, which involves concrete action shaped by their exposure to information around obesity.

4.3 Social marketing interventions

The respondents pointed out the social marketing interventions employed to reduce – and prevent – obesity rates in the Nigerian society. Our findings revealed that, through these social

marketing interventions, the participants were living a healthier lifestyle, while working to reduce their obesity. These interventions centred around four sub-themes: local celebrity endorsements, healthy-lifestyle promotions, reduced gym membership, and affordable access to healthy foods and services**.** The aim of these social marketing interventions is to encourage people to live healthier lifestyles, which is in line with the social marketing theory (Gordon *et al.,* 2018; Rundle-Thiele *et al.,* 2019).

4.3.1 Local celebrity endorsements

Over the last two decades, Nigeria's entertainment industry (including live entertainment, music, film, publishing, etc.) has witnessed rapid development and has received national and international audiences (Primera Africa Legal, 2021). For example, the Nigerian film industry (named Nollywood) is the third largest and fastest growing in the world – after Hollywood and Bollywood. In the same vein, Nigeria's music industry is the largest in Africa, has produced several Grammy award-winning artists and generated over $60 million dollars in 2020 (Nnamdi and Oludayo, 2021). To this end, there is a growing number of local celebrities in Nigeria who are adored by their large fan base. Accordingly, our findings show that that one of the social marketing intervention channels used to prevent and reduce obesity in Nigeria is 'local celebrity endorsements'. Participant P4/M/C2 noted that, *"I follow Kate Henshaw [A Nigerian movie celebrity] on Instagram, and I follow her activities. She is not obese, but she is always advertising and promoting healthier lifestyle living content on her page. As someone I adore, I always practice what she says."* This was also corroborated by participant P26/F/C2:

> *"Even though I work from 7am till 7pm, I always make sure I check Kemen's [fitness and well-being celebrity] Instagram page, to see the healthy products and exercise he advises we should do, and I always do them. As I do not have time to go to the gym, Kemen's recommendations of these products and home exercises have really helped me a lot in staying more fit."*

Participant P35/F/C1 noted that: "*I lost 3kg last month and I believe it's linked to the slimming tea Sandra (a Nigerian fitness celebrity) endorsed online, which I bought."* Furthermore, participant

P29/F/C1 stated: *"How can you drink tea and lose weight? I did not believe it till Davido [a music celebrity] posted it on his Instagram story, and I decided to buy it. It's been working for me."*

4.3.2. Healthy-lifestyle promotions

Our findings revealed that healthy-lifestyle promotion on TV or billboards, in newspapers or leaflets, via word-of-mouth or social media was one of the social marketing intervention channels used to reduce and prevent obesity in the Nigerian society. According to Divine and Lepisto (2005, p.275), a healthy lifestyle is "*…an orientation toward the prevention of health problems and the maximization of personal wellbeing."* Subsequently, our findings revealed that promotions around healthy products and services encouraged the participants to work towards reducing their obesity. Participant P39/F/C2 stated: *"There's this advert I saw on NTA [a local television station in Nigeria] that showed the importance of integrating fruits into one's meal. See, I am not really a big fan of fruits but, because of the way the advert was presented, I was keen to try fruits. I started with the sweet ones though – pineapples, apples, oranges etc."* Seven participants noted seeing healthy products and services adverts and promotions on billboards and leaflets around public transport areas, and such promotions encouraged them to work towards reducing their obesity. According to participant P24/F/C2, "*I remember when I travelled from Lagos to Abuja by road and there was this man on our bus that was promoting a product that could lower blood sugar and cholesterol levels in the body. I bought the drug and I have been taking it since then."* Furthermore, participant P13/M/C1 noted: "*I went to watch football in a viewing centre, and I stopped to read a newspaper at the news stand. As I turned to the second page, [I] saw this vitamin drug advert [shows the research agent], which has given me more energy and made me engage more in physical activities."*

4.3.3 Reduced gym membership

One of the social marketing intervention channels that our findings revealed is reduced gym membership. As the aim of social marketing is to change unhealthy consumption behaviours (Gordon *et al.,* 2018; Rundle-Thiele *et al.,* 2019), the participants noted the reduced gym membership made it

easier for them to register at a gym, and contributed to reducing their obesity. Participant P29/F/C1 noted, *"There's [a] new gym next to my house and, when they opened, the offered [a] 50% discount on people [whose weight was] on the high side. This made it easier for me and I quickly registered."* Participant P36/F/C2 shared the following: "*Due to the nature of my job, I hardly have time engage in any physical activity. On my way back from work, I saw this gym that [was] offering free classes and reduced prices to get a personal trainer. I quickly registered with them, and this really helped me on my weight-loss journey."* Participant P4/M/C2 further added to this notion, stating: *"There's a gym on almost every street now. At first, I was shy of joining because of my weight but I was offered a free discount and I got to meet other people that are also trying to lose weight and live healthier. This has really helped me as we all encourage each other to keep going."*

4.3.4 Affordable access to healthy foods and services

Despite Nigeria's favourable economic prospects, over 70% of her population are living below the poverty line (Mcleay and Oglethorpe, 2013). In the same vein, Patel et al. (2015) posit that low-income-earning families may not be able to afford nutritious and healthy food. Hence, our study findings revealed that the affordable access to healthy foods and services influenced the participants' consumption behaviour towards healthier foods, in turn, reducing their obesity. According to participant P11/M/C3, "*I started buying more vegetables when it became cheaper... I noticed that this also applied to fruits and soya milk, and I have incorporated them into my food consumption now."* This was echoed by participant P36/F/C2, who noted that: "I *was finally able to check my blood sugar levels when the hospital offered free health-testing services in my community. The results showed that I had high cholesterol. At this point, I knew I had to do something as I was not ready to die… I have now started eating meals that are low on fat and I have started walking more. In fact, I try to walk back from work whenever I can."* Furthermore, participant P27/F/C2 noted: *"You know Nigeria is not easy. Everything [is] just hard. Free healthcare check-up services by my church really helped me. I know now*

know that I must live better now". Participant P26/F/C2 shared the following: *"Every Wednesday, my church group sells fresh vegetables at a very reduced price for [the] less privileged in the society. Sometimes, they even offer them for free. This has made it possible for me to integrate more fresh vegetables in my meal and work towards controlling my condition*."

5.0 Discussion and Implications

Building on social marketing theory, this study examines the relationship between family units and obesity in Nigeria and the social marketing intervention channels used to prevent and reduce the levels of obesity in the Nigerian society. To this end, we adopted a semi-structured interview research design with 42 obese individuals in Nigeria to test our research aim. Findings from our study show: (1) the family unit an individual is born into influences their consumption behaviour, which drives their obesity; (2) that obese Nigerian citizens are willing to live healthier lifestyles due to the direct and indirect medical costs associated with obesity; and (3) the social marketing interventions – local celebrity endorsements, healthy lifestyle promotions, reduced gym membership, and affordable access to healthy foods and services – used to prevent and reduce the rising obesity rates in the Nigerian society. These findings have significant theoretical and practical implications for academic researchers, social marketers, government officials and public policy.

5.1 Theoretical implications

Our findings make three key contributions to the extant obesity and social marketing literature by drawing insights from obese individuals in Nigeria. First, our study observes for the first time, as per the social marketing theory, that family units in Nigeria shape the consumption behaviour of individuals, which, in turn, drives their obesity. Specifically, our findings show that the 'environment' where the family unit is situated and members of the family 'household' shape the consumption behaviour of individuals, which drives their obesity. These findings are in line with Wijayaratne et al. (2018) and Voola et al.'s (2018) argument that environmental and social factors are

the drivers of unhealthy food choices and obesity. For instance, participant P1/M/C1 noted: *"When I was growing up, obesity in Nigeria was not often considered negatively. People seem to understand when people are fat, and they even see it as a sign of good living."* Due to the cultural values attached to obesity in the 'environment' where this participant was growing up in, the participant (and their family members) did not view obesity negatively and this contributed to the individual's unhealthy food consumption, driving their obesity. Furthermore, our findings reveal the role of members of the family 'household'. For example, participant P32/F/C2 noted, "*I lived with my grandmother because my parents went to the city to work and study. My grandmother pampered and took good care of me. I was never hungry as I had access to all sort of food… My parents even said I looked chubby whenever they come visiting… I enjoyed my time with my grandmother but, upon reflecting, I think I should have been more cautious of the way I was just eating*."

Furthermore, with Nigeria being a male-dominated society (Hofstede *et al.,* 2005; Igwe *et al.,* 2020), the role of men and women within the family unit was found to shape an individual's consumption behaviour, which drives their obesity. This was reiterated by participant P24/F/C2, who noted: *"In my family, all the boys are slim while the girls are obese,* my mother wanted to ensure we become strong women and [were] able to take care of the family…*, while the boys are often out and playing outside with their mates… myself and sister stays at home cooking and eating*." Furthermore, our findings also reveal that the unavailability of financial resources to purchase healthy products and services shaped an individual's unhealthy consumption behaviour, which drives their obesity. According to participant P42/F/C3: *"…we buy leftover food from the market. We overate starch growing up because my [mother] couldn't afford any of those healthy foods, and I am sure it may have contributed to my state now."* These findings reveal how obesogenic environments and conditions of life (see Wijayaratne *et al.,* 2018), such as family units (Voola *et al.,* 2018; Wijayaratne *et al.,* 2018), in emerging markets shape an individual's food choices and consumption behaviour and, in turn, their obesity. In sum, these finding are in line with the social marketing theory which posits that there are

underlying factors behind an individual's consumption behaviour (Peattie and Peattie, 2009; Gordon *et al.,* 2018; Rundle-Thiele *et al.,* 2019).

Second, in line with the social marketing theory, our study findings reveal the social marketing intervention channels used to reduce – and prevent – the rising obesity rates in the Nigerian society. According to McDermott et al. (2005, p. 545), *"…social marketing is the application of marketing to the solution of social and health problems.*" The aim of social marketing is to adopt commercial marketing tools, concepts and techniques to solve social and health problems and address unhealthy individual and societal behaviour (Hastings and Saren, 2003; Peattie and Peattie, 2009; Wymer, 2011). To this end, our findings show that obese Nigerians have recognised the direct and indirect medical costs associated with obesity. Thus, these individuals are engaging with several social marketing intervention channels to reduce their obesity. Specifically, our findings show that these intervention channels include local celebrity endorsements, healthy-lifestyle promotions, free healthcare testing, reduced gym membership, and affordable access to healthy foods and services. While these are traditional marketing techniques, the aim of these social marketing interventions is to improve the Nigerian population's lifestyle, and in turn reduce the obesity rates in the society (Gordon *et al.,* 2018; Rundle-Thiele *et al.,* 2019).

Third, our study extends the social marketing theory to an underexplored research domain, specifically on obesity research in the emerging market setting of Nigeria. Social marketing theory posits that social and health problems can be solved through applying marketing ideologies to change consumption behaviour (McDermott *et al.,* 2005). Proponents of the social marketing theory posit that understanding the underlying drivers behind an individual's consumption behaviour is the benchmark needed to create social changes and solve health problems (Andreasen, 1995; Hastings and Saren, 2003; Wymer, 2011). Subsequently, our findings reveal the institutional drivers of obesity in Nigeria – the most populous country in Africa. Particularly, our findings show that the family unit an individual grows up in shapes their consumption behaviour, which drives their obesity. The findings reveal that the environment where the family unit is situated, and members of the family unit

household, are the contributing factors within the family unit that drive obesity. Furthermore, the findings reveal that obese Nigerians are aware of the direct and indirect medical costs associated with obesity and are engaging with social marketing intervention channels, which include local celebrity endorsements, healthy-lifestyle promotions, free healthcare testing, reduced gym membership, and affordable access to healthy foods and services, to reduce – and prevent – their obesity.

In conclusion, we answers calls by Chukwuonye et al. (2013), Cronin et al. (2014b), Voola et al. (2018) and Adepoju (2021) for more research studies to examine the institutional drivers and social marketing intervention channels used to reduce the rising obesity rates, especially in the emerging market setting. Subsequently, building on the social marketing theory, our findings show how the familial units in Nigeria drive obesity and the social marketing interventions used to reduce the rising obesity rates in the society.

5.2 Practical implications

Our findings have several practical implications. First, as the participants noted that the lack of financial resources to afford healthy foods and services contributed to their obesity, governments and public policy makers should work towards subsidising prices on healthy foods, products and services, to make them more affordable for families and individuals. In addition, governments should invest in and improve healthcare facilities and services, and invest in more open/green spaces, where families and citizens can freely exercise. Second, governments should enact higher taxes on unhealthy foods, in turn, making it more difficult for families and individuals to afford them. Third, governments should create an economically conducive environment that would make it easier for social marketers to have access to loans to further their business activities. Fourth, social marketers should design interventions that can be targeted more at family units and households as, due to the collectivist culture in Nigeria, familial units are critical sites and conduits of values, practices and food consumption in the society. Finally, educational institutions and places of religious worship (churches, mosques, etc.) should place more emphasis on the health benefits of being healthy, considering the religious nature and background of the Nigerian society.

5.3 Limitations and future research direction

Like with most research studies, there are limitations associated with these current findings, which provide an avenue for future research directions. First, our study only considered obese individuals in Nigeria. As the obesity rates are currently rising in emerging markets, especially those in sub-Saharan Africa, it is important for future studies to investigate the institutional drivers and social marketing interventions used to reduce and prevent obesity across several African countries. Second, the social marketing interventions we posit are based on what the study participants can identify. Hence, it would be worthwhile for future research to examine the underlying factors behind why and how social marketers design their social marketing interventions. Third, our study only focused on adult obese individuals who were over 18 years. On this note, it is paramount for future research studies to investigate the underlying factors behind childhood obesity in emerging markets and the social marketing interventions that can be employed to reduce it. Fourth, future research studies should carry out a longitudinal study to examine the effect of the social marketing interventions on obese individuals in the long term.

6.0 Conclusion

What are the institutional drivers of obesity in Nigeria? Are obese Nigerians aware of the direct and indirect medical costs associated with obesity? What are the social marketing interventions used to reduce and prevent obesity in the Nigerian society? Our findings, based on a survey of 42 obese Nigerians reveal that the family unit—which includes the environment where the family unit is situated and members of the family unit household—influences an individual's consumption behaviour, which drive their obesity. The findings reveal that obese Nigerians are aware of the direct and indirect medical costs associated with obesity and in turn, are willing to live healthier lifestyles. Furthermore, the findings also reveal the social marketing interventions—local celebrity

endorsements, healthy lifestyle promotions, reduced gym membership and affordable access to healthy foods and services—used to prevent and reduce obesity rates in the Nigerian society.

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Table 1: Empirical search studies on obesity

No:	Author (Year)	Research aim	Theoretical perspective	Method	Key findings
1	Voola et al. (2018)	Understand the dynamics of food consumption practices of poor families in the developing economies to advance the Food Well-being.	Poverty framework	Qualitative; semi-structured interviews with 25 women; context of rural South India	The interaction of poor families with food everyday produces the cultural identity of masculinity and femininity and power hegemonies that fix men and women in unequal status.
2	Cronin et al. (2014)	Determine the role of critical practices in seeking social change through understanding the prejudices of obese people's experience with food.	Transformative consumer research	Qualitative; in-depth interviews with 78 men and women; context of Ireland	The individuals' identities and their experiences in the areas of identity, environment, and the body shapes their food behavior conducive to weight gain.
3	Nikolova and Inman (2015)	Examined the effectiveness of a simplified nutrition scoring systems at the point-of-sale to improve eating habits	Nutritional Labeling and Education Act	Quantitative; experiment design; eight product categories for more than 535,000 members of a grocery chain's frequent shopper program;	The point-of-sale nutrition scoring system helped the consumers to make the choice of healthy food. This also made consumer less price-sensitive but more promotion sensitive.
4	Argo and White (2012)	Understand the influence of package size and appearance self-esteem on consumption	N/A	Quantitative; experiment design; two studies: 1) 76 female undergraduate students and 2) 84 male and 123 female undergraduate students	The consumption pattern is cognitively driven. The external appearance of small package (like visible product quantity and the caloric content location and communication) increase consumption, particularly among people with low in appearance self-esteem.
5	Chandon and Wansink (2007)	Understand obesity as a result of the underestimation of the	The Power Law of Sensation	Quantitative; experiment design; three studies: 1) 55 students with low and high body masses in	The same compressive power function is used by high- and low-body-mass people in

		number of calories contained in a large fast-food meal.		estimating the size of eight meals; 2) 156 university students; 3) 147 people interviewed in food courts in three U.S. cities; 4) 405 certified dieticians attending an annual conference of the American Association of Diabetes Educators estimated the calories of three fast-foods.	calorie estimations. A piecemeal decomposition improves calorie estimation and leads people to choose smaller, but equally satisfying, fast-food meals.
6	Besharat et al. (2020)	Explored how rejection (vs. selection) strategy consumer calorie perceptions, retail evaluations, and decisions.	Decision bias and personnel selection strategies	Quantitative; experiment design; four studies: 1) 102 Mechanical Turk panelists; 2) 111 students from a large US-based University; 3) 116 Mechanical Turk panelists; and 4) 191 students.	The rejection (vs. selection) strategies leads to lower calorie estimates, thereby improving patronage intentions and additional order for retailers.
7	Garcia-Collart et al. (2020)	Determined the influence of cultural identity on health appeals' effectiveness to increase Hispanics' healthful choices.	Culture and marketing literature	Quantitative; experiment design; three studies: 1) 159 undergraduate students completed interdependent or independent self-construal priming tasks; 149 undergraduate students participated; and 3) 125 undergraduate students in a subjects-study; context of Hispanic.	The positive response to self-framed vs. social-framed healthy eating was exhibited by Hispanics. Also, cultural perceptions were underlying mechanism and message framing was a moderator of these effects.

Table 2: Abridge Demographics Information of Participants

Demographics		Frequency n=42	%
Gender	Male	17	40.5
	Female	25	59.5
	18 - 29	15	35.7
	30 – 49	11	26.2
	41 – 59	13	31.0
	Above 60	3	7.1
BMI*	Class 1: BMI of 30 to < 35	19	45.2
	Class 2: BMI of 35 to < 40	21	50.0
	Class 3: BMI of 40 or higher	2	4.8
Employment	Student	7	16.7
	Unemployed	6	14.3
	Employed (part-time)	11	26.2
	Employed (full-time)	16	38.1
	Retirees	2	4.8
Education	No formal Education	7	16.7
	Secondary School	17	40.5
	First Degree (Bachelors)	13	31.0
	Second Degree (Masters)	4	9.5
	Third Degree (PhD)	1	2.4
Location	North-West	6	14.3
	North-East	6	14.3
	North-Central	7	16.7
	South-East	9	21.4
	South-South	6	14.3
	South-West	8	19.0
Family Unit	Lived with both parents and only child	4	9.5
	Lived with both parents and siblings	15	35.7
	Lived with single parent and only child	3	7.1
	Lived with single parent with siblings	6	14.3
	Lived with Grandparent	7	16.7
	Lived with family members	4	9.5
	Lived with non-family members	3	7.1

Table 3: Summary of Key Themes

s/n	Initial codes (first-order concepts, third phase of thematic analysis)	Sub-themes (second-order concepts, fourth phase of thematic analysis) (n=frequency of themes in 42 participants)	Main themes (aggregate dimension, fifth phase of thematic analysis)
1.	Applicable within the society	The Environment (n=32)	Family Unit
2.	The perception of obese people		
3.	The attitude towards obese people		
4.	The media portrayal of obesity		
5.	A sense of reassurance		
6.	Hope of being accepted in society		
7.	The parents supporting the societal acceptance		
8.	The cultural values and attitude towards food	The Household (n=28)	
9.	Eating being a regular part of family activities		
10.	Eating what is available		
11.	Parent's job/career		
12.	Location and access to resources		
13.	Socio economic background		
14.	Understanding of quality food		
15.	Financial resources to buy food		
16.	The person responsible for buying and cooking		
17.	The gender of the individual		
18.	The positioning within the family		
19.	Individual don't care about their obesity	I Don't Care (n=18)	Recognition
20.	Acknowledge that they are fine		
21.	Do not care about what people say		
22.	They are well accepted within the society		
23.	Too late to change		
24.	It was their nature to be obese		
25.	They accepted their fate		
26.	Individual is becoming more aware	I Know (15)	

27.	Aware of the public perception of their weight		
28.	Feel low self-esteem		
29.	Eager to act		
30.	Recognising challenges around shopping		
31.	Experiencing social marginalisation		
32.	Willing to act	I care (n=9)	
33.	Reflecting on their experiences and awareness		
34.	They get an official confirmation of their obesity		
35.	Recognise the health implications		
36.	They seek help and by seeking medical assistance		
37.	Searching for information to help them make an informed choice.		
38.	Interested in marketing communications		
39.	Read claims on food labels		
40.	Can decipher information from social media		
41.	Social media health campaign by celebrities	Local celebrity endorsements (n=32)	Social Marketing interventions
42.	Celebrity content creation on health issues		
43.	Advert of health products and services by celebrities		
44.	Online opinion of Celebrities on health issues		
45.	Celebrity endorsement of healthy products and services		
46.	Health Technology	Heathy-lifestyle promotions (n=28)	
47.	Health promotions on TV, newspaper, leaflets, social media		
48.	Health products and service packaging		
49.	Discounts on gym services	Reduced Gym Membership (N=24)	
50.	Sales on gym services		
51.	Family discounts on gym services		
52.	Cheaper prices on healthy food and services	Affordable access to healthy foods and services (n=36)	
53.	Free healthcare services		
54.	Discounts on healthy food		

Appendix 1: Full demographics information of participants

Participants' Code	Gender	Age	BMI	Employment	Education	Location	Family Structure	Recognition Stage
P1/M/C1	Male	18 - 29	Class 1: BMI of 30 to < 35	Student	Secondary School	North-Central	Lived with both parents and siblings	I don't care
P2/M/C1	Male	18 - 29	Class 1: BMI of 30 to < 35	Student	Secondary School	North-East	Lived with family members	I don't care
P3/M/C1	Male	18 - 29	Class 1: BMI of 30 to < 35	Employed (part-time)	No formal Education	North-West	Lived with non-family members	I know
P4/M/C2	Male	18 - 29	Class 2: BMI of 35 to < 40	Employed (part-time)	No formal Education	North-East	Lived with both parents and siblings	I know
P5/M/C2	Male	18 - 29	Class 2: BMI of 35 to < 40	Employed (full-time)	First Degree (Bachelors)	South-East	Lived with single parent with siblings	I don't care
P6/M/C2	Male	18 - 29	Class 2: BMI of 35 to < 40	Employed (full-time)	First Degree (Bachelors)	North-East	Lived with both parents and siblings	I don't care
P7/M/C1	Male	30 - 49	Class 1: BMI of 30 to < 35	Student	Secondary School	South-South	Lived with both parents and siblings	I don't care
P8/M/C2	Male	30 - 49	Class 2: BMI of 35 to < 40	Unemployed	First Degree (Bachelors)	South-East	Lived with family members	I don't care
P9/M/C2	Male	30 - 49	Class 2: BMI of 35 to < 40	Unemployed	Secondary School	North-West	Lived with single parent with siblings	I don't care
P10/M/C2	Male	30 - 49	Class 2: BMI of 35 to < 40	Employed (part-time)	No formal Education	North-Central	Lived with both parents and only child	I don't care
P11/M/C3	Male	30 - 49	Class 3: BMI of 40 or higher	Employed (part-time)	First Degree (Bachelors)	South-South	Lived with Grandparent	I care
P12/M/C1	Male	41 – 59	Class 1: BMI of 30 to < 35	Employed (full-time)	First Degree (Bachelors)	South-South	Lived with both parents and siblings	I don't care
P13/M/C1	Male	41 – 59	Class 1: BMI of 30 to < 35	Employed (full-time)	First Degree (Bachelors)	South-East	Lived with Grandparent	I care
P14/M/C1	Male	41 – 59	Class 1: BMI of 30 to < 35	Unemployed	No formal Education	North-West	Lived with single parent with siblings	I know
P15/M/C2	Male	41 – 59	Class 2: BMI of 35 to < 40	Employed (part-time)	No formal Education	North-East	Lived with family members	I don't care
P16/M/C2	Male	41 – 59	Class 2: BMI of 35 to < 40	Employed (full-time)	Secondary School	South-East	Lived with non-family members	I don't care
P17/M/C2	Male	60+	Class 2: BMI of 35 to < 40	Retirees	Third Degree (PhD)	South-West	Lived with both parents and only child	I know
P18/F/C1	Female	18 - 29	Class 1: BMI of 30 to < 35	Student	Secondary School	North-East	Lived with both parents and siblings	I don't care
P19/F/C2	Female	18 - 29	Class 1: BMI of 30 to < 35	Student	Secondary School	North-Central	Lived with both parents and siblings	I don't care
P20/F/C2	Female	18 - 29	Class 2: BMI of 30 to < 35	Student	Secondary School	North-Central	Lived with both parents and siblings	I don't care
P21/F/C1	Female	18 - 29	Class 1: BMI of 30 to < 35	Employed (full-time)	Secondary School	South-East	Lived with non-family members	I don't care
P22/F/C1	Female	18 - 29	Class 1: BMI of 30 to < 35	Employed (part-time)	Secondary School	South-South	Lived with both parents and siblings	I don't care
P23/F/C1	Female	18 - 29	Class 1: BMI of 30 to < 35	Employed (full-time)	First Degree (Bachelors)	South-South	Lived with both parents and siblings	I care
P24/F/C2	Female	18 - 29	Class 2: BMI of 35 to < 40	Employed (full-time)	First Degree (Bachelors)	South-East	Lived with single parent with siblings	I care
P25/F/C2	Female	18 - 29	Class 2: BMI of 35 to < 40	Employed (part-time)	Secondary School	South-West	Lived with both parents and siblings	I don't care
P26/F/C2	Female	18 - 29	Class 2: BMI of 35 to < 40	Employed (full-time)	First Degree (Bachelors)	North-Central	Lived with Grandparent	I care
P27/F/C2	Female	30 - 49	Class 2: BMI of 35 to < 40	Student	Secondary School	South-South	Lived with both parents and only child	I know
P28/F/C1	Female	30 - 49	Class 1: BMI of 30 to < 35	Unemployed	Secondary School	South-East	Lived with Grandparent	I know

P29/F/C1	Female	30 - 49	Class 1: BMI of 30 to < 35	Unemployed	Secondary School	South-West	Lived with both parents and siblings	I know
P30/F/C2	Female	30 - 49	Class 2: BMI of 35 to < 40	Employed (part-time)	No formal Education	North-West	Lived with single parent with siblings	I know
P31/F/C2	Female	30 - 49	Class 2: BMI of 35 to < 40	Employed (full-time)	Secondary School	North-West	Lived with single parent and only child	I don't care
P32/F/C1	Female	30 - 49	Class 1: BMI of 30 to < 35	Employed (full-time)	First Degree (Bachelors)	North-East	Lived with Grandparent	I know
P33/F/C1	Female	41 – 59	Class 1: BMI of 30 to < 35	Unemployed	First Degree (Bachelors)	South-East	Lived with Grandparent	I know
P34/F/C1	Female	41 – 59	Class 1: BMI of 30 to < 35	Employed (part-time)	No formal Education	North-West	Lived with family members	I know
P35/F/C1	Female	41 – 59	Class 1: BMI of 30 to < 35	Employed (full-time)	Secondary School	South-East	Lived with both parents and only child	I care
P36/F/C2	Female	41 – 59	Class 2: BMI of 35 to < 40	Employed (full-time)	Second Degree (Masters)	South-West	Lived with single parent with siblings	I care
P37/F/C2	Female	41 – 59	Class 2: BMI of 35 to < 40	Employed (part-time)	Second Degree (Masters)	South-West	Lived with both parents and siblings	I care
P38/F/C2	Female	41 – 59	Class 2: BMI of 35 to < 40	Employed (part-time)	Second Degree (Masters)	South-West	Lived with both parents and siblings	I care
P39/F/C2	Female	41 – 59	Class 2: BMI of 35 to < 40	Employed (full-time)	Secondary School	North-Central	Lived with both parents and siblings	I know
P40/F/C1	Female	41 – 59	Class 1: BMI of 30 to < 35	Employed (full-time)	Second Degree (Masters)	South-West	Lived with Grandparent	I know
P41/F/C1	Female	60+	Class 1: BMI of 30 to < 35	Retirees	First Degree (Bachelors)	North-Central	Lived with single parent and only child	I know
P42/F/C3	Female	60+	Class 3: BMI of 40 or higher	Employed (full-time)	First Degree (Bachelors)	South-West	Lived with single parent and only child	I know

Appendix 2: Interview Protocol and Interview Guide

Interview Protocol: A semi-structured interview, recorded and transcribed.

Title of Project:
Participant Pseudonym:
Time of interview:
Date:
Location:
Interviewer:

Questions:
Note for Interviewer.

- Thank the individual for participating in this interview.
- Assure them that the interview will be recorded, and responses used solely for academic purposes
- Reassure of confidentiality of responses.
- Explain what obesity is to the respondents.

Family Unit

1. How would you describe your family?
2. How many siblings do you have?
3. How about your parent (still married or separated)? What type of work are/were they doing?
4. How would you describe your level of education compared to your siblings?
5. What were your fond memories regarding food—for instance, during festive periods like Christmas, Salah—growing up as a kid?
6. How would you describe food shopping in your family when growing up? Who did the food shopping when growing up?
7. Who does the cooking?
8. How would you describe the role of the person making the food in your family?
9. Would you say you influenced what was being bought/cooked?
10. Would you say you were aware of healthy food choices when growing up?
11. How would you describe your neighbourhood when growing up?
12. How would you describe obesity? What do you know about it?
13. Do you remember seeing anyone being obese?
14. What do you think contributes to your obesity? (Ask if they think their family unit affected their obesity, if not mentioned)
15. Do you think the variety of food you eat in Nigeria makes one obese?
16. Do you think people cared about obesity when you were growing up?

Recognition

1. Do you think Nigerian society should be worried about obesity?
2. Do you think obesity is a sign of good living? (Have a background question asking them how their financial background influences this. This will cover question 4)
3. Do you have any concerns about your health?
4. Has a health professional confirming that you are obese?
5. How do you feel about your weight?
6. Do you have any psychological feelings about your weight? (e.g., does your weight affect your self-esteem, work etc.,)

7. Would you say your family upbringing influenced your weight? (Asked this again ONLY if the respondent do not talk about this in the beginning).
8. Would you say the food you were eating made you obese?

Social Marketing Intervention

1. What are you doing to address your obesity?
2. What do you say to those who feel they are obese?
3. Do you think healthy food options can help you manage your weight?
4. Would you say you have access to those types of food options in Nigeria?
5. Do you think those healthy foods are too expensive or people do not know about them?
6. Do you think healthy foods should be advertised?
7. What information do you search for when you want to buy food?
8. Have you tried buying something different before based on the information (or lack of it) for what you were looking for?
9. Why did you try it? Did you see any advert?
10. Do you find the information from the label, or where did you seek the information from (and what if you did not find the information, what would you have done?)
11. What do you think of advertisements about food that can make people obese?
12. How about an advertisement for weight loss products on Instagram? Do you think that is good?
13. Do you think celebrities should be selling weight loss products?
14. Would you buy a health product because a celebrity recommended it?
15. Would you consider leading a healthier living style, e.g., gym, watching your calorie intake?
16. Do you know of any gym or health services providers?
17. How did you know about the gym or health service provider?
18. Can you describe the different healthy living styles that you might be doing? (e.g., going to the gym or eating more healthy foods)
19. Would you consider engaging with any marketing communications on healthy living styles? If yes, which ones?
20. Do you think there is enough market awareness about the benefits of living healthy? Can you list them?
21. Are you aware of any healthy living apps? Blog posts?
22. How would you describe the role of markets in addressing obesity?
23. Do you think the government has a role in managing obesity? (Categorise different levels of government (local, state and federal). Government agencies like NAFDAC)
24. What else do you think can be done to address obesity?

Appendix 3: Main themes, sub-themes, and Verbatim quotes from participants

Main themes	Sub-themes	Verbatim quotes from participants (quotes are coded as - participants serial number/gender/class of obesity)
Family Units	The Environment	*''When I was growing up, obesity in Nigeria is not often considered negatively. People seem to understand when people are obese, and they even see it as a sign of good living. My siblings were even jealous of me then, as I was bigger than them''* **P1/M/C1** *''You need to recognise that parents have a part to play in the health and wellbeing of their children, so often when you have a fat child, it's the fault of the parent, but as you grow older and leave the shadows of your parents, you are integrated into a system that does not border or care.''* - **P2/M/C1** *''People may laugh at you and call you names, but nobody means you any harm for being fat in Nigeria; I think there is that general acceptance, at least from what I have experienced, it is just individuals that look at themselves and worry. Nigerians have got many problems than worrying about fat people.''* - **P3/M/C1** *'My mother often tells me that I am not too fat, she shows me pictures of people on Tv and pictures of people in the newspaper who are fat, and this often makes me feel assured that I am fine.'* - **P18/F/C1**
	The Household	''*It's always a reuniting time to eat together as a family. You don't care about the portion you eat, provided it's available. We believe food is to be eaten, and therefore you enjoy yourself once it is available*.'' - **P7/M/C1** *''I lived with my grandmother because my parents went to the city to work and study. My grandmother pampered and took good care of me. I was never hungry as I had access to all sort of food…My parents even said I looked chubby whenever they come visiting…I enjoyed my time with my grandmother but upon reflecting, I think I should have been more cautious of the way I was just eating''* - ***P32/F/C2*** *''In my family, all the boys are slim while the girls are obese… my mother wanted to ensure we become strong women and [were] able to take care of the family…while the boys are often outside and playing with their mates, myself and my sister stayed at home cooking and eating'* - ***P24/F/C2***

		''I lived with foster parents, and they placed a lot of responsibilities on me, I will do the shopping and even do the cooking … I wanted to take care of myself, and I could eat anything I really want …I had no understanding about the health implications of my actions, and my foster parent didn't say much, I guess they did not want to offend me.'' - **P21/F/C1** *''We buy leftover food from the market. We overate starch growing up because my [mother]couldn't afford any of those healthy foods, and I am sure it may have contributed to my state now.''* - **P42/F/C3** *''Going to my uncle's house over the school holidays exposed me to overeating. We were not very rich, so I go to my cousin's place during the holiday…they are more affluent, and food is always in abundance and most times, I ate a lot of everything that was available. Even when I wanted to go to University, I chose a university around them… I stayed with them during my undergraduate studies. They were very generous with food. Whenever I go back to my parents, they always talk about how my uncle feeds me. My love for food started when I was staying with them''* - **P12/M/C1**
Recognition	I Don't Care	*''Do you know how many people call me fat and other derogatory names a day? I don't care. This is who I am, and I can't change it. We are all different, and I am not sorry for who I am.''* - **P19/F/C2** *''Many people think that poor people can't be fat, I am not rich, but I am fine with my weight, it can sometimes be a coverup from my lack of money. This size can sometimes be seen as a sign of good living.''* - **P31/F/C2** *''I owe nobody any explanation…I am fine like I am. My family likes me like this, and my friends have accepted me like this."* – **P10/M/C2** *''It is my nature to be fat. Since I was a small baby, I have been fat. I have come a long way living with it. It's not a disability, and I am fine like this.''* - **P20/F/C2** *''People look at me differently, and they want me to fall and laugh at me…I know why but I am a strong, independent and focused woman, I don't really care about what they say.''* - **P18/F/C1**

		''What do you want me to do? I have tried many remedies, medication, activities even keto fasting. Nothing worked for me. I am going to be this size, and I have to live with it and manage myself very well.'' – **P25/F/C2** *''Many people around me are slim. It's like they are suffering from poverty, I have come to accept I am different, and we all have to laugh at ourselves; you call me names, and I call you names. I don't care what people say about me.''*– **P7/M/C1**
	I Know	*''I could not run as part of the parent's sports activities, and I was ashamed of myself as I embarrassed my daughter, I knew I was fat, I reckon I had a problem that needs to be addressed.''* – **P28/F/C1** *''I have been watching my weight for many years now, I am over 60 [years], and I am aware of the health complications with my weight; I know I am obese, I am trying, but you need to understand I have struggled with this for many years.''* - **P41/F/C1** *'We were meant to buy Aso Ebi [uniform cloth material] for a party. I discovered that I had to buy an extra yard of fabric because my size was too big. I felt I had to start paying extra for my dresses. I know I had to change.'* - **P28/F/C1** *''This can be very embarrassing if you can't find your size in the market and ask a tailor to make your underwear; I know I had to overcome this shame and work on my size.''* **- P40/F/C1** *''People call your Orobo (colloquial Yoruba word for obese in Nigeria) …often they don't mean harm …they want to stare at you, instead of having a face-to-face conversation …they would be looking at my chest, it can be distracting and embarrassing.''* - ***P33/F/C1***
	I Care	*''I have reflected on my life and what I have done to myself, and I am willing to act and change my health. I have been making my small steps in the right direction. I have received supports from my friends and family, and I am getting there.''* - **P11/M/C3**

		''…. when I was pregnant and had to lose weight for the sake of my baby'' **P23/F/C1** ''Now I don't just consume anything, it is very difficult and challenging, but that's something I must do. I need to make conscious effort to reduce unhealthy food, and if that's just a little I can do, I am doing it.'' – **P13/M/C1** ''Now I am trying to walk more and more. Previously I used to take uber to work because I couldn't stand that embarrassment on public transport, but now, I try to take Uber to a few stops to my place of work, and I walk the remaining part of the journey; I am often tired, but I see I am making progress.'' - **P13/M/C1** *''I care about my weight, and I try to reduce my food, do exercise, and seek medical assistance …I have tried going to the gym, swimming and even walking, those things can be expensive, but I know there is a cost to pay for my wellbeing. I have a treadmill at home that I use, and I regularly measure my weight, and I have seen results.''* - **P36/F/C2** *''I am very mindful of what I eat now, and I have been looking out for personal trainers and gym, searching on the internet, and asking around. I need to act fast.''* - **P14/M/C1**
Social Marketing Interventions	Local Celebrity endorsement	*''I follow Kate Henshaw [A Nigerian movie celebrity] on Instagram, and I follow her activities. She is not obese, but she is always advertising and promoting healthier living content on her page. As someone I adore, I always practice what she says.''* **P4/M/C2** *'Even though I work from 7am till 7pm, I always make sure I check Kemen's (fitness and well-being celebrity) Instagram page, to see the healthy products and exercise he advises we should do, and I always do them. As I do not have time to go to the gym, Kemen's recommendations of these products and home exercises have really helped me a lot in staying more fit* - **P26/F/C2** *''I lost 3KG last month and I believe its linked to the slimming tea Sandra (a Nigerian fitness celebrity) endorsed online, which I bought''.* **P35/F/C1**

		''How can you drink tea and lose weight? I did not believe it till Davido (a music celebrity) posted it on his instagram page, and I decided to buy it. It's been working for me''. **P29/F/C1**
	Healthy-lifestyle promotions	*''There's this advert I saw on NTA (a local television station in Nigeria) that showed the importance of integrating fruits into one's meal. See, I am not really a big fan of fruits but because of the way the advert was presented, I was keen to try fruits. I started with the sweet ones though—pineapples, apples, oranges etc.,''* **P39/F/C2** *''I remember when I travelled from Lagos to Abuja by road and there was this man on our bus that was promoting a product that could lower blood sugar and cholesterol levels in the body. I bought the drug and I have been taking it since then''* **P24/F/C2** *'I follow various fitness and well-being pages on Instagram and twitter. I see how good the fitness instructors look and I have always admired their bodies and the kind of healthy lifestyle they promote. This made me want to improve on what I am eating, and look like them.'* **P37/F/C2** *''I went to watch football in a viewing centre, and I stopped to read a newspaper at the news stand. As I turned to the second page, it saw this drug (shows the research agent), which has given me more energy and made me engage more in physical activities -* **P13/M/C1**
	Reduced gym membership	*''There's new gym next to my house and when they opened, the offered 50% discount on people that their Kilos' was on the high side. This made it easier for me and I quickly registered''* - **P29/F/C1** *''Due to the nature of my job, I hardly engage in any physical activity. On my way back from work, I saw this gym that were offering free classes and reduced prices to get a personal trainer. I quickly registered with them, and this really helped me on my weight loss journey''* **P36/F/C2**

		'There's a gym on almost every street now. At first, I was shy of joining because of my weight but I was offered a free discount and I got to meet other people that are also trying to lose weight and live healthier. This has really helped me as we all encourage each other to keep going.'' **P4/M/C2**
	Affordable access to healthy foods and services	*''I started buying more vegetables when it became cheaper... I noticed that this also applied to fruits and soya milk, and I have incorporated them in my food consumption now''.* **P11/M/C3** ''I *was finally able to check my blood sugar levels when the hospital offered free health testing services in my community. The results showed that I had high cholesterol. At this point, I knew I had to do something as I was not ready to die…I have now started eating meals that are low on fat and I have started walking more. In fact, I try to walk back from work whenever I can''* - **P36/F/C2** *You know Nigeria is not easy. Everything just hard. Free healthcare check-up services by my church really helped me. I know now know that I must live better now'* **P27/F/C2** *''…every Wednesday, my church group sells fresh vegetables at a very reduced price for less privileged in the society. Sometimes, they even offer them for free. This has made it possible for me to integrate more fresh vegetables in my meal and work towards controlling my condition* - **P26/F/C2**