International Journal of Communication and Public Relations (IJCPR)

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Abstract

Purpose: To establish the influence of consequences frame on the perception of obesity among middle-aged women in Nairobi County, Kenya.

Methodology: This study applied the one-group pretest-posttest experimental design. In the one-group pretest-posttest experimental design all study participants provided with the same treatment and assessment. The researcher therefore, collected data using the pre-and posttest questionnaires. The treatment administered was a television program titled *Slimpossible*, which showcased middle-aged Kenyan women suffering from the stigma of obesity who were participating in a competition to lose their weight. The multi-stage cluster sampling technique was applied in this study. Out of the target population of 1848 participants, the study sample was 317 academic female staff found in three public universities in Nairobi County, Kenya. The data was analyzed using the Statistical Package for Social Sciences (SPSS) version 23.0. The analysis applied descriptive statistics and the inferential analysis tools such as the Factor analysis (The Keiser-Meyer –Olkin (KMO) test), Pearson’s correlation coefficient and regression analysis (logical regression).

Findings: The study sought to establish the influence of consequences frame on the perception of obesity among middle-aged women in Nairobi County, Kenya. Therefore, the study found that the physical consequences, psychological consequences and social consequences significantly influenced the perception of obesity, except for economic consequences, which had no relationship with the dependent variable.

Unique contribution to theory, practice and policy: In terms of contribution to theory, this study emanated from the media framing theory, where it provided consequences frame as one among five frames, mentioned by an American political scientist known as Robert Entman in 1993. Its contribution to practice, this study recommends media involvement in developing well-research journalistic stories, documentaries and the use of educative programming to highlight on the consequences of obesity.

Keywords: *Consequences Frame, Perception of Obesity, Obesity, Middle-aged women, Media Framing Theory*

1.0 INTRODUCTION

Obesity is a complicated condition that has been considered an epidemic and global issue of concern. It is said to be related to several influences such as behavioral, cultural, genetic, social and environmental influences. Obesity is usually defined in terms of body mass index (BMI), which is derived when a person's weight in kilograms is divided by their height to give the BMI percentage (Brun, McCarthy, McKenzie & McGloin, 2015). For instance, a person is considered obese when the BMI is at/above 30 kg per meters squared. According to Armentia and Marin (2018) obesity has become one of the pertinent health issues affecting people all over the world. The writer acknowledged the words of the World Health Organization Director General Margaret Chan that currently in the world over there are more people who are obese than those who are underweight. Obesity has become an issue of concern because it is one of those severe diseases, also equated as an epidemic that requires urgent attention. In addition there were about 641 million obese people worldwide in 2014 compared to 105 million in 1975. Thus raises an alarm because the disease appears to be increasing rather than decreasing. The authors indicated that the issue of obesity has been explored from numerous perspectives as it questioned the scientific roles played in how media frames obesity as a whole. Islam and Fitzgerald (2016) concurs with the writers that in the news media and public discourse, obesity was usually described as a lifestyle problem, which should be dealt with urgently and lives could be saved.

Problem Statement

According to McGlynn and McGlone (2018) obesity is a serious disease that results to about three million deaths being reported each year, where the number of death has doubled in the last forty years in Western Countries. In Kenya, the Ministry of Health (2014) reported that more women than men are obese. The highest prevalence of obesity was in Nairobi County and it mostly affects women between 35 to 50 years. Furthermore, Lenneis and Pfister (2017) research studies showed that middle-age is a stage, where women are at risk of obesity problems and other related diseases such as cancer, and Type2 diabetes. Moreover, Penkler et al. (2015) stated that since interception, existing studies have largely investigated on media representations of health issues. However, the authors' state that little focus has been given to issues of perception relating to health and media. Yoo and Junghyun (2012) posited that in media research, framing is useful in explaining people's attitudes and perceptions about obesity. Hence, in this study, the consequences frame was applied to explain the perception of obesity among middle-aged women in Nairobi County. However, the consequences frame brings about the catastrophic effect of obesity as one that can have a negative effect on the economic, social, and physical environment. For instance, the report presented by the Ministry of Health in Kenya (2015) established that obesity results to other obesity-related diseases such as Type2 diabetes, cancer, and many other diseases. This could be translated to mean that increase in obesity would have a ripple effect on

the economy of Kenya, where sick, working, middle-aged Kenyan women would be unproductive at work. Eventually, the cost of treating obesity could be high, thus making it difficult for Kenya as a Country to treat the disease, resulting to more deaths being reported each year. Despite of this, Kyoung and Gower (2009) argued that the manner in which media frames obesity, the causes and consequences of it should be reported based on the actual facts to produce positive behavioral change among middle-aged obese women but so Therefore, this study sought to establish the influence of consequences frame on the perception of obesity among middle-aged women in Nairobi, Kenya.

Media Framing Theory

It was Entman (1991) who established five popular ways of framing news stories and highlighted the following media frames; conflict frames, human interest frames, consequence frame, morality frame and responsibility frames. In addition, Semetko and Valkenburg (2000) concur with Entman (1991) description of the five frames, which were attribution of responsibility, human interest, conflict, morality and economic consequences. Consequence frame was relevant because it could assist media professionals frame their stories based on the consequences of obesity and how positive healthy eating behaviour could be cultivated among middle-age women in Nairobi County, Kenya. The journalist, editors and producers would strive to provide the right content related to the consequences of obesity and how they influence negatively on the health of an individual.

2.0 CONSEQUENCES FRAME

Brun et al. (2015) examined how research studies have shade light on the area of consequences of obesity. These research studies indicated that there are two categories of consequences as follows: physical and psychological consequences; economic and social consequences.

2.1 Physical Consequences

Some of the physical consequences of obesity, as mentioned by Armentia and Marin (2018) included: heart disease, diabetes, hypertension, some forms of cancer such as colon cancer, throat cancer, pancreas cancer and much more. In this context, Brun et al. (2015) established that the mentioned consequences have been highlighted by the media on several occasions and most are related to physical diseases connected to obesity. The referenced media reports have associated obesity to dementia, every so often using dramatic and controversial language, deliberating the fear and alarm connected to such illnesses. This is indicative of the media's selective reporting of sensational and alarming research and in consistent with recent research that has highlighted the emotive discourse of blame around weight and obesity in the media.

Moreover, according to Brun et al. (2015), at least fifty (50) percent of media content make reference of some of the following diseases; type 2 diabetes, heart disease, high cholesterol, high

blood pressure and cancer levels. Amugsi et al. (2017) concurred with Armentia and Marin (2018) recent reports that link obesity to thirteen different cancers such as kidney, colon, breast and gallbladder cancers. Furthermore, these studies draw an alarming conclusion that obesity is a risk factor for spreading other diseases at a rapid rate annually. Sadly, it appears those affected by obesity are not aware of the problem in the first place; hence has no knowledge of how to seek for treatment.

Armentia and Marin (2018) provide real cases by stating that eighty (80) percent of existing media frames from an El Correo dailies indicate diabetes affects majority of people who were obese. The dailies further pointed out that those obese individuals' above the age of fifty (50) years were more likely to suffer from Alzheimer's illness. In addition, the authors stated that obesity causes are more inclined to physical and physiological consequences (World Health Organization, 2015; Amugsi et al., 2017; Armentia & Marin, 2018).

3.2 Psychological Consequences

Furthermore, Brun et al. (2015) mentioned some of the psychological consequences of obesity framed in the media as depression and low self-esteem. These psychological consequences have gotten undoubtedly more media coverage compared to the psychological causes of obesity. For instance, we found that the media would practically create fear that obesity is high among children as young as two (2) years old, which causes depression leading to death or cause diseases. In addition, Brun et al. (2015) found that various media articles insinuate that, for instance, the government of Ireland had failed to fund and manage the obesity epidemic because of lack of obesity clinics for offering treatment of the disease.

Luo et al. (2018) concurred with Brun et al. (2015), in that one of the psychological consequences of obesity is depression. Depression as a condition was linked to both the problem of moving about with excessive weight and the negative perception that obese people experience. The authors established that psychological consequences of obesity were usually mentioned in media articles and it has been related to the cause of dementia disease, which is characterized by progressive memory loss and learning disabilities. The media articles also cited that obesity was the cause of disorder such as anxiety attacks and depression, which are consequences of negative perception associated with obesity.

Furthermore, the media blamed the dreadful effect of obesity on the aspect of self-esteem. A patient suffering from obesity tends to have a lower image of him/herself. According to Brun et al. (2015), even though the media admitted the detrimental effects of this stigma and bordered on the magnitude of the stigmatization affecting obese people, reporting more about it tends to propagate this negative perception through applying imagery that propel antipathy, enabling the environment for negative stereotyping of suffering individuals.

3.3 Economic Consequences

The third consequence frame of obesity is the economic consequences and causes. El Pais publication of January 4th 2015 showed that the economic consequences of obesity appeared dominant in the news articles and made up of fifty percent of the coverage in the press. The El Pais mentioned that the cost of obesity was immensely high and managing it would require financial investment from both the person affected and public health institutions (Armentia & Marin, 2018). In addition, media reports pointed out that Ireland's public health services were poorly equipped to manage with the health care pressure that comes with obesity. Some media reports indicated that the government had failed to allocate funds to health care units specific for handling obesity issues. In the same note, the economic costs related to obesity were discussed amid the highest commonly quoted environmental consequences of the condition.

In general, the news reports debated on the business opportunities and risks that come with obesity causes and the economic weight of the condition and its treatment to the taxpayer. Although, one such media articles highlighted that the condition would cost taxpayers billions of Euros yearly (Brun et al., 2015). Also, there are no obesity clinics and facilities existing in Ireland to tackle the pressure for obesity treatment services. It is not because the country has no money, the reason is lack of seriousness in managing the obesity epidemic. Moreover, media article cited that a majority of pharmaceutical manufacturers were to gain from obesity complications because they are in charge of distributing drugs that suppress the person's appetite, while attempting to lower cholesterol level of the affected (Brun et al., 2015).

3.4 Social Consequences

Fourthly, this research study connects the social consequences of obesity to the society and work place environments (Brun et al., 2015). However, negative consequences for trade industries, commonly affecting the employees, and there was an insistent depiction in the media of an obese member of staff and was referred to as a liability to the company. This negative stereotype was as a result of obesity related diseases that cause them to miss work often, exert low energy at work and that obese employees are more likely to destroy the company businesses (Brun et al., 2015).

The social consequences of obesity are generally related to the negative perception of others and its effect at work, as well as in their personal relationships. The authors further state that those who suffer have to bear with societal ridicule and extreme judgment for their physical appearances. This ridiculing situation has negative consequences to the affected individuals because it may cause anxiety and depression. In spite of that the media aided this stigmatization through the application of suggestive and unsympathetic language (Brun et al., 2015).

Research Gaps

These findings agree with authors Couch et al (2016); Armentia and Marin (2018), and Islam and

Fitzgerald (2016) that the consequence frame has been exhausted in mass media research. In addition, based on the Ministry of Health (2013) in Kenya, the researcher has observed that numerous studies concentrate on the statistical representations and prevalence of obesity. Moreover, this study strived fill the gap of the relationship between consequence frame a factor within media framing theory and obesity.

3.0 METHODOLOGY OF THE RESEARCH

Research Design

Consequently this study applied the one-group pretest-posttest experimental design. As Allen (2017) posited regarding one-group pretest-posttest experimental design all study participants required to be provided with the same treatment and assessment. The researcher administered both pre-and posttest questionnaires to the participants. This study used television program titled *Slimpossible* as treatment. *Slimpossible* is a television show that was designed to combat the issue of obesity among middle-aged women in Kenya. Moreover, it also drew young ladies in their 20s and above years. The show ran for 15 weeks and it attracted middle-aged obese women living in Nairobi and other environs. In the show 21 ladies are evaluated on their consistency in losing weight, where the winner was revealed officially once the 15 weeks were completed. It was hosted by Royal Media specifically Citizen TV. Table 1.1 provided the visual illustration of the one-group pretest-posttest experimental design. The illustration indicates how the pretest questionnaire was administered to respondents before they watched the *Slimpossible* television show. After the participants watched it, they filled the posttest questionnaires. The following was the structure of the experimental design:

Table 1.: One-Group Pretest-Posttest Experimental Design

Pretest	Independent Variable	Posttest
O1	Treatment (<i>Slimpossible</i> TV program)	O2

Source: Visual Illustration of the One-Group Pretest-Posttest Design (Allen, 2017).

The justification of using the one-group pretest-posttest design was the aspect of comparing results of the pretest questionnaires and the posttest questionnaires. Furthermore, the design gave better control over the experimental mortality, maturation and regression threats (Fraenkel, Wallen & Hyun, 2012).

Target Population

Bless, Smith and Kagee (2006) defined population as the whole set of people or items that were determined using some characteristics such as age, gender and education levels. The target population comprised of 1848 participants who were women, academic staff found in three public universities in Nairobi County, Kenya as indicated in Table 3.2. This target population was derived from the Commission of University Education (2016), University of Nairobi (2018), Technical University of Kenya (2019), and Kenyatta University (2019). The rationale of using academic staff was based on Nkwoka et al. (2014) research study that showed all academic staff had higher levels of education. Similarly, the Kenya National Bureau of Statistics and the Ministry of Health (2015) reported that the proportion of obesity cases in women increases with increase in the level of education and wealth. Consequently, in this research study higher level of education correlated with higher prevalence of obesity among the academic staff in universities.

Therefore, the rationale of Nairobi County was informed by the Kenya National Bureau of Statistics and the Ministry of Health (2015) studies that showed Nairobi was leading as it has the highest proportion (48 percent) of women who were obese compared to all other Counties in Kenya. The report further confirmed that obesity levels increases with age. Hence, in this study, the age group was between 30-55 years old was informed by Lenneis and Pfister, 2017. This research focused on public universities in Nairobi County since the proportion of obesity cases in women increased with the level of education and wealth. The public universities comprised of University of Nairobi, Technical University of Kenya, and Kenyatta University. The reason for choosing public universities over private universities was informed on existing statistical data at the Kenya Bureau of Statistics report findings for the three public universities. Furthermore, the Commission of University Education (2016) research reports showed chartered public universities having the highest number of academic staff at 69 percent compared to chartered private universities at 19 percent, while the rest of the 12 percent obtained from constituent colleges. Moreover, there was insufficient evidence or any statistical data that could represent private university.

Sample and Sampling Technique

According to Babbie (2011) a sample was selected among the population that could be collected and studied. In this research study, the sample collected and studied comprised of 317 respondents. The sample size for this study was determined using Fisher et al (1998) formula (Israel, 1992). A 95% confidence level with $\pm 5\%$ margin of error (E) would be desired in this research study. The unadjusted sample size (n') required for $\pm 5\%$ using the conservative sample proportion (p) of

$$p=0.5 \text{ (or 50\%)} \text{ is: } n' = \left(\frac{Z}{E} \right)^2 p(q)$$

Where

n is the desired sample size

Z is the standard normal deviation at the required confidence interval.

E is margin of error.

p is the percentage of the target population with the desired characteristics.

q = 1 - p

Therefore, sample size for the respondents will be:

$$n = \frac{1.96^2(0.5 \times 0.5)}{(0.05)^2} = 384$$

Since the population was less than 10,000, the final sample estimated was calculated using the formula below:

$$nf = \frac{n}{1 + (n/N)}$$

Where: nf = The desired sample size (when the population is < 10,000)

n = Desired sample size when the population was more than > 10,000

N = Population with the desired characteristics

$$nf = \frac{384}{1 + (384/1848)} = 317$$

The sample size = **317 Participants**

Sampling Technique

Leavy (2017) defined sampling as the process that requires the researcher to select a number of individual elements from a large population. The study employed multi-stage cluster sampling. Babbie (2011) posited that multistage cluster was frequently used when the list of the members of a given population did not exist. Ideally, the researcher balanced the number of clusters and its size to attain a given sample size. Stratification was used to minimize the sampling error by establishing relatively homogeneous strata before sampling, which included the gender, age, income levels and education levels. The purpose of this was to improve representativeness of the sample size by reducing the degree of sampling error.

Sample of *Slimpossible* Television Program

The *Slimpossible* television program season *six* episode *one* was purposively selected out of seven seasons and ninety-eight episodes covered by the *Slimpossible* television program. The obese women were qualified through an interview process to participate in the *Slimpossible* challenge, a popular weight loss television program aired by Citizen Television Network. The researcher edited the video to take 30 minutes. The justification of choosing the season *six* episode *one* television program was based on the assessment of the media frames according to Entman (1993), where the scholar mentioned the consequences frame.

Data Collection Instrument

This study used questionnaires as the primary data collection instrument. Furthermore, Babbie (2011) asserted that the advantage of using a questionnaire keeps the respondents free from the bias of interviewers, who may want to manipulate their answers. The questionnaire incorporated the *Likert*-type scale, which measures the respondents' perception by asking them the extent in which they agree or disagree with an issue. Hence, the respondents are given a chance to answer the questions in their own way. Section one of the questionnaire comprised of social-demographic details such as age group, education and income levels. Section three tested questions on consequences frame. Furthermore, some of the items would be on the 5-point *likert*-type scale, with level of agreement 1=strongly agree to 5= strongly disagree; level of likelihood 1=very likely to 5=very unlikely. However, other items would also be on the 3-point *likert*-type scale.

Data Collection Procedure for Conducting the Experiment

The researcher used several steps to describe the procedure for conducting the experiment in detail. They are as follows: In the first step, the researcher recruited and trained two research assistants who assisted in the whole process of the experiment. The researcher scripted the instructions of participating in the experiment. The researcher, with the help of the two research assistants made phone calls to the respondents requesting them to participate in the experiment. The research assistance sent the scripts to the participants on email and on *Whatsapp Messaging App*. In the second step, the respondents filled the pretest and posttest questionnaires through the Google form link. The Google form link required them to add their email addresses. The researcher could easily monitor the responses because the responses were automatically redirected to the Google sheet through the Google form link provided. The research assistant followed up and reminded the respondents to fill the forms appropriately, and to watch the *Slimpossible* TV program through a link sent to them. In the third step, the respondents filled the posttest questionnaire through the online link. The researcher monitored all the responses on the backend using Google sheets. The research assistants made follow-up calls to enhance communication and achieve smooth process during the experiment.

Data Processing and Analysis

Data processing was done. It entailed the process of data cleaning, where the researcher checked for errors in the filled data and checked for completeness of data. Data cleaning also required screening and organizing of data before analyzing them. Hence, the researcher cleaned data by checking completeness of data and whether all questions were answered. Somekh and Lewin (2005: p.215) stated that “statistical methods consist of a wide range of tools and techniques that could be used to describe and interpret data that were quantitative in nature. This meant they should be measured numerically.” In this study, the data obtained was analyzed using the Statistical Package for Social Sciences (SPSS) version 23.0. Therefore, the researcher conducted several levels of analysis. Firstly, this study presented the descriptive statistics using tables with frequencies and percentages. Secondly, the research conducted inferential statistics using several types of inferential analysis tools such as the Factor analysis (The Keiser-Meyer –Olkin (KMO) test), Pearson’s correlation coefficient and regression analysis (logical regression). These tools were used to examine the influence of the consequence frame on the perception of obesity among middle-aged women in Nairobi as indicated in Table 3.4.

Table 2: Model of Specification

Objectives	Level of Measurement of Data	Statistical Tools
To establish the influence of consequences frame on the perception of obesity among middle-aged women in Nairobi County, Kenya.	Interval/Ratio	Regression Analysis, Pearson’s correlation, KMO test

Regression Model for the Objective

H₀₂: Consequences frame has no significant influence on the perception of obesity among middle-aged women in Nairobi County, Kenya.

$$Y = \beta_0 + \beta_2 x_2 + \epsilon$$

Whereby;

Y= perception of obesity

β_0 = Constant

β_2 =Coefficients of determination

x_2 = Consequences frame

ϵ = Error term

Table 3: Response Rate

Response	Frequency	Percent
Returned	252	79.5%
Unreturned	65	20.5%
Total	317	100%

The researcher issued out 317 questionnaires, out of which 252 were received, translating to a response rate of 79.5%. Out of the 252 questionnaires collected back from respondents, 30 were rejected because of incompleteness culminating in 222 usable questionnaires for analysis.

Table 4: Descriptive Statistics

Descriptive statistics summarizes the observations made after data analysis.

Table 5: Descriptive Statistics for Consequence Frame

N	Age	Education	Income
	Missing 0	0	0
	Mean 2.46	2.61	1.57
	Median 2.00	3.00	2.00
	Mode 2	3	1
	Std.Deviation 1.160	1.082	.595

The age group was as follows: 30-34 years were 19.8%; 35-39 years were 42.8%; 40-44 years were 14.4%; 45-49 were 17.1%; and 50-55 years were 5.9%. This finding agrees with Nkwoka, Egua, Abdullahi, Sabi and Mohammed (2014) studies that obesity increases with increase in age. In addition, Nkwoka et al. (2014) studies support the findings that, increase in obesity was related to increase in education and this was reflected in the findings obtained from a study carried out in Usmanu Danfodiyo University in Nigeria. Further, Khan et al. (2013) studies bring about discussion on income levels. Here the increase of obesity levels among high income middle-aged female academic staff to high intake of fatty contents. The high intake could be attributed also to the individuals because they have the responsibility to ensure what they consume is healthy.

The table shows the descriptive statistics of the consequence frame on the perception of obesity among middle-aged women in Nairobi County, Kenya.

Table 6 showing average scores for consequence frame

		Pre-test			Post-test		
		Agree	neutral	disagree	agree	neutral	disagree
1	Physical fatigue is a physical consequence of obesity affecting middle-aged women.	146	59	17	152	70	0
		65.8%	26.6%	7.7%	64%	31.5%	0.0%
2	Feelings of isolation are a physical consequence of obesity affecting middle-aged women.	158	48	16	147	46	29
		71.2%	21.6%	7.2%	66.2%	20.7%	13.1%
3	Shortness of breath is a physical consequence of obesity affecting middle-aged women.	147	48	27	164	46	12
		66.2%	21.6%	12.2%	73.9%	20.7%	5.4%
4	Obesity-related diseases, e.g diabetes, cancer are some of the physical consequence of obesity affecting middle-aged women	178	44	0	164	58	0
		80.2%	19.8%	0.0%	73.9%	26.1%	0.0%
5	Overindulgence in food and alcohol is a physical consequence of obesity affecting middle-aged women.	65	21	136	69	68	85
		29.3%	9.5%	61.2%	31.1%	30.6%	38.3%
6	Depression is a psychological consequence of obesity affecting middle-aged women.	142	50	30	159	63	0
		64%	22.5%	13.5%	71.6%	28.4%	0.0%
7	Low self-esteem is a psychological consequence of obesity affecting middle-aged women.	144	48	30	176	46	0
		64.9%	21.6%	13.5%	79.3%	20.7%	0.0%
8	Body dissatisfaction is a psychological consequence of obesity affecting middle-aged women.	132	45	45	176	24	22
		59.5%	20.3%	20.3%	79.3%	10.8%	9.9%
9	Unhealthy dieting/Restrictive dieting is a psychological consequence of obesity affecting middle-aged women.	131	78	13	164	58	0
		59%	35.1%	5.9%	73.9%	26.1%	0.0%
10	Anxiety is a psychological consequence of obesity affecting middle-aged women.	117	92	13	159	63	0
		52.7%	41.4%	5.9%	71.6%	28.4%	0.0%
11	High treatment financial costs for obesity related ailments, like diabetes, cancer are economic consequences of obesity affecting middle-aged women.	141	67	14	147	63	12
		63.5%	30.2%	6.3%	66.2%	28.4%	5.4%
12	Loss of job and/or income is an economic consequence of obesity affecting middle-aged women.	115	64	43	147	75	0
		51.8%	28.8%	19.4%	66.2%	33.8%	0.0%

	Indirect costs, like spending more on expensive	134	61	27	152	58	12
13	custom-made clothes are economic consequences of obesity affecting middle-aged women.	60.4%	27.5%	12.2%	68.5%	26.1%	5.4%
	Ill-treatment at work/in social settings is a social	112	84	26	155	67	0
14	consequence of obesity affecting middle-aged women.	50.5%	37.8%	11.7%	69.8%	30.2%	0.0%
	Open public ridicule is a social consequence of	161	48	13	176	46	0
15	obesity affecting middle-aged women.	72.5%	21.6%	5.9%	79.3%	20.7%	0.0%
	Sexual bullying is a social consequence of obesity	145	50	27	147	63	12
16	affecting middle-aged women.	65.3%	22.5%	12.2%	66.2%	28.4%	5.4%
	Lower quality of life is a social consequence of	96	70	56	114	96	12
17	obesity affecting middle-aged women.	43.2%	31.5%	25.2%	51.4%	43.2%	5.4%
	Social exclusion from participating in certain	131	58	33	171	29	22
18	events is a social consequence of obesity affecting middle aged women.	59%	26.1%	14.9%	77%	13.1%	9.9%

From the table above, the study made the following observations: Generally, a high proportion of respondents agreed with most of statements about obesity based on consequence frame. However, the following statements on obesity rated highly: “*Feelings of isolation are a physical consequence of obesity affecting middle-aged women*” with **71.2%** and **66.2%** for pre-test and post-test respectively. “*Obesity-related diseases, for instance, diabetes, cancer are some of the physical consequence of obesity affecting middle-aged women*” with **80.2%** and **73.9%** for pre-test and post-test respectively. “*Open public ridicule is a social consequence of obesity affecting middle-aged women.*” with **72.5%** and **79.3%** for pre-test and post-test respectively. The findings agree with Brun et al. (2015) because there exists several consequences of obesity. The consequences include the following: physical, psychological, economic and social consequences.

A high proportion of respondents disagreed with the following statements on obesity: “*Overindulgence in food and alcohol is a physical consequence of obesity affecting middle-aged women*” with **61.2%** and **38.3%** for pre-test and post-test respectively. “*Body dissatisfaction is a psychological consequence of obesity affecting middle-aged women.*” with **20.3%** and **9.9%** for pre-test and post-test respectively. “*Lower quality of life is a social consequence of obesity affecting middle-aged women.*” with **25.2%** and **5.4%** for pre-test and post-test respectively. Similarly, the findings on the aspect of psychological consequences of obesity were supported by Brun et al. (2015). These were mentioned by media to include, depression or low self-esteem. Depression was linked to both the problem of moving about with excessive weight and the negative perception that obese people experience. The authors established that psychological consequences of obesity were usually mentioned in media articles and it has been related to the

cause of dementia disease, which was characterized by progressive memory loss and learning disabilities.

A high proportion of respondents neither agreed nor disagreed with the following statements on obesity: *“Unhealthy dieting/Restrictive dieting is a psychological consequence of obesity affecting middle-aged women.”* with **35.1%** and **26.1%** for pre-test and post-test respectively. *“Anxiety is a psychological consequence of obesity affecting middle-aged women.”* with **41.4%** and **28.4%** for pre-test and post-test respectively. *“Ill-treatment at work/in social settings is a social consequence of obesity affecting middle-aged women”* with **37.8%** and **30.2%** for pre-test and post-test respectively. *“Lower quality of life is a social consequence of obesity affecting middle-aged women”* with **31.5%** and **43.2%** for pre-test and post-test respectively. The findings resonate with those of Brun et al. (2015) that mention the social consequences of obesity and how they affect women at work and in their social settings. The middle aged obese women might experience challenges in their personal interactions with other due to constant ridicule from, friends, family members, or colleagues. They suffer extreme judgment because of their physical appearances. Despite that the media fuels this negative perception through the application of suggestive and unsympathetic language.

Table 7: Analysis of Sample Paired statistics

The table shows the paired sample statistics and corresponding T-tests.

Table 7: Analysis of Sample Paired Statistics for Consequence Frame

		Pre-test		Post-test		Test	
		Mean	SD	mean	SD	t-stat.	p-value
1	Physical fatigue is a physical consequence of obesity affecting middle-aged women.	3.64	0.709	3.74	0.55	-1.843	0.067
2	Feelings of isolation are a physical consequence of obesity affecting middle-aged women.	3.64	0.62	3.59	0.784	1.058	0.291
3	Shortness of breath is a physical consequence of obesity affecting middle-aged women.	3.56	0.727	3.84	0.743	-4.680*	0
4	Obesity-related diseases, e.g diabetes, cancer are some of the physical consequence of obesity affecting middle-aged women	3.96	0.597	4	0.721	-0.762	0.447
5	Overindulgence in food and alcohol is a physical consequence of obesity affecting middle-aged women.	2.55	1.066	2.93	1.009	-5.119*	0
6	Depression is a psychological consequence of obesity affecting middle-aged women.	3.57	0.803	3.82	0.602	-3.978*	0

7	Low self-esteem is a psychological consequence of obesity affecting middle-aged women.	3.52	0.735	3.9	0.554	-6.314*	0
8	Body dissatisfaction is a psychological consequence of obesity affecting middle-aged women.	3.4	0.81	3.75	0.705	-5.338*	0
9	Unhealthy dieting/Restrictive dieting is a psychological consequence of obesity affecting middle-aged women.	3.68	0.792	3.9	0.64	-3.839*	0
10	Anxiety is a psychological consequence of obesity affecting middle-aged women.	3.54	0.709	3.82	0.602	-4.875*	0
11	High treatment financial costs for obesity related ailments, like diabetes, cancer are economic consequences of obesity affecting middle-aged women.	3.76	0.826	3.77	0.782	-0.217	0.829
12	Loss of job and/or income is an economic consequence of obesity affecting middle-aged women.	3.33	0.794	3.77	0.628	-6.733*	0
13	Indirect costs, like spending more on expensive custom-made clothes are economic consequences of obesity affecting middle-aged women.	3.64	0.886	3.86	0.835	-3.210*	0.002
14	Ill-treatment at work/in social settings is a social consequence of obesity affecting middle-aged women.	3.54	0.89	3.85	0.659	-4.802*	0
15	Open public ridicule is a social consequence of obesity affecting middle-aged women.	3.77	0.71	4.02	0.662	-4.189*	0
16	Sexual bullying is a social consequence of obesity affecting middle-aged women.	3.78	0.96	4.02	0.956	-3.159*	0.002
17	Lower quality of life is a social consequence of obesity affecting middle-aged women.	3.27	0.947	3.61	0.809	-5.405*	0
18	Social exclusion from participating in certain events is a social consequence of obesity affecting middle aged women.	3.59	0.921	3.82	0.808	-3.089*	0.002

From the table of mean and standard deviation, we make the following observations: Generally all variables registered means above average in both the pretest and post test scores. High means are registered across the groups in the following variables: “*Obesity-related diseases, e.g diabetes, cancer are some of the physical consequence of obesity affecting middle-aged women* ”; **3.96** and **4.00** for pre-test and post-test respectively. “*Open public ridicule is a social*

consequence of obesity affecting middle-aged women”: **3.77** and **4.02** for pre-test and post-test respectively. “*Sexual bullying is a social consequence of obesity affecting middle-aged women*”; **3.78** and **4.02** for pre-test and post-test respectively.

A relatively low means are registered across the groups in the variable below: “*Overindulgence in food and alcohol is a physical consequence of obesity affecting middle-aged women*”; **2.55** and **2.93** for pre-test and post-test respectively. The t-test results show that the pre-test and post test results are significantly different at 5% level of significance in most of the variables except the following: *Physical fatigue is a physical consequence of obesity affecting middle-aged women; Feelings of isolation are a physical consequence of obesity affecting middle-aged women; Obesity-related diseases, i.e. diabetes, cancer are some of the physical consequence of obesity affecting middle-aged women; High treatment financial costs for obesity related ailments, like diabetes, cancer are economic consequences of obesity affecting middle-aged women.* Further, Armentia and Marin (2018) presented some of the physical consequences of obesity, including heart disease, diabetes, hypertension, some forms of cancer such as colon cancer, throat cancer, pancreas cancer and much more, which was in support with these findings.

The factor analysis was successful in extracting four independent components in relation to consequence frame.

Table 8: Factor Analysis

	Psychological consequence	Social consequence	Economic consequence	Physical consequence
Low self-esteem is a psychological consequence of obesity affecting middle-aged women.	.869*	0.282	0.197	0.283
Depression is a psychological consequence of obesity affecting middle-aged women.	.806*	0.368	-0.017	0.398
Body dissatisfaction is a psychological consequence of obesity affecting middle-aged women.	.737*	0.182	0.548	0.13
Open public ridicule is a social consequence of obesity affecting	.651*	0.206	0.487	0.212

middle-aged women.				
Anxiety is a psychological consequence of obesity affecting middle-aged women.	.650*	0.593	0.238	0.161
Lower quality of life is a social consequence of obesity affecting middle-aged women.	0.15	.756*	0.56	0.036
High treatment financial costs for obesity related ailments, like diabetes, cancer are economic consequences of obesity affecting middle-aged women.	0.163	.740*	-0.039	0.408
Ill-treatment at work/in social settings is a social consequence of obesity affecting middle-aged women.	0.401	.694*	0.361	0.155
Social exclusion from participating in certain events is a social consequence of obesity affecting middle aged women.	0.544	.637*	0.349	-0.007
Loss of job and/or income is an economic consequence of obesity affecting middle-aged women.	0.564	.616*	0.097	0.287
Overindulgence in food and alcohol is a physical consequence of obesity affecting middle-aged women.	0.241	.559*	0.174	0.474
Indirect costs, like spending more on expensive custom-made clothes are economic consequences of obesity affecting middle-aged women.	0.179	0.284	.760*	0.26
Obesity-related diseases, e.g	0.081	0.074	.757*	0.505

diabetes, cancer are some of the physical consequence of obesity affecting middle-aged women				
Unhealthy dieting/Restrictive dieting is a psychological consequence of obesity affecting middle-aged women.	0.488	0.201	.735*	0.242
Shortness of breath is a physical consequence of obesity affecting middle-aged women.	0.069	0.111	0.243	.803*
Feelings of isolation are a physical consequence of obesity affecting middle-aged women.	0.164	0.343	0.16	.690*
Physical fatigue is a physical consequence of obesity affecting middle-aged women.	0.393	0.065	0.176	.668*
Sexual bullying is a social consequence of obesity affecting middle-aged women.	0.378	0.205	0.356	.576*

The factor analysis was successful in extracting four independent components in relation to consequence frame. The Keiser-Meyer –Olkin (KMO) test of adequacy (KMO=0.442; Chi-square=13198.8, d.f =153, p=0.000) was significant implying factor analysis using principal component method was appropriate. The four components cumulatively explain 78.93 % of the total variability. From table, the factor 1 basically described how low self-esteem, depression, body dissatisfaction, open public ridicule and anxiety influences obesity affecting middle-aged women. This factor could simply be referred to as *psychological consequence*. Factor 2 measured mostly social consequences such as low quality of life, ill treatment at work and social settings, social exclusion from participating in certain events and loss of jobs and therefore it could be referred to as *social consequence*. Factor 3 has high loadings on indirect costs, like spending more on expensive custom-made clothes. Hence it could be referred to as *economic consequence*. Factor 4 addressed the factors/aspects of physical consequences majorly on shortness of breath, feelings of isolation and physical fatigue. Therefore factor 4 could be referred to as *physical consequence*.

Inferential Statistics

Hypothesis: Consequences frame has no significant influence on the perception of obesity among middle-aged women in Nairobi County, Kenya. The analysis extracted four factors of the consequence frame, including the psychological consequence, social consequence, economic consequence, and physical consequence. There was significant correlation between all extracted factors of Consequence frame and the perception of obesity among middle-aged women at 1% level of significance except the economic consequence, which had no significant influence in relation to the perception of obesity. However, they were uncorrelated among themselves. These were the test for the hypothesis and it means that the null hypothesis was rejected because there was significant correlation between the three factors under consequence frame and the perception of obesity among middle-aged women in Nairobi County. However, there economic consequence had no significant influence on the perception of obesity, thus this finding does not resonant with Armentia and Marin (2018) and Brun et al. (2015) who attribute economic consequence as a major factor affecting the rise of obesity in the developed countries such as Ireland.

Table 9: Regression analysis

Fitting all extracted variables and the response in the logistic regression model, the results were as shown in table below:

Table 9: Parameter estimates and their standard errors

Parameter	Estimate, β	std. error	Wald	df	sig.	exp(β)
constant(least negative)	-0.565	0.117	23.485	1	0.00	0.568
constant(moderate)	1.616	0.134	146.05	1	0.00	5.033
Psychological consequence	1.175	0.129	82.404*	1	0.00	3.238
Social consequence	0.495	0.095	26.885*	1	0.00	1.64
Economic consequence	0.125	0.098	1.619	1	0.203	1.133
Physical consequence	0.617	0.104	35.246*	1	0.00	1.853

Link function: Logit.

The model fits well. Both Pearson (1888.2) and Deviance (798.8) chi-square statistics for goodness of fit are significant, (p-value=0.00). The results indicate that all consequence frame factors i.e. *psychological consequences*; *social consequences*; *physical consequences* are statistically significant at 1% level of significance except the *economic consequence factor*. The interpretations of the factors were as follows: - Factor 1 was *Psychological consequences*, whereby the estimated odds ratio was **3.24**. Therefore for every one unit increase in the psychological consequence, a person was 3.24 times likely to have lower level of negative perception towards middle aged obese women as opposed to higher levels negative perceptions. Factor 2 was *Social consequences*, whereby the estimated odds ratio was **1.64**. Therefore for

every one unit increase in social consequence, a person is 64% more likely to have lower level of negative perception towards middle aged obese women as opposed to higher levels negative perceptions. Factor 3 was *Physical consequences*, whereby the estimated odds ratio was **1.85**. Therefore for every one unit increase in the physical consequence, a person was 85% more likely to have lower level of negative perception towards middle aged obese women as opposed to higher levels negative perceptions.

Summary of Findings

The purpose was to establish the influence of consequences frame on the perception of obesity among middle-aged women in Nairobi County, Kenya. The descriptive statistics showed that physical consequences, like obesity related diseases, psychological consequences and social consequences significantly influence perception of obesity, except for economic consequences, where there was no relationship. The inferential results further indicated based on the interpretation of odds ratios that with increase in psychological consequences, one was 3.24 times likely to have lower level of negative perception towards obese middle-aged women of Nairobi County. Secondly, with increase in social consequences and physical consequences, the respondents were more likely to have lower level of negative perception towards obese middle-aged women of Nairobi County as opposed to higher levels of negative perception. Therefore, the results showed a statistical significant relationship between three of the factors of consequences frame, except economic consequences. The literature review showed that physical and psychological consequences were often mentioned as contributors of obesity. In addition, social consequences are mentioned to create negative perception in relation to how the obese individuals interact at work and personal relationship with others. Therefore, previous research studies are supporting these findings. Previous studies attribute economic consequences as dominant factor influencing obesity in developed countries; however, in this context it does not support this finding.

Conclusion

This research aimed at establishing the influence of consequences frame on the perception of obesity among middle-aged women in Nairobi County, Kenya. Based on the quantitative analysis, it can be concluded that consequences of obesity are important factor to consider when designing and targeting media messages and media campaigns. The results indicate that the affected obese individuals are more receptive to change behaviour if they become aware of the existing consequences of obesity.

Recommendation to Media Owners and Stakeholders

Media stakeholders to engage medical experts in various TV and radio shows to discuss the consequences of obesity in relation to physical, mental and social health. In addition, media

owners could allocate newspapers/magazine spaces for nutrition experts to write articles geared towards dealing with obesity, changing eating habits and lifestyles.

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