Predictors of the Attempt and Failure to Lose Weight among the South African Population

Mashudu Manafe *

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Article

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Mashudu Manafe

Department of Human Nutrition & Dietetics, Sefako Makgatho Health Sciences University, Pretoria, 0001, South Africa; mashudu.manafe@smu.ac.za; Tel.: +27125214186

Abstract: Background: The increase in the prevalence of obesity in South Africa is a problem and weight management play an important role in the treatment of the high prevalence. For this purpose, a quantitative study was carried out using a structured questionnaire to assess predictors of attempt and failure to lose weight. Methods: One thousand and fifty adults were enrolled in the study and 54% (n=562) were overweight and obese (BMI >/25kg/m2). Descriptive statistics were analysed. Inferential statistical tests (chi-square tests, logistic regression, and Pearson's correlation coefficients) were used to determine the relationship between variables. Results: The results revealed that age, sex, marital status, educational level, employment status, income level, area of residence, ethnic groups, and self-perceived BMI (normal weight, overweight, and obese) were predictors of attempt and failure to lose weight. There was a positive correlation between self-perceived BMI and the attempt and failure to lose weight. Conclusion: Weight management is important in the realm of public health and can be regarded as an investment in the population, as it leads people toward weight control strategies grounded in empirical evidence. Additionally, the findings can inform public health policies and interventions to improve weight management strategies at the population level.

Keywords: overweight; obesity; weight loss attempt; weight loss failure

1. Introduction

Obesity, a serious problem worldwide, presents a formidable obstacle to the prevention of chronic diseases. The World Health Organisation has estimated that 2% of all global deaths caused by diabetes are related to obesity [1]. South Africa, like other nations, is not exempt from this epidemic, as obesity rates are markedly higher among adults, particularly among women [2–4]. Multiple economic, environmental, and sociocultural factors have been noted for their influence on the elevated prevalence of obesity in South Africa [5]. Consequently, almost half of people affected by cardiovascular disease find themselves burdened by obesity, increasing their susceptibility to developing type 2 diabetes [6]. Therefore, the gravity of obesity cannot be ignored when considering that in South Africa 87% of diabetes cases, 68% of hypertensive disease cases, 38% of cases of ischaemic heart disease, and 45% of ischemic stroke cases are attributed to obesity [7]. Given that the majority of individuals with type 2 diabetes are obese, weight reduction assumes a paramount role in the prevention and management of type 2 diabetes mellitus [8].

The goal of obesity management compared to weight reduction among obese people should be to reduce the metabolic risk rather than achieve ideal body weight. The potential benefits of weight loss for health are fundamental to policy makers seeking solutions to obesity. As a result, weight management plays an essential role in public health as a strategy for behavioural change and as a preventive measure to reduce obesity. Despite the benefits of weight loss, however, people with good metabolism may not be motivated to lose weight [9,10]. In the case of obese individuals without comorbid conditions, weight reduction can significantly reduce the likelihood of developing such conditions [11]. The desire to lose, reduce or maintain weight can be influenced by factors such as the perception of weight. For example, individuals who perceive themselves as overweight, even when they are not, can use unnecessary weight loss tactics [12].

However, as stated by Tol et al. [13] , decisions to seek weight-related care may be influenced by medical need, financial impact, access to health care, demographic factors, and personal health

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beliefs. However, in the context of South Africa, there is a misconception and inadequate understanding of the notion of body weight [14]. A study by the authors of [8] revealed that obese individuals who experience weight loss exhibit improved biochemical profiles, despite still being classified as clinically obese. Furthermore, sustained weight reduction in obese individuals can lead to a decrease in the duration of hypertension, type 2 diabetes, as well as the expected lifetime occurrences of coronary heart disease and stroke [6,15]. In addition, the Organization for Economic Cooperation and Development (OECD) reports that prevention of obesity is cost-effective [11,16,17] by implementing a strategy to treat obesity, whereby people who are metabolically unhealthy are transformed into a healthy obesity state [18].

The importance of people who experience a reduction in weight cannot be underestimated. From an individual point of view, there is a decrease in expenses associated with the treatment of obesity and an improvement in overall quality of life. From a social perspective, there is a reduction in working days lost due to absenteeism and decreased productivity [8,11]. In the South African population, people with overweight or obesity may not be aware or recognize the importance of weight loss for health reasons. According to Lemon et al. [18] , the perception of an individual as overweight or obese determines his or her motivation to lose or gain weight. Social norms that accept and tolerate excess weight can contribute to the emergence of obesity in society [5]. Despite the gaps in knowledge about body weight and weight management behaviours in the South African literature, it is evident that obesity remains a significant challenge and a threat to health.

The presence of obesity and its association with health risks and comorbidities, as well as its impact on public health, resulting in increased healthcare costs, is a matter of utmost importance [19]. Consequently, maintaining a healthy body weight becomes an integral aspect of an individual's existence. The underlying assumption in the implementation of weight management approaches is that individuals must first acknowledge their overweight or obese condition. Neglecting this recognition can lead individuals to disregard the potential chronic diseases associated with their lifestyle, potentially influenced by the belief that achieving sustainable weight reduction is complex. Consequently, this perception decreases their motivation to initiate weight loss efforts [17]. Thus, the adopted health behaviour can align more with short-term objectives than with future health risks. Taking into account these circumstances, the article describes the predictors of the attempt and failure to lose weight among the South African population.

2. Materials and Methods

2.1. Sample Size

The sample size for the unknown population was calculated using the formula: $n = Z^2pq/e^2$ where Z = confidence level (1.96) for the 95% level of confidence; p = the estimated proportion of the population; q = 1 - p (reduced to 0.3) to obtain a larger sample size; and e = error margin (confidence interval) used elsewhere in Manafe et al. [14]. The size of the sample was calculated to ensure that the minimum number of respondents must be representative of the population under study. The sample size was calculated at the 95% confidence level, 0.5 standard deviations, and a margin of error of 2%. Therefore, data was collected among 1, 050 participants.

2.2. Participant Recruitment and Characteristics

This study was approved by the Medunsa Research Ethics Committee (MREC/H/269/2012: PG). Participants were recruited in public places, including shopping malls, towns, rural, urban, and mining areas. The study was carried out in the provinces of Gauteng, Northwest, and Mpumalanga, three of the nine provinces in South Africa. In the provinces, there are various ethnic groups represented. The ethnic groups represented in the provinces are the following: North Sotho, South Sotho, Tswana, Venda, Zulu, Ndebele, Xhosa, Tsonga, and Swati. The areas of the different provinces have both formal and informal residential areas. Permission to recruit participants was obtained from the local authorities of each province. Non-probability sampling method, convenience sampling was used to sample participants. Inclusion and exclusion criteria. Potential participants included

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individuals of both sexes who were 18 to 35 years old, old, 36 to 55 years and older than 55 years. Individuals with disabilities and mobility challenges were excluded from the study. Persons meeting eligibility criteria were given verbal information about the study and the opportunity to ask questions. Those choosing to participate provided written consent and an ID number was assigned to the questionnaire to maintain confidentiality. Participants self-reported their perceived BMI. Weight and height were measured, and BMI calculated from these and recorded on the questionnaire. All those enrolled in the study were adults aged 18 to 55 years and above.

2.3. Data Collection

Following the informed consent process, the three trained field workers carried out the data collection using a structured questionnaire. The questionnaire consisted of two sections. The first section focused on the following demographic characteristics: age, sex, marital status, employment status, income level, level of education, and area of residence. The second section focused on questions about self- perception of body weight, which included questions on weight loss attempt and failure to lose weight. Field workers came from different ethnic groups and were able to translate information from English to local languages and vice versa, during data collection for those who did not understand English. The questionnaire was in English, designed, and adapted according to the literature reviewed for the study [20]. To ensure reliability and internal consistency, the Cronbach alpha coefficient was calculated from eight elements of the data collection tool. The Cronbach alpha coefficient obtained was 0.77, indicating a high-reliability level of the data collection tool [21]. The weight and height of the respondents were measured, and the body mass index (BMI) calculated in kg /m2. Height was measured standing, without shoes, using a stadiometer and to the nearest 0.1 cm. The weight was measured using a digital scale to the nearest 0.1 kg. The BMI cut-off points to determine body weight were classified according to WHO references as follows: BMI less than or equal to 18.5 kg/m2, underweight· 18.5 to 24.9 kg /m2, normal, BMI greater than or equal to 25 kg/m2, overweight and obese [22]. Responses were recorded in the questionnaire by field workers. A pilot study was conducted before actual data collection to ensure reliability. Minor modifications to the questionnaire were made after the pilot study and before the start of the study.

2.4. Data Analysis

Data were entered into an MS Excel spreadsheet and organised for statistical analysis. Continuous variables were presented as mean ± standard derivation (SD). Pearson's chi-square test was used to test for differences in participant characteristics for categorical variables. Logistic regression analysis was used to find the relationship between sociodemographic characteristics, calculated BMI, and self-perceived BMI. The results of the logistic regression analysis were presented with odds ratio (OR) and 95% confidence intervals (CI). The Pearson correlation coefficient was used in the study to test for a significant relationship between self-perceived BMI, attempted and failed weight loss. All statistical analyses were performed with STATA version 17 (StataCorp, LLC, College Station, TX, USA). The value of $P \leq 0.05$ was considered statistically significant.

3. Results

3.1. Attempt to Lose Weight and Demographic Variables

The sample consisted of 1,050 respondents. Table 1 presents the sociodemographic characteristics of the respondents. The 18 to 35 years (67%) are the age group most represented. The mean age and standard deviation were 32.5±11.5. Most of the respondents (56%) were women and (70%) were single. Below 50% of the respondents were unemployed. Most of the respondents had an income just above three thousand rands (R3000.00). Most of the respondents (52%) resided in a township (residence in an urban area). The Tswana ethnic group was well represented (30%) since Setswana is the language spoken in most of the areas where the study was conducted. There was a high proportion (54%) of overweight and obesity among respondents with BMI of 25kg/m2 and a lower proportion of respondents (40%) who were of normal weight (BMI of 18.5 – 24.9kg/m2) based

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on the calculated BMI. Most of the respondents (62%) perceived themselves overweight. The mean BMI of the respondents was 26.4±6.2. From the results of the chi-square test, age, sex, marital status, education level, area of residence, and self-perceived BMI had a significant effect on the attempt to lose weight among the respondents($p<0.001$).

Table 1. Sociodemographic characteristics of the respondents and attempt to lose weight ($p<0.05$).

Variables	Frequency n (%)	Tried to lose weight P -value
	Age	<0.001*
18-35 years	711 (67%)	
36-55 years	280 (27%)	
Older than 55 years	58 (6%)	
	Sex	<0.001*
Female	586 (56%)	
Male	463 (44%)	
	Marital status	0.014*
Ever married	311 (30%)	
Single	713 (70%)	
	Education level	<0.001*
No formal education	11 (1%)	
Primary education	48 (5%)	
Secondary education	268 (26%)	
Completed matric	460 (44%)	
Tertiary education	258 (25%)	
	Employment status	0.794
Not employed	494 (47%)	
Part-time employed	74 (7%)	
Self-employed	62 (6%)	
Full-time employed	411 (40%)	
	Income	0.909
<R1000.00	203 (27%)	
R1001.00- R3 200.00	214 (28%)	
R3 201.00- R6 400.00	174 (23%)	
R6 401.00- R12 800.00	99 (13%)	
R12 801.00- R25 600.00	63 (8%)	
>25601.00	8 (1%)	
	Area of residence	<0.001*
Township	542 (52%)	
Suburb	16 (1%)	
Informal settlement	102 (10%)	
Rural	373 (36%)	
	Ethnic group	0.617
Northern Sotho	190 (18%)	
Tsonga	132 (13%)	
Tswana	313 (30%)	
Venda	27 (3%)	
Xhosa	66 (6%)	
Ndebele	136 (13%)	
Zulu	89 (8%)	
Southern Sotho	52 (5%)	
Swati	45 (4%)	

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	Calculated BMI	0.816
Underweight	64 (6%)	
Normal weight	424 (40%)	
Overweight and obese	562 (54%)	
	Self- perceived BMI	<0.001*
Underweight	5 (1%)	
Normal weight	161 (29%)	
Overweight	339 (62%)	
Obese	42 (8%)	

Significant. P<0.05. R: South African rands.

3.2. Sociodemographic Characteristics of the Respondents and Failure to Lose Weight

The results of the chi-square test in Table 2 show that the area of residence and the self-perception of body weight have a significant effect on the failure to lose weight (p<0.001).

Table 2. Sociodemographic characteristics of the respondents and the failure to lose weight.

Variables	**Frequency (n%)**	***Failure to lose weight (p-value)***
	Age	*0.809*
18-35 years	*711 (67%)*	
36-55 years	*280 (27%)*	
Older than 55 years	*58 (6%)*	
	Sex	*0.061*
Female	586 (56%)	
Male	463 (44%)	
	Marital status	*0.730*
Ever married	311 (30%)	
Single	713 (70%)	
	Education level	*0.208*
No formal education	11 (1%)	
Primary education	48 (5%)	
Secondary education	268 (26%)	
Completed matric	460 (44%)	
Tertiary education	258 (25%)	
	Employment status	*0.279*
Not employed	494 (47%)	
Part-time employed	74 (7%)	
Self-employed	62 (6%)	
Full-time employed	411 (40%)	
	Income	*0.589*
<R1000.00	203 (27%)	
R1001.00- R3 200.00	214 (28%)	
R3 201.00- R6 400.00	174 (23%)	
R6 401.00- R12 800.00	99 (13%)	
R12 801.00- R25 600.00	63 (8%)	
>25601.00	8 (1%)	
	Area of residence	*0.030**
Township	542 (52%)	
Suburb	16 (1%)	
Informal settlement	102 (10%)	
Rural	373 (36%)	

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Ethnic group		0.172
Northern Sotho	190 (18%)	
Tsonga	132 (13%)	
Tswana	313 (30%)	
Venda	27 (3%)	
Xhosa	66 (6%)	
Ndebele	136 (13%)	
Zulu	89 (8%)	
Southern Sotho	52 (5%)	
Swati	45 (4%)	
Calculated BMI		0.640
Underweight	64 (6%)	
Normal weight	424 (40%)	
Overweight and obese	562 (54%)	
Self- perceived BMI		<0.001*
Underweight	5 (1%)	
Normal weight	161 (29%)	
Overweight	339 (62%)	
Obese	42 (8%)	

Significant. P ≤ 0.05. R: South African rand.

3.3. Self-Reported Weight Management Behaviour by Gender

As presented in Table 3, most of the women (71%) tried to lose weight. Most of the female respondents (93%) used diet pills and exercise at home (65%) to lose weight, and < 40% of the male respondents reported going to the gym as the method used for weight loss. The response of most of the respondents (84%) on whether the method used helped or not was that the method was not helpful. The attempt to lose weight, the weight loss method used, and whether the weight loss method helped or not had a significant effect (P < 0.001) effect on the weight management behaviour of the respondents.

Table 3. Self-reported weight management behaviour by gender.

Variables	Gender		p-value
	Female	Male	
	n	n	
Tried losing weight			<0.001*
No	137 (60%)	93 (40%)	
Yes	227 (71%)	92 (29%)	
The weight loss method used.			<0.001*
Diet pills	53 (93%)	4 (7%)	
Exercise at home	113 (65%)	60 (35%)	
Going to the gym	21 (62%)	13 (38%)	
Eating less	31 (84%)	6 (16%)	
The weight loss method helped			<0.001*
No.	80 (84%)	15 (16%)	
Yes	135 (65%)	73 (35%)	

** Significant. P ≤ 0.05.*

3.4. Logistic Regression for Sociodemographic Characteristics and Attempt to Lose Weight

The results of logistic regression are shown in Table 4, and the following variables: age, sex, marital status, education level, employment status, income, area of residence, ethnic group, and self-perceived BMI appear as significant predictors of the attempt to lose weight. The values of the odds

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ratio of the variable age indicate that there are 1.939 times, 1.581 times, and 1.707 times greater chance to attempt to lose weight, with the age group 18-35 years most likely to attempt to lose weight.

The variable sex emerged as a significant predictor of the attempt to lose weight with odds ratios 1.865 and 1.644 which means there was a 1.865 chance of women attempting to lose weight. The values of the odds ratio for the variable marital status indicate that there are 1.674 times and 1.865 times the chance of attempting to lose weight, with those who are single more likely to attempt to lose weight. The odds ratio for the variable education level is 1.117 and a 95% CI of (-0.145, 0.367), indicating a less likely chance that respondents with no formal education attempted to lose weight. The value of the odds ratio for the variable education further shows that those with tertiary education were most likely (2.009) to attempt to lose weight.

The variable employment status emerged as a significant predictor in all employment status categories (both $p<0.001$). Respondents in all income categories were likely to try to lose weight. The odds ratio (1.875) of those residing in a township indicates that they were most likely to try to lose weight. For the variable ethnic group, both ethnic groups were likely to attempt to lose weight, with the Swati ethnic group most likely to attempt weight loss. Respondents who perceived themselves as underweight had an odd ratio of 1.284 and a 95% CI of (-0.545 – 1.045), indicating a lower chance of trying to lose weight. Respondents who perceived themselves as normal weight (1.542), overweight (1.894) were more likely to attempt to lose weight and those who perceived themselves as obese (2.042) were the most likely to attempt to lose weight.

Table 4. Results of the logistic regression for sociodemographic characteristics and attempt to lose weight.

Variables	**Frequency n (%)**	***P -value***	***Odds Ratio***	***[95% Conf.Interval]***
		Age		
18-35 years	*711 (67%)*	<0.001*	1.939	(0.609 – 0.715)
36-55 years	*280 (27%)*	<0.001*	1.581	(0.387 – 0.529)
Older than 55 years	*58 (6%)*	<0.001*	1.707	(0.379 – 0.690)
		Sex		
Female	586 (56%)	<0.001*	1.865	(0.573 – 0.673)
Male	463 (44%)	<0.001*	1.644	(0.424 – 0.570)
		Marital status		
Ever married	311 (30%)	<0.001*	1.674	(0.449 - 0.581)
Single	713 (70%)	<0.001*	1.862	(0.567- 0.675)
		Education level		
No formal education	11 (1%)	0.347	1.117	(-0.145 –0.367)
Primary education	48 (5%)	0.005*	1.374	(0.106 – 0.529)
Secondary education	268 (26%)	<0.001*	1.684	(0.437 – 0.605)
Completed matric	460 (44%)	<0.001*	1.793	(0.519 – 0.648)
Tertiary education	258 (25%)	<0.001*	2.009	(0.623 – 0.772)
		Employment status		
Not employed	494 (47%)	<0.001*	1.831	(0.541 – 0.669)
Part-time employed	74 (7%)	<0.001*	1.716	(0.372 – 0.708)
Self-employed	62 (6%)	<0.001*	1.763	(0.400 – 0.735)
Full-time employed	411 (40%)	<0.001*	1.762	(0.503 – 0.629)
		Income		
<R1000.00	203 (27%)	<0.001*	1.848	(0.515 – 0.713)
R1001.00- R3 200.00	214 (28%)	<0.001*	1.750	(0.461 – 0.658)
R3 201.00- R6 400.00	174 (23%)	<0.001*	1.818	(0.461 – 0.658)
R6 401.00- R12 800.00	99 (13%)	<0.001*	1.701	(0.498 – 0.697)
R12 801.00- R25 600.00	63 (8%)	<0.001*	1.788	(0.405 – 0.656)

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>25601.00	8 (1%)	0.030*	1.770	(0.427 – 0.735)
Area of residence				
Township	542 (52%)	<0.001*	1.875	(0.574 – 0.683)
Suburb	16 (1%)	0.007*	1.648	(0.168 – 0.831)
Informal settlement	102 (10%)	<0.001*	1.335	(0.138 – 0.440)
Rural	373 (36%)	<0.001*	1.772	(0.500 – 0.643)
Ethnic group				
Northern Sotho	190 (18%)	<0.001*	1.829	(0.506 – 0.700)
Tsonga	132 (13%)	<0.001*	1.828	(0.473 – 0.733)
Tswana	313 (30%)	<0.001*	1.755	(0.488 – 0.636)
Venda	27 (3%)	0.008*	1.535	(0.132 – 0.725)
Xhosa	66 (6%)	<0.001*	1.603	(0.300 – 0.643)
Ndebele	136 (13%)	<0.001*	1.748	(0.437 – 0.679)
Zulu	89 (8%)	<0.001*	1.919	(0.509 – 0.795)
Southern Sotho	52 (5%)	<0.001*	1.883	(0.450 – 0.816)
Swati	45 (4%)	<0.001*	2.013	(0.479 – 0.920)
Self-perceived BMI				
Underweight	5 (1%)	0.391	1.284	(-0.545 – 1.045)
Normal weight	161 (29%)	<0.001*	1.542	(0.354 – 0.511)
Overweight	339 (62%)	<0.001*	1.894	(0.587 – 0.690)
Obese	42 (8%)	<0.001*	2.042	(0.571 – 0.856)

** Significant. P ≤ 0.05.*

3.5. Logistic Regression for Sociodemographic Characteristics and Failure to Lose Weight

Age, sex, marital status, educational level, employment status, income, area of residence, ethnic group, and self-perceived BMI were significant predictors of weight loss failure (Table 5). Respondents in the age group of 18 – 35 years had an odds ratio of 11.469, showing the probability of not losing weight. The probability that women did not lose weight was 11.698 times compared to their male counterparts. Singles were 11.355 times most likely to fail to lose weight compared to those who were ever married. Those without formal education were less likely (-0.111 – 3.111) to fail to lose weight, and those with higher education level: secondary (9.932), completed matric (11.767), and tertiary education (11.685) were more likely to fail to lose weight. With employment status, those who were not employed had an odd ratio of 14.339, indicating that they were most unlikely to lose weight. All income categories were significant predictors (P <0.001) of failure to lose weight, with those in the higher income bracket (R12 801.00- R25 600.00) most likely to fail to lose weight. The area of residence was significant for all categories ((P <0.001), and those who resided in townships and rural areas were most likely to fail to lose weight. All ethnic groups except southern Sotho were most unlikely to lose weight. Those who perceived themselves as underweight were less likely (-2.287 – 5.287) to fail to lose weight. The value for the odds ratio of those who perceived themselves as obese is 42.521 (2.662 – 4.837), which shows a higher probability of failure to lose weight.

Table 5. Results of the logistic regression for sociodemographic characteristics and failure to lose weight.

Variables	**Frequency n (%)**	**P -value**	**Odds Ratio**	**[95% Conf.interval]**
Age				
18-35 years	711 (67%)	<0.001*	11.469	2.062 – 2.816
36-55 years	280 (27%)	<0.001*	9.641	1.876 – 2.655
Older than 55 years	58 (6%)	<0.001*	8.523	1.092 – 3.193
Sex				
Female	586 (56%)	<0.001*	11.698	2.129 – 2.789

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Male	463 (44%)	<0.001*	8.611	1.728 – 2.577
Marital status				
Ever married	311 (30%)	<0.001*	9.613	1.871 – 2.655
Single	713 (70%)	<0.001*	11.355	2.072 – 2.786
Education level				
No formal education	11 (1%)	0.064	4.481	-0.111 – 3.111
Primary education	48 (5%)	0.010*	5.754	0.481 – 3.018
Secondary education	268 (26%)	<0.001*	9.932	1.779 – 2.811
Completed matric	460 (44%)	<0.001*	11.767	2.065 – 2.865
Tertiary education	258 (25%)	<0.001*	11.685	1.912 – 3.003
Employment status				
Not employed	494 (47%)	<0.001*	14.339	2.242 – 3.083
Part-time employed	74 (7%)	<0.001*	4.141	0.372 – 0.708
Self-employed	62 (6%)	<0.001*	5.506	0.400 – 0.735
Full-time employed	411 (40%)	<0.001*	10.105	0.503 – 0.629
Income				
<R1000.00	203 (27%)	<0.001*	7.996	1.368 – 2.789
R1001.00- R3 200.00	214 (28%)	<0.001*	10.590	1.789 – 2.930
R3 201.00- R6 400.00	174 (23%)	<0.001*	8.109	1.442 – 2.743
R6 401.00- R12 800.00	99 (13%)	<0.001*	8.092	1.276 – 2.905
R12 801.00- R25 600.00	63 (8%)	<0.001*	17.411	2.014 – 3.699
Area of residence				
Township	542 (52%)	<0.001*	10.784	2.015 – 2.740
Suburb	16 (1%)	0.030*	5.552	0.231 – 3.197
Informal settlement	102 (10%)	0.001*	3.549	0.546 – 1.986
Rural	373 (36%)	<0.001*	14.448	2.214 – 3.126
Ethnic group				
Northern Sotho	190 (18%)	<0.001*	7.236	1.396 – 2.561
Tsonga	132 (13%)	<0.001*	9.487	1.332 – 3.167
Tswana	313 (30%)	<0.001*	10.994	1.921 – 2.873
Venda	27 (3%)	0.005*	15.642	1.154 – 4.345
Xhosa	66 (6%)	<0.001*	11.588	1.371 – 3.528
Ndebele	136 (13%	<0.001*	13.703	2.016 – 3.219
Zulu	89 (8%)	<0.001*	9.227	1.135 – 3.308
Southern Sotho	52 (5%)	0.066	4.055	-0.115 – 2.915
Self- perceived BMI				
Underweight (<18.5kg/m2)	5 (1%)	0.297	4.481	-2.287 – 5.287
Normal weight (18,5 – 24.99kg/m2)	161 (29%)	<0.001*	8.853	1.779 – 2.582
Overweight (25kg/m2 – 29.99kg/m2)	339 (62%)	<0.001*	10.905	2.020 – 2.758
Obesity (30kg/m2 and above)	42 (8%)	<0.001*	42.521	2.662 – 4.837

** Significant. P ≤ 0.05.*

3.6. Pearson's Correlation Coefficient between Self- Perceived BMI, Attempt to Lose Weight, and Failure to Lose Weight

The results of the Pearson correlation as shown in Table 6 below indicate a positive correlation between self-perceived weight and the weight loss attempt, with a Pearson correlation coefficient of r = 0.2015, (p <0.0001). There was also a positive correlation between the failure to lose weight and self- perceived BMI.

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Table 6. Pearson's correlation coefficient between self- perceived BMI and attempt to lose weight.

	Self-perceived BMI	Attempt weight loss	Failure to lose weight
Self-perceived BMI	1.0000		
Attempt weight loss	0.2015* <0.0001	1.0000	
Failure to lose weight	0.1342* 0.0373	-0.0500^{ns} 0.4392	1.0000

* Significant correlation at P ≤ 0.05, ns: no significant correlation at P <0.05.

4. Discussion

The study aimed to determine the predictors of weight loss attempt and failure among the South African population. The study results showed that, according to the calculation of the BMI, most of the people are overweight and obese (BMI>25kg/m2), and that less than 50% of the population falls within the normal weight range (BMI = 18.5-24.9kg/m2). Furthermore, most of the respondents perceived themselves as overweight. There was a higher proportion of women in the study, and most were single. Adeloye et al. [23] in a study conducted in Nigeria, reported a higher prevalence of obesity among women. Inversely, a study conducted in China by Zheng et al. [24] reported a higher prevalence of overweight among men compared to their female counterparts. Another study that noted a higher prevalence of obesity among men was conducted in the United States (USA) by Ogden et al.[25]. Currently, there is a different trend from the one observed in most studies, showing a high prevalence of overweight among men. The trends that are emerging among men are noteworthy and indicate a shift in the prevalence of overweight and obesity. As reported in the studies, the increase in overweight and obesity is an indication of sedentary and unhealthy lifestyles. These findings are of great importance for the development and implementation of effective public health interventions programmes for men and women.

The OR of the age group of 18 -35 years was higher than of the other age groups in the study, although all ORs in the age group were greater than 1. Therefore, the findings suggest that people in the 18 -35-year age group were more likely to attempt to lose weight. A study conducted in Brazil reported an attempt to lose weight among ages 19 – 59 years [26]. Lee and Hong [27] in a study conducted among Koreans noticed that those who participated in weight loss efforts were individuals over 51 years of age. As the study findings have shown, individuals in all age groups attempted to lose weight, including those older than 55 years. However, the reasons for participating in weight loss among the different age groups may differ. In young people, peer pressure and social media can influence the desire to achieve ideal weight by attempting to lose weight [28]. On the other hand, in older adults, participation in weight loss efforts can be attributable to improvements in health. Education strategies for different age groups and adapted to individual needs are necessary to make informed weight management decisions.

Sex emerged as a significant predictor of the attempt to lose weight in the study. While the point estimates of the OR for both men and women were greater than 1, the OR for women was higher, indicating the likelihood that women would try to lose weight. The study revealed that most women tried to lose weight. An interesting aspect that emerged from the analysis is that the men also tried to lose weight. Similar conclusions were drawn by Santos et al. [29] and Sobal et al. [30] that a higher number of women than men consistently try to lose weight. Interestingly, the findings of the current study show an emerging trend for males to attempt to lose weight. Similar trends have been reported by Zhong et al. [31] in their systematic review where a weight loss attempt among men was observed. Men who are participating in weight loss strategies may be able to explain their fears about the consequences of excess weight and obesity [32]. Strategies to increase awareness of the dangers of excessive weight gain are essential not only for overweight people, but also for those who are overweight and at normal weight. It is important to understand that, if you maintain healthy weight, you will reduce the risk of chronic diseases such as diabetes, heart disease, sleep apnea, and other

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chronic diseases [33]. Furthermore, the results of the study showed that women did not lose weight when they tried. The reason can be attributed to that women are more likely to be the victim of weight stigma and lack of knowledge that weight loss is effective [34]. With regard to public health, individuals and communities need to be educated through community-based strategies to raise awareness of obesity.

Most of the women who responded reported using diet pills and < 40% of the men reported going to the gym as a weight loss strategy. The results of men going to gym are noteworthy, however, most of the respondents are unemployed and may not have the means to go to the gym. The study also did not determine the frequency of gym trips, and respondents may have offered socially desirable responses. On the other hand, the concern about the use of diet pills is that they are not suitable for long-term weight management, are impractical, are unsustainable and may be harmful to the health of the individual [35]. Systematic reviews have stated that the effectiveness of weight loss pills cannot be guaranteed [36,37]. A study conducted in South Africa by Senekal et al. also reported the use of weight loss medications among students [16]. The study findings are consistent with those of Machado et al. [35] in a study conducted in Brazil, where there was a reported increase in the likelihood of using weight loss substances in people under the age of 60 years. Most respondents in the current study were unemployed and had lower incomes, making the use of diet pills unsustainable. However, no results have been reported on the effects of diet pills. Public health interventions and initiatives should be designed to educate people about various weight management strategies and raise awareness about the use of diet pills as a weight management measure. This means that individuals should seek a comprehensive change in lifestyle rather than a quick and temporary solution. Public programmes aimed at preventing weight gain and promoting weight loss can benefit both those with obesity-related metabolic complications and those without.

The study respondents also reported eating less food as a strategy for weight control. However, it should be noted that the actual amount of food consumed in this population is not measured and that the concept of "less eating" can be interpreted differently. In addition, the authors of [38] similarly concluded from their data that participants who attempted weight loss reported consuming less food as a strategy of choice. However, it should be noted that people can eat less food with high energy content and gain weight [38] Most people live in urban areas, where the food environment encourages consumption of high-energy, dense, high-fat, high-sugar foods, and fast food [39] . The consumption of high-fat, energy-dense, and high-fat foods contributes to the growing problem of overweight and obesity. Thapa et al. [40] in a study conducted in Myanmar argued that people can report eating less food while consuming higher amounts of carbohydrates, leading to weight gain and increased BMI. Food choices may also be influenced by socio-economic conditions, as people may lack financial means to adopt a healthier lifestyle [41,42]. An important point to note is that by reporting their eating habits as a weight control strategy, participants can provide desirable social responses to these effects. Female participants reported that eating less was a strategy, overwhelmingly. These results differ slightly from those of Tsai et al. [33] who reported exercising and eating less fat as weight strategies used by male participants in their study. Weight management is a public health issue and can be seen as an investment in the well-being of the population by guiding individuals towards evidence-based weight control approaches. Nutrition education for the public is part of an effective strategy for equipping people and families to make healthier food choices to combat obesity.

The values of the odds ratio of the variable marital status indicates that respondents who have ever been married and single respondents are more likely to try to lose weight, although the probability of trying to lose weight in single respondents is higher. The study findings are interesting because other studies show that it is mostly unmarried women who usually engage in weight loss practices as compared to married women [43]. Tzotzas et al. [44], in their study, they share this view, suggesting that unmarried persons can make more efforts to improve their attractiveness. The dominance of single participants may explain why many of them tried to lose weight. In contrast, Joh et al. [45] argued that women are susceptible to obesity, but may not be proactive in weight management because they are the main caregivers and cooks in the family setting. Interestingly, the

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results of the study show that even married people tried to lose weight. It is not possible to exclude the desire to improve the current state of health of all respondents, although in the current study it was not measured whether they had any obesity-related diseases. Interventions aimed at reducing obesity, including strategies to reduce weight gain, should also be implemented for married persons as well.

The probability ratio for respondents without formal education shows that they are less likely to try to lose weight and those with higher education are more likely to try to lose weight. The results for people with higher education are consistent with the findings of the study by Lee and Hong [27], which showed that upper- and middle-school graduates are more likely to exercise weight control than other graduates. The most interesting observation that emerged from the current data was that respondents without formal education were less likely to try to lose weight. Education is a potential determinant of an individual's socio-economic status and, in turn, influences the choice of diet and habits. In addition, people with higher levels of education are more likely to access materials and media related to health and nutrition messages, even if they are not necessarily translated into healthier lifestyle. Younger people may lack knowledge about weight management and control and choose not to do anything if they are overweight or obese. Health education initiatives aimed at both individuals without formal education and those with higher education are encouraged to adopt a healthier lifestyle.

The results of the study show that the employment status categories appear to be important predictors of weight loss attempts. Respondents in all employment categories are likely to try to lose weight. Similarly, the results show that respondents in different income categories are likely to try to lose weight. However, studies such as those conducted by Santos et al. [29] and Lee and Hong [27], contrary to current research, reported that people with higher socio-economic status and higher incomes may control weight. Thapa et al. [40]’s view of individuals with high socioeconomic status is that they have purchasing power, and are therefore, able to access energy-dense foods and expensive food items which lead to weight gain. However, this may not be the case in the current cohort of respondents. The study showed an interesting trend, with even low-income respondents trying to lose weight. To implement effective and relevant strategies, the trend needs to be looked at in more detail. In terms of the area of residence, all categories were significant predictors of weight loss attempts, although those who live in the township had the odds ratio which was higher than other categories. Thus, those who resided in the township were more likely to attempt to lose weight. Inversely, a study conducted by Mench et al. [46] observed a trend of more weight loss occurring among those in rural areas. The findings of Mench et al. are contrary to the expectation that people in urban areas are the ones who lose weight because they have a higher consumption of fast food and caloric soft drinks [40]. Interestingly, the findings of the study show that all respondents in each residential category tried to lose weight. This result is not expected and warrants further investigation. Health-related messages are important to be tailored to each area of residence according to their needs.

For the various ethnic groups, they were both likely to try to lose weight, as the study shows, and the Swati ethnic group was the most likely to try to lose weight. In South Africa, most studies were conducted mainly among blacks and whites [47,48]. These conclusions merit further discussion and research because of fewer studies conducted among the different ethnic groups. Future studies are needed to provide information that can explain the results of the study. There is a lack of studies investigating the association of ethnic groups, as proposed in the study. The gap is worth highlighting because the current study is the first to report on these new discoveries. The results will help to plan and implement a suitable strategy to combat obesity among individuals, communities, and different ethnic groups.

The study findings showed a positive correlation between self-perceived BMI and the attempt to lose weight. The authors of [49] are of the opinion that weight perceptions strongly influence the attempt to lose weight. Furthermore, the findings of the study show that, with the exception of people who perceive themselves to be underweight, people who perceive themselves to be normal, overweight, and obese, are likely to try to lose weight [34] and [50]. People who perceived themselves

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overweight in the study tried to lose weight. Contrary to the study findings by authors of [51], people of normal weight reported less desire to lose weight. Consistent with some of the findings is a study conducted in England by Piernas et al. [52], where the most common weight control attempts were observed among overweight and obese individuals. Lee and Hong [27] reported that women who considered themselves obese were more likely to try to lose weight. The possible reasons for participation in weight loss are that people are already diagnosed with cardiovascular disease and are trying to improve their health status [53]. Sirirassamee et al. [54], on the other hand, argued that women who mistakenly believe that they are overweight may not try to lose weight. The authors of [31] agree with the study findings showing that those who perceive themselves underweight are less likely to attempt weight loss. In order to address weight management, interventions should give priority to educating people on the understanding of body weight perception. Public health interventions indicate that people who are overweight are unable to engage in weight control measures because they believe weight loss cannot be achieved. The study also showed that people who perceived themselves as normal, overweight, and obese failed to lose weight. In support of the findings, Evans et al. [55] noted in studies carried out in Europe that people who were obese and tried to lose weight were unsuccessful. Obesogenic food environments, including high-calorie foods and sedentary lifestyles, can inhibit weight loss [56]. Therefore, strategies for addressing body weight must include changes in lifestyle, cost-effective means, and community consideration.

Conclusions

Findings: The study revealed the influence of age, gender, marital status, educational level, location of residence, and self-assessed weight in attempting to lose weight. Furthermore, the area of residence and the perception of body weight in themselves influence those who try to lose weight. Furthermore, the study found a positive correlation between age, gender, marital status, educational level, occupation, income, area of residence, and body weight perception, suggesting that most participants in these categories are likely to try to lose weight. In general, the study revealed a curious trend that weight loss attempt was likely to occur in all categories of socio-demographic characteristics. Consequently, awareness of BMI measurements and weight loss are important aspects of effective weight management programmes.

Significance: The findings are of significance as they will have an important impact on the development of interventions to promote healthy weight management practices.

Implications: The knowledge obtained from the study can be instrumental in determining public health policies and interventions aimed at making necessary changes to the weight management strategy to improve the results at the population level. In addition, these discoveries provide an opportunity to apply weight control strategies that meet specific requirements for individuals and communities.

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Informed consent statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: Original data used to support the findings of this study are available from the corresponding author upon request.

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