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Knowledge and Perceptions on Overweight and Obesity among Adults in Same District, Tanzania

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Abstract

Overweight and obesity are nutritional problems requiring great attention in both developed and developing countries where nutrition knowledge is confined to few people allied with health sectors. A cross-sectional study was conducted to assess knowledge and perception about overweight and obesity among 362 adults aged 25-55 years in Same District, Kilimanjaro Region. This age group comprises active people at higher risk of non-communicable diseases, and much of the effects may not be due to aging. A structured questionnaire was administered through a face-to-face interview to obtain demographic characteristics, nutrition knowledge and perception about overweight and obesity. Standard WHO Anthropometric procedure of weight and height measurement was used to obtain Body Mass Index (BMI) which was categorized as normal (18.5-24.9kg/m^2), overweight (25-29.9kg/m^2) and obesity (≥30 kg/m^2). A high prevalence of overweight (23%) and obesity (17%) was observed among adults. Women were more overweight (28%) and obese (23%) as compared to men (14%) and (6%) respectively. About 80% perceived their body weight as being normal but in reality, only 51% were confirmed to be normal. Also, 22% of overweight respondents perceived their body weight as normal and 10.5% of obese people perceived their BMI as being overweight. Nevertheless, 60% perceived an obese person as healthy and rich and 26% perceived a thin person as poor and unhealthy because they associated thinness with illness such as HIV/AIDS. Obesity was significantly related to income, sex, parity of the mother, education levels, perception and employment status at P<0.005. The high prevalence of overweight and obesity, lack of nutrition knowledge and poor perception about body weight may increase the risks of developing non-communicable diseases. Hence, these findings will assist health-related stakeholders to design appropriate interventions to reduce the problems.

Keywords: *Overweight, Obesity, perception, knowledge, Adults*

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Introduction

Overweight and obesity are defined by a person's body mass index (BMI), the conditions of excessive fat accumulation in the body categorized as overweight (25-29.9kg/m^2) and obesity (=>30 kg/m^2) (WHO, 2005). These conditions are highly associated with a number of non-communicable diseases (NCDs) including cardiovascular and kidney diseases, type 2 diabetes mellitus, different type of cancers, musculoskeletal disorders, and other chronic

diseases (Non-Communicable Diseases Risk Factor Collaboration 2016; Dai *et al*., 2020). Evidence from the World Obesity Federation's Atlas report shows that 2.6 billion people worldwide (38% of the population) was overweight or obese in 2020. It further emphasizes that obesity alone is projected to upswing from 14% in 2020 to 24%, or approximately 2 billion people by 2035 (Lobstein *et al*., 2022).

In Tanzania likewise, the prevalence of overweight and obesity has been reported to rise among women of reproductive age (15-49 years of age) from 28% in 2015 to 31.5% in 2018) (Ministry of Health, Community Development, Gender, Elderly and Children [MoHCDGEC] *et al.*, 2016; 2018). The higher prevalence of obesity leads to an increase in non-communicable diseases (NCDs) such as type 2 diabetes mellitus (T2DM), cardiovascular diseases, and hypertension which are the biggest health and developmental threats among populations (Gbadamosi and Tlou, 2020).

Although overweight and obesity are increasing at an alarming rate, most of adults may have poor perception and knowledge on the situations which may affect their efforts to control and manage the conditions. Knowledge on the increasing rate of overweight and obesity and associated risks is very important as it makes people aware of the associated consequences. According to the Health Belief Model, perceived susceptibility to disease is a key predictor of health behavior change (Janz and Becker, 1984). Based on this model, the development of tailored behavior change strategies requires an understanding of patients' perceived risk of a disease for building a spirit of self-care seeking behaviors. Increasing one's knowledge of nutrition improves attitudes, beliefs, and self-efficacy toward the consumption of a healthy diet and a possible increase in physical activity. Improving dietary knowledge can help people adjust their eating and exercise behaviors to attain a balance between consumption and expenditure (Wagner *et al.,* 2016). Therefore, it is important to examine the relationship between nutrition knowledge, perceptions, and body mass index to come up with appropriate interventions for addressing the conditions. Hence, this study aimed to assess knowledge and perceptions about overweight, obesity and underweight among adults residing in Same District in Kilimanjaro, Tanzania.

Material and methods

A cross-sectional survey was conducted among adults from 25-55 years old to a total of 362 adults. The study excluded those who refused to consent, pregnant and lactating women as their weight may be affected by pregnancy and fats deposited for preparation of lactation. Purposive sampling was done in selecting seven wards (Lugulu, Mtii, Bombo, Vuje, Kisima, Maore, Ndungu). In this technique the wards were purposively selected based on their coverage and a large number of people residing in the areas and their locations to make sure that both low and highland areas are represented. From each ward, one village was randomly selected using a table of random numbers to get a total of four villages (Kanza, Mtii, Bombo, Vuje) and three streets (Kisima, Mpirani, Ndungu). Proportionate sampling was used to select adults from each village and street to ensure that the selection accounts for the population sizes. In this method, the number of adults to be included from each village was selected according to the respective population size of the village. The individual respondents were selected by using random sampling. Weight was measured using a digital weighing scale (SECA-Germany) and recorded to the nearest 0.1kg. Height was measured using a Harpenden stadiometer (Holtain ltd-UK) which was placed firmly against a wall and read to the nearest 0.1cm. The BMI of the subject was derived by dividing the weight (kg) and height (m^2) of the subjects. The BMI indices were used for classifying subjects into various categories based on WHO (2005) criteria. A structured questionnaire was administered through face-to-face interviews to obtain data on demographic characteristics, nutrition knowledge, and perception about overweight, obesity, and associated co-morbidities. Data collected were edited and analyzed using Statistical Product and Service Solutions (SPSS)™ version 20 where descriptive statistics such as frequency, means and percentages were obtained. The student t-test was used to compare means of BMI between sexes. Information on

BMI was analyzed by using Microsoft Excel. The relationships among categorical variables such as nutrition education, knowledge, perception, and parity of the mothers, gender and the prevalence of obesity were established by Chi-square test.

Ethical considerations

The ethical clearance for the study was approved by the National Institute of Medical Research (NIMR) registration number NIMR/HQ/R.8a/Vol.IX/3798 and Same District Health Administration as well as district and local leaders who provided the permission to proceed with the study. The study considered the willingness of the people where written consent was obtained from each participant. Confidentiality was assured by assigning numbers to participants as their identification and names were used during data collection but not during data management.

Results

Demographic characteristics

Two-thirds (67%) of the subjects were females and about 48% of respondents had more than four children. The majority of the respondents (95%) were married. Most of respondents had completed primary school level of education (82.9%) with 9.4% who completed secondary and 2.9% who completed college level of education. The non-formal sector employs 89% of the subjects and the main occupation was agriculture (Table 1).

Table 1

Demographic characteristics of the respondents (n = 362)

Variables assessed	n	Percent
Sex		
Males	119	33.0
Females	243	67.0
Number of children		
No children	28	8.0
<4children	162	43.8
>=4children	172	48.2
Marital status		
Married	344	95
Not married	18	5
Education levels		
Never been to school	18	4.9
Primary education level	300	82.9
Secondary education	34	9.4
College Education level	10	2.8
Type of Jobs		
Formally Employed	40	11.0
Non formally Employed and Unemployed	322	89.0
Main occupation		
Agriculture	282	78.0
Non-agricultural activities	80	22.0

Nutrition status of the respondents

About 24% of respondents were found to be overweight and 17.4% were obese with an overall mean BMI of 24.4kg/m^2. Twenty-eight percent of females were overweight and 23% were obese compared to 14% and 6% of males respectively. The mean BMI was significantly different (p=0.000) between males and females (Table 2).

Nutrition knowledge among adults

The majority of the respondents (79%) had no nutrition knowledge and about 58% have never assessed their nutrition status. Among a few respondents whose nutrition status was assessed, 95% were assessed at the hospital when they went for other complaints. About 48% of respondents were aware of the causes of being overweight or obese while 52% were not. Nevertheless, 50% of respondents were not aware of the effects of being overweight and obese on people's health because they associated it with diseases like malaria, flu and skin rashes. Only 37% of the respondents were concerned about an increase in their body weight while 63% were not. Despite half of the respondents knowing the effects of being overweight and obese, the majority (85.6%) did not know the good ways of keeping a healthy body weight as they thought it could be maintained by consuming much salt, sugar, fats/oils as well as refined foods (Table 3).

Table 2

Nutrition status of respondents (BMI in kg/m2)

Variables	Underweight <18.5	Normal 18.5 –24.99	Overweight 25-29.99	Obese >=30	BMI mean difference	P- value
Overall	28 (7.7%)	186(51.4%)	85 (23.5%)	63(17.4%)		
Males	18(15.5%)	78(67.2%)	14(12.1)	6(5.2%)	2.4748	0.000
Females	13(5.3%)	110(44.7%)	69(28.0%)	54(22.0%)		

Note: Mean differences are significant at a 0.05(95%) level

Table 3

Nutrition knowledge among adults (n=362)

Variables assessed	Frequency	Percent
Received nutrition information		
Yes	76	21.0
No	286	79.0
Assessed Nutrition status		
Yes	154	42.5
No	208	57.5
Reason for assessment (n = 154)		
In the hospital during the visit for other complaints	146	95.0
Assessed alone without any complaints	8	5.0
Knowledge on the cause of overweight/obesity		
Yes	173	48
No	189	52
Understand the effect of overweight/obesity		
Yes	180	49.7
No	182	50.3
Sensitive(concerned) and care about their body weight		
Yes	134	37
No	228	63
Know ways of keeping healthy body weight		
Yes	52	14.4
No	310	85.6

Perceptions on body weight

About 80.2% of respondents perceived their body weight as normal while in reality only 51% of respondents were measured and confirmed to be normal. When the results were analyzed according to BMI, 48.3% of respondents correctly perceived their body weight as been normal, while 22% who were overweight perceived their body weight as normal and 10.5% of obese people perceived themselves as being overweight. Nevertheless, about 60% of the respondents perceived an obese person as healthy and rich and 26% perceived an underweight (thin) person as poor and unhealthy because they associated thinness with illness such as HIV/AIDS (Table 4).

Table 4

Perceptions on body weight (n=362)

Variables assessed	Frequency	Percent
Perception on own body weight		
As normal	283	80.2
As overweight/obese	34	9.3
As underweight/thin	45	10.5
Perception of an obese person		
As a Healthy and rich	218	60.2
As Unhealthy	144	39.8
Perception of an underweight (thin) person		
As healthy / Normal	268	74
As unhealthy and poor	94	26
Perception of own weight according to BMI		
Underweight but perceived as normal	16	4.4
Normal but perceived as underweight	29	8
Overweight but perceived as normal	78	21.6
Obese but perceived as normal	38	10.5
Obese but perceived as overweight	22	6.1
Obese/overweight but perceived as underweight	4	1.1
Normal and perceived as real normal	175	48.3

Factors associated to overweight and obesity among respondents

Among the factors analyzed to assess the relationship between overweight and obesity, sex and perception about body weight revealed a significant association between overweight and obesity at p=0.000, furthermore employment status, lack of nutrition knowledge, education level, and parity of the mother (number of children) also showed a significant association with overweight and obesity all at P<0.005. Marital status did not show any relationship with overweight and obesity (Table 5).

Table 5

Chi-square tests of the variables for relationships between overweight and obesity

Variables	Chi-square values	df	p-value
Gender (sex) (Female)	38.034 [a]	3	0.000*
Perception of own body weight	108.836 [a]	15	0.000*
Lack of Nutrition Education	18.928 [a]	3	0.048*
Employment status	9.117 [a]	3	0.028*

Parity of the mother(number of children)	7.329 [a]	6	0.005*
High Education level	6.229[a]	4	0.0045
Marital status	2.618 [a]	3	0.454

*Denotes significance at $p < 0.05$

Discussion

The current study revealed a high prevalence of overweight and obesity among adults. This may be attributed to changes in lifestyles. Among the obese and overweight respondents, more than half were females. The higher prevalence of overweight and obesity among females may be due to parity of the mothers as the number of children was found to be significantly related to the BMI of respondents. An increase in the number of children (parity of the mother) is associated with weight gain as a result of weight retention in each additional child born. Moreover, in the study area, most of the women take a leave of a minimum of three months after delivery without doing hard work but small household chores only. This cultural practice may contribute to an increase in the prevalence of overweight and obesity as it is done with the purpose of making sure that a woman regains the lost energy and get fat as a symbol of good health and care. When a woman comes out without being fat, it is perceived as poor feeding and care which is a shame to the husband and his family. These practices and their perceived social values may increase the rate of overweight and obesity in society, especially among females. Studies concur with the current findings that women with one or more children are more likely to be overweight or obese compared to those with no children (Pobee *et al.* 2013; Agbeko *et al*., 2013: Appiah *et al.* 2014). This has been supported by other studies in South Africa that in the African context mothers are encouraged to eat more for their well-being and their infants after delivery, leading to extreme weight gain (Dake *et al*., 2010; Okop *et al*., 2016). This may contribute to the increasing rate of overweight and obesity in many parts of Africa leading into NCDs.

Knowledge about overweight, obesity and associated co-morbidities

More than half of the respondents were not aware of the causes and effects of being overweight and obese. This is because they mentioned causes of overweight and obesity as being the consumption of foods high in fiber, fruits and vegetables. Nevertheless, they mentioned diseases like malaria, flu, and skin rashes as the effects of being overweight and obese. The majority of respondents who were not aware of the causes and effects of obesity and overweight may be contributed to a lack of nutrition knowledge and education which was also found to be associated with overweight and obesity in the current study. A substantial number of the respondents measured their body weights whenever they went to hospitals for treatment which indicates that there was no tendency of assessing nutrition status regularly. Furthermore, the majority of the respondents were neither concerned nor sensitive to the increase in their body weight and the majority did not know good ways of keeping a healthy body weight, as they thought it could be maintained by consuming much salt, sugar, fats/oils as well as refined foods. Studies support these findings that underestimation of weight may be caused by lack of information on personal weight and not knowing the definition of overweight and obesity because information about real weight status increases the likelihood of overweight/obesity individuals attempt to lose weight (Post *et al.,* 2011).

Perceptions towards overweight, obesity and associated co-morbidities

The majority of respondents perceived themselves as having normal body weight, while in reality only half of them were measured and found to have normal body weight. Nevertheless, the majority of the obese subjects perceived themselves as overweight and those who were overweight perceived their BMI as normal. This may have contributed to the observed rate of overweight and obesity among adults. Lack of nutrition knowledge and nutrition status assessment leaves the community feeling

comfortable about their nutrition status such that they do not think of changing their life lifestyles such as physical activities and eating habits.
Other studies support that there has been a widespread of normalization of heavy body weights that resulted in a number of people whose real BMI is in the overweight range but do not recognize that they are overweight (Robinson, 2017). Another study supports that medically defined individuals as overweight believe that their weight is just normal. This has been revealed by a study from mates in England which suggest that more than one in three men and one in five women who are overweight or obese, underestimate their weight status (Muttarak, 2018).

Also, the majority of the respondents perceived an obese person as healthy and rich, while few perceived a thin (underweight) person as unhealthy and poor, this is due to the fact that they associate thinness with illness such as HIV or any other kind of diseases. This implies that people have poor attitudes and perceptions towards thinness (underweight) which may increase the rate of overweight and obesity in the community because people feel proud of being fat and inferior of being thin. All these factors may have contributed to an observed high prevalence of overweight and obesity among adults. Wang *et al.,* (2009), supports that perception of one's own weight is important for controlling weight.
In developing countries, cultural perceptions and ideals attributes to the increase in overweight and obesity, particularly in Africa as it is commonly believed that healthy people should not be skinny as it symbolizes poverty and illness (Simfukwe et al., 2017). The perception that being overweight is considered good, healthy, and a sign of prosperity is also reported in South Africa and countries such as Morocco and the USA (Okop et al., 2016). This is because it is believed that when an individual has money can buy food and eat as much as possible which reflect their income (Simfukwe *et al.,* 2017). Thus, it is emphasized that wealth and well-being are involved in perpetuating the upsurge in overweight and obesity (Agyapong *et al.,* 2020). Another common belief that drives the desire for a larger body weight remains and can be perpetuated by a stigma attached to being "thin" and the labeling of thin individuals as HIV-infected (Ofori and Angmorterh, 2019). This perception and attitude continue to upsurge the burden of overweight and obesity among individuals and society.

An overweight body was found to have positive implications within African community, signifying happiness, beauty, affluence, health and a negative HIV/AIDS status (Ofori and Angmorterh, 2019). In Tanzania likewise, people's perception of body weight has been greatly influenced by the HIV pandemic (Ezekiel *et al.*, 2009). Contrary to the current findings, a study done in Lithuania reported that participants had similar body size perceptions and knowledge about obesity whereby disappointment with their current weight was significantly associated with healthier behavior among obese participants (Zelenytė *et al.,* 2021). The sense of feeling unhappy among participants with high BMI signifies the knowledge on the importance of having normal BMI which may motivate them to engage in weight reduction mechanisms to obtain a normal weight. Another study supports that perceptions and beliefs play a significant role in preventing and managing overweight and obesity (Manafe *et al.,* 2022). Hence, knowledge to improve attitudes and perceptions about overweight and obesity may have a great influence on prevention, control and management of overweight and obesity to prevent the development of NCDs.

Conclusion

A substantial proportion of respondents in this study were either overweight or obese especially among females than males. This may increase the risks of developing nutritional related chronic diseases such as type II diabetes and cardiovascular diseases. Overweight and obesity were found to be associated with factors such as parity, sex, poor perceptions and lack of nutrition knowledge. There was little nutrition knowledge and assessments among adults particularly males who normally think that, a nutritional assessment is a special care given to women and children. Also there was a poor perception towards overweight, obesity and underweight, which may have increased the observed prevalence of overweight and obesity in adults.

Further research can be done to other age groups including school children to see if nutrition information is offered to them and their curriculums include some important and basic nutrition concepts. Also, there should be awareness creation and promotion of regular nutrition status assessment to the community so as to take informed preventive measures before the situation become worse.

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