

Weight Status (BMI) and Self-Reported Body Image of Saudis and Non - Saudis Female Staff at the University of Hail, (KSA)

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ABSTRACT

Background: Body image and weight perceptions have a significant impact on nutritional practices and weight management. An inability to accurately assess body image and weight status may result in ineffective weight management measures and health risks.

Objective: The aim of this study was to assess the weight status (BMI), self-perceived body image, and dietary habits of Saudi and non-Saudi women working at the University of Hail.

Methods: A well-designed and pre-tested questionnaire was used to collect data on 240 respondents' demographic characteristics, anthropometric measurements, self-perceived body image, medical histories, amount of time spent engaging in various activities, and frequency of consuming various food categories.

Results: Sixty-one percent were 31–40 years old, and 33% were 41–50 years of age. Saudi subjects' mean height was 159 cm, their weight was 65 kg and their BMI was 25 kg/m². Whereas in non-Saudi countries, the mean height was 160 ± 5.8, weight 66 ± 16.1, and BMI 26 ± 6.0. The prevalence of obesity or being overweight is shown for both categories. A comparison of BMI and self-perceived body image revealed that Saudi respondents accurately assessed their own body image, in contrast to pre-obese and obese non-Saudis. Hypertension and diabetes were common among pre-obese and obese subjects in both groups. Pre-obese (23%), obese (17%), Saudis, and pre-

obese (18%) non-Saudis spend more than 6 hours on their cell phone. Walking and exercising at the gym were favourite activities among normal and pre-obese Saudi and non-Saudi subjects. Chi-square analysis revealed a statistically significant relationship between weight status and the amount of time spent doing sedentary activities (X^2 (9, N = 240) = 19.60, P = .0204). Dietary practices showed consumption of cereals, meat, and milk products was higher compared to fruits and vegetables. As a result, the diet was lacking in fiber-rich foods, which may be one of the causes of the high prevalence of overweight or obesity.

Conclusion: For the promotion of a healthy lifestyle, good dietary practices with an emphasis on physical activity should be highlighted.

Keywords: Weight status (BMI); Body Image; Weight perceptions; Dietary practices; Physical Activity

1. INTRODUCTION

Nutritional status is an indication of the overall well-being of a population. Body image and its perception are important aspects of health and play a significant role in physical and mental well-being regardless of whether a person is underweight, normal, or overweight. Inaccurate recognition of body image can pose a threat to health. [1] Body image can be defined as a multifaceted psychological construct that includes subjective attitudinal and

perceptual experiences about one's body, particularly its appearance. [2] The construction and perception of body image are strongly influenced by social standards and the media, which advertise almost unattainable perfect bodies in most Western countries. [3] Usually, women present more bodyweight and shape concerns than men [4] and tend to consider thinness as the preferred body image style. [5] Despite the concerns about body image that are often associated with adolescence in the literature [1, 5, 6], these concerns also affect adults, especially women. Females are sensitive to the effects of weight perception [7], and studies have shown that they perceive weight incorrectly. [8] Social norms have a significant influence on people's perceptions of their appearance, which is a widespread problem. An incorrect understanding of weight may contribute to the maintenance of unhealthy lifestyles and a false sense of security about one's health. Conversely, normal or underweight women who perceive themselves as overweight are at risk for eating disorders such as anorexia nervosa, [9] whereas overweight women who perceive themselves as underweight are less likely to control their diets or exercise. [10] Weight perception plays a significant role in determining dietary practices and weight management. [11] Current studies focus mostly on students from western countries, and there is a lack of information on the Saudi Arabian population, especially from the working staff. Women have recently taken on additional responsibilities in society, particularly in Saudi Arabia, and their nutritional status is essential for both their general health and increased productivity at work. [12] This study assessed the association between eating patterns, self-perceived body image, and nutritional status (BMI) among Saudi and non-Saudi women employed at the University of Hail in the Kingdom of Saudi Arabia.

2. MATERIALS & METHODS

After receiving informed consent, 240 female subjects from the University of

Hail's various colleges (120 Saudi citizens and 120 non-Saudi citizens) were recruited for this cross-sectional study through randomize sampling technique. Through a pre-tested questionnaire, data on demographics (age, marital status, and level of education), medical history for the frequency of co-morbid conditions, and amount of time spent on various activities was acquired. Anthropometry and food frequency are widely recognized as useful techniques in detecting nutritional status as they are highly sensitive. Using anthropometry, BMI was calculated and subjects were classified into different nutritional statuses based on WHO 2007 cut-off. Through eight body images, subjects were oriented to choose one image that better represents their body (self-perceived body image) and compared it with BMI. Food frequency was used to collect information on how frequently various food groups were consumed. **Statistical Analysis:** Descriptive data were represented as percentage, mean, and SD. A Chi-square test was used to analyse qualitative variables using SPSS version 26.0 for windows 2010. Significance was set at $p < 0.05$

3. RESULT AND DISCUSSION

3.1 A. Demographic profile:

Table 1: Demographic profile of Saudis and Non- Saudis subjects

Demographic variables	Saudi n =120	Non-Saudi n =120	Total N =240
Age:			
31 - 40	72 (30)	74 (31)	146 (61)
41- 50	40 (16)	38 (16)	78 (32)
51-60	8 (3)	8 (3)	16 (7)
Marital status:			
Single	32 (13)	22(9)	54 (23)
Married	74 (31)	81 (34)	155 (64)
Others:	14 (6)	17 (7)	31 (13)
Educational Qualification			
Graduation	70 (29)	42 (18)	112 (47)
Post-Graduation	44 (18)	50 (21)	94 (39)
Ph.D.	6 (2)	28 (11)	34 (14)

The values in parenthesis are the percentage

The subject's demographic profile is presented in Table 1. The majority (61%) was between 31 and 40 years of age, and 64% were married and 23% were single. The majority (47%) were graduates, 39%

were postgraduates, and 13% were doctorates. Comparison between both groups revealed that 21% of non-Saudis were postgraduates while only 18% of Saudis held a postgraduate degree, and 11 % of non-Saudis were doctorates while only 2% of Saudis were doctorates. Chi-square analysis showed that statistically, there was no association between age, marital status, educational qualification and weight status ($p < .05$).

Numerous studies conducted across the country [13] have shown a link between education level and a reduced prevalence of obesity, which may be attributable to more educated consumers making healthier dietary choices. According to a study published in 2020, obesity is more prevalent among married Saudi citizens than non-Saudis or singles, and lesser education and higher income are both positively associated with the condition. [14] Even though the study's participants were well educated, obesity was widespread in both low- and high-income groups. This could be linked to a sedentary lifestyle, high consumption of low-cost junk food and beverages, and low intake of fruits and vegetables high in fiber,

as seen in the present study's dietary intake and other studies [15].

3.2 B Anthropometry and Nutritional status:

Table 2: Mean Anthropometry of Saudi and Non-Saudi Subjects:

Variables	Saudi n=120	Non-Saudi n =120
Mean Height (cm)	159 ± 5.52	160 ± 5.86
Mean Weight (Kg)	65 ± 10.86	67 ± 15.96
Mean BMI (Kg/m ²)	26 ± 4.78	26 ± 6.0

Table 2 depicts the anthropometric measurements of subjects. The mean height, weight, and BMI of non-Saudi females were higher compared to Saudi females. Between the two groups, there was no statistically significant difference in height, weight, or BMI ($p < .05$). The average BMI in both groups was greater than $>25 \text{ kg/m}^2$, indicating the prevalence of overweight in both groups.

However, the findings in Fig:1 indicate that the prevalence of overweight and obesity was higher among Saudis than among non-Saudis, which is consistent with the findings of other studies from Saudi Arabia [14]

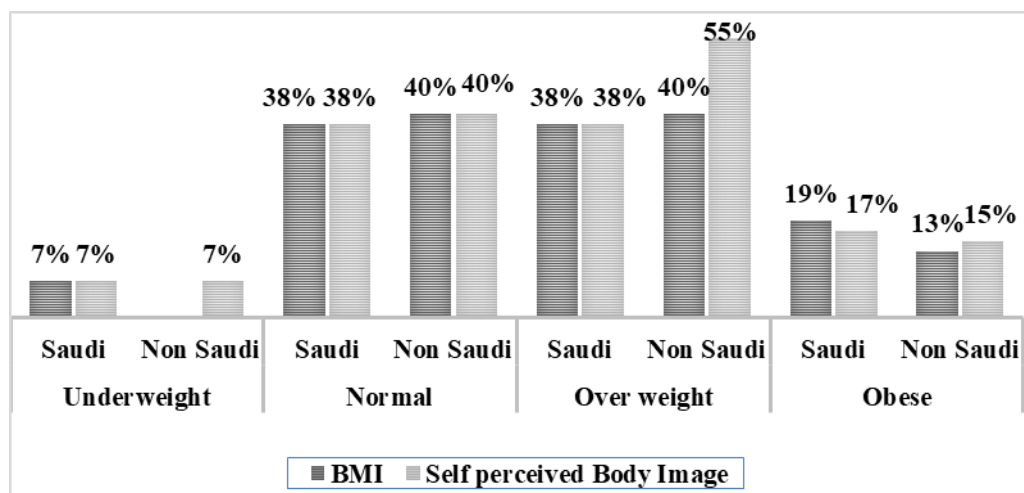


Fig. 1: Weight status (BMI) and self-perceived body image of Saudis and non-Saudis

The results in Figure 1 show the weight status. Among Saudis, 7 percent were underweight, 38 percent were normal, 38 percent were overweight, and 19 percent

were obese. Among non-Saudis, 40 percent were normal, 55 percent were overweight, and 13 percent were obese. Overall, 57 percent of Saudis and 53 percent of non-

Saudis had a BMI higher than 25 kg/m². The results of weight status are similar to other studies reported from Saudi Arabia [14], highlighting the higher prevalence of obesity among Saudis compared to non-Saudis. This can be attributed to increased faulty dietary habits with energy-dense foods and a sedentary lifestyle, as evident in the results of the present study. Interestingly, at the other end of the weight spectrum, "underweight" was also reported among seven percent of Saudis. Though underweight individuals represent a small portion of Saudis, the health risks associated with being underweight are important topics in nutrition and health. Being underweight can negatively impact your health just as much as being overweight. Underweight is associated with nutrient deficiencies, an increased risk of infection, chronic diseases, eating disorders, and mental illness. Comparison between BMI and self-perceived body image showed that underweight, normal weight, overweight, and obese Saudis had accurate perceptions of their body image. Various studies among young adolescents from other nations showed similar findings [16] and [17].

An interesting result of the current study was that, despite being statistically non-significant, non-Saudis (7%) perceived they

were underweight despite being of normal weight. Underestimating weight status may be an expression of body dissatisfaction that could lead to a lack of self-confidence and a feeling of depression, predisposing an individual to obesity. In order to acquire weight, Korean adolescents were found to consume a lot of fast food and unhealthy snacks [18], which was linked to an underestimation of actual weight. Although many studies claim that accurate weight perception is a stronger predictor of dietary practices and weight management behavior [19,20], it appears that this is not true for the Saudi population in the current study. The findings suggest that, despite Saudi citizens' correct perceptions of their weight, there is inadequate overall management of obesity. Therefore, there is a need to raise awareness through nutritional education and counseling to improve the population's weight status at a young age with policies addressing the food industry and encouraging people to be more physically active, as many locations have been built around neighborhood parks for sports and exercise.

3.3 C: Association of Weight Status with Co morbidities

FIG 2: Weight status and co morbidities among subjects

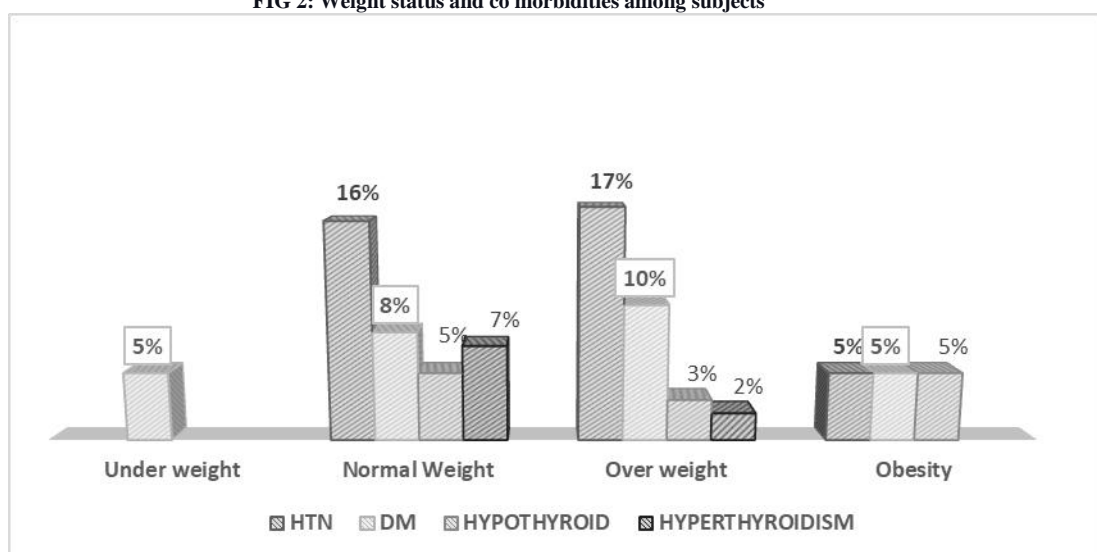


Fig 2 shows the weight status and co morbid conditions. Among normal-weight subjects 16 percent had hypertension (12% Saudi, 4% Non-Saudis), 8 percent were diabetic (3 % Saudis and 5 % Non-Saudis) 5 percent had hypothyroidism (3% Saudis and 2 % Non-Saudis), and 7 percent of only Saudis had hyperthyroidism. Among overweight subjects, 17 percent had hypertension (10% Saudis and 7 % Non-Saudis). Diabetes was present in 10 percent (8 % Saudis and 2 % Non-Saudis) Hypothyroidism and hyperthyroidism was present in 3 percent of Saudis only. Among obese subjects, 5 percent of only Saudis had hypertension, diabetes, and hypothyroidism. The overall prevalence of hypertension was 38 percent (27 % Saudis and 11% Non-Saudis) diabetes 28 percent (19% Saudis and 9 % Non-Saudis) hypothyroidism 13 percent (9 % Saudis and 4% Non-Saudis) hyperthyroidism (9%) was present only in Saudis.

Hypertension and diabetes were common among overweight and obese subjects in

both groups. It was observed that though 38 percent of Saudis had normal weight 12 percent had hypertension while only 2 percent of normal weight Non-Saudis had hypertension. According to statistics, there was no correlation between co morbid conditions and weight status ($P < .05$).

The results are consistent with recent research by [21] that implies Saudis' high prevalence of hypertension and diabetes may be connected to their higher BMI, bad eating habits, and lack of physical activity. The increased intake of unhealthy foods, packaged foods high in sodium, and preservatives among Saudis and Non-Saudis who are of normal weight could be the cause of the prevalence of hypertension. It was observed that less people were eating fruits and vegetables, which are good sources of potassium and fiber.

3. 4 D: Weight Status and Time Spent on Sedentary Activities:

Table 3: Association of Weight Status with Sedentary Activities

Sedentary Activities	Under Weight	Normal weight	Overweight	Obese	total	P value
2 hours						
TV	6 (5)	41 (34)	27 (22)	10 (8)	84 (70)	.7398
Cell phone	1 (0.8)	11 (9)	13 (11)	2 (1)	27 (22)	
Reading	5 (4)	23 (19)	25 (21)	11(9)	64 (53)	
Nap	6 (5)	35 (29)	28 (21)	7 (6)	76 (63)	
4- 6 hours						
TV	1 (0.8)	1 (0.8)	9 (7)	4 (3)	15 (12)	.0204*
Cell phone	2 (1)	18 (15)	9 (7)	3 (2)	32 (27)	
Reading	1 (0.8)	20 (17)	13 (11)	1 (0.8)	36 (30)	
Nap	1 (0.8)	7 (6)	8 (7)	6 (5)	22(18)	
> 6 Hours						
TV	0	1 (0.8)	3 (2)	0	4 (3)	.8928
Cell phone	4 (3)	17 (14)	25 (21)	10 (8)	56 (47)	
Reading	1 (0.8)	1 (0.8)	3 (2)	1 (0.8)	6 (5)	
Nap	0	2 (1)	1 (0.8)	1 (0.8)	4 (3)	

The values in parenthesis are percentage, * statistically significant at 5 percent.

Pre-obese (23%), obese (17%), Saudis and pre-obese (18%) Non-Saudis spend more than 6 hours on their cell phone. Weight status and the duration of various sedentary activities for 4-6 hours were found to be statistically significantly correlated ($X^2(9, N=240) = 19.60, P = .0204$). This shows physical inactivity was common among Saudi females, and cause of concern. The

findings are consistent with other studies from Saudi Arabia [23, 22] that observed adult males and females with higher BMI depicted lower physical activity and higher sedentary life, spending as much as 4-6 hours daily on screens, exceeding the recommended recreational screen time for adults of 2-4 hours per day.

3. 5 E: Information on Dietary Intake:

Data from food frequency questionnaire revealed that both groups consumed more meat, milk, and cereals than fruits and vegetables, therefore their diets were deficient in fiber-rich items. The consumption of junk food and soft drinks was higher among Saudis. The statistical analysis revealed no relationship between dietary intake and weight status ($p < .05$). Our findings support recent research by ²⁴ that found that people consume more simple carbohydrates and meat while eating less fruit, vegetable, and complex carbohydrates. According to the World Health Organization (WHO), a lack of physical activity and an inadequate intake of fruits and vegetables are the main risk factors for the development of obesity and non-communicable diseases ^[25]

4. CONCLUSION

The findings of the current study showed that Saudis were able to accurately assess their weight when compared to pre-obese and obese non-Saudis. Healthy foods such as pulses, fruits, and vegetables were consumed in low quantities by both groups. The consumption of junk food and soft drinks was higher among Saudis. The sedentary life style of overweight and obese Saudi females in the study is alarming.

Recommendations:

This study recommends designing and implementing community-based nutrition-related educational programs to create awareness about obesity and related risk factors, with an emphasis on healthy food choices, to improve the dietary patterns of both Saudi and non-Saudi females. Adults should be encouraged to participate actively in physical fitness programs in order to prevent obesity-related non-communicable diseases in the future.

By raising public knowledge and enacting supportive policies, these public awareness programs will successfully reduce not only the prevalence of obesity but also the risk of

developing insulin resistance (IR), pre-diabetes, diabetes, and CVD.

The strength of the study:

This study investigates weight status, self-perceived body image, and dietary habits of Saudi and non-Saudi women at the University of Hail. It also examines the relationship between weight status and sedentary behaviors, such as cell phone use. The findings offer insights into health risks and obstacles faced by this population, and potential interventions to promote a healthy lifestyle.

Limitations of the study:

Our study had some limitations, such as the small and female-only sample, the cross-sectional design, and the self-reported data. Future studies should address these issues by using larger and more diverse samples, longitudinal or experimental designs, and more objective measures.

Declaration by Authors

Author's contribution:

H. Banu: Designed the work, analyzed, interpreted the data and drafted the final article.

Hajar. A.A and Fayha. S.A: Designed the work, collected data, drafted initial manuscript, revised and approved the final draft of the published version

Ethical Approval: All procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation (institutional and national) and/or with the Helsinki Declaration of 1964 and later versions. Informed consent was obtained from all subjects for being included in the study.

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Conflict of Interest: The authors declare that they have no conflicts of interest with respect to the research, authorship, and/or publication of this article.

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