

## Personalized Perceptions and Attitudes Towards Healthy Weight Management in Ha'il Region, Northern Saudi Arabia

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### ABSTRACT

In recent years, obesity/overweight has represented a major health issue in Saudi Arabia, particularly among the younger population. Consequently, the current investigation is aimed to characterize the personalized perceptions and attitudes towards healthy weight management in Ha'il Region, Northern Saudi Arabia. In the present study 317 Saudi participants living in the city of Hail, Northern Saudi Arabia were recruited to find out the personalized perceptions and attitudes towards healthy weight management in Ha'il Region, Northern Saudi Arabia. The prevalence of obesity/overweight was 53%. The majority of the participants believe that "Calories' contents knowledge", can maintain a healthy body weight followed by "Reducing meal quantity", "Reducing meals frequencies", and "Reducing meals frequencies and Reducing meal quantity", constituting 223/315(70.8%), 210/313(67%), 161/313(51.4%), and 127/313(40.6%), respectively. Obesity/overweight is prevalent in Northern Saudi Arabia, which is behavioral and habitual determinant in most occasions. Personalized bodyweight determinant factors, including food intake habits, have a strong impact on Saudi weight management.

**KEY WORDS:** OBESITY, OVERWEIGHT, WEIGHT LOSS, BMI, SAUDI ARABIA.

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## INTRODUCTION

Obesity/overweight (classified by Body Mass Index (BMI)) is a growing health issue worldwide associated with increased mortality due to its strong link to diverse comorbidities. Several diseases well documented to be resulting from obesity/overweight conditions including cardiovascular diseases, type 2 diabetes mellitus, hypertension, fatty liver disease, dyslipidemia, sleep apnoea, cancers, and some mental disorders (Fava et al 2019; Sung et al 2019; Mouton et al 2020). Many dietary and food habits have been linked to the increasing burden of obesity/overweight due to the imbalance of energy consumed within the food. Diets rich in processed food, trans/saturated fatty acids, sugars rich diets are the most weight (wt.) gain factors. Conversely, physical inactivity, low intake of whole grains, vegetables, fruits, and legumes can also elevate the risk of obesity (Legaand Lipscombe 2020). The etiology of obesity/overweight is extremely complicated, comprising an interaction of biological, psychological, social, and environmental factors. As a result, maintaining or achieving a healthy weight is challenging, and several weight loss accomplishments soon initiated with weight regain (Ataey et al 2020).

In recent years, an increase in self-attempts of weight loss worldwide. Maintaining continued weight loss requires continued management of dietary, food intake habits/behaviors, and other strategies (Evans et al 2020). However, the self-insight of weight loss and weight maintenance may promote long-term healthy weight maintenance (Han et al 2019; Dhurandhar et al 2019). The highest reported obesity/overweight prevalence rates (63.6%) (Ahmed et al 2014) in Saudi Arabia were from Ha'il region, Northern Saudi Arabia. Consequently, the current study aimed to characterize the personalized perceptions and attitudes towards healthy weight management in Ha'il Region, Northern Saudi Arabia.

## MATERIAL AND METHODS

In the present study 317 Saudi participants living in the city of Hail, Northern Saudi Arabia were recruited to find out the personalized perceptions and attitudes towards healthy weight management in Ha'il Region, Northern Saudi Arabia. Data were obtained during a cross-sectional survey conducted in the period from October 2019 to Feb 2020. The study population was randomly selected regardless of age or sex. A purposeful questionnaire was designed and filled during a personal interview. Besides demographical data, the questionnaire included inquiries such, Attractants of maintaining normal BMI, attitude towards food intake, and maintaining healthy body weight, the claimed causes of weight gain, and regular meal habits (Pardo et al 2004).

**Data analysis:** Statistical analysis was performed using SPSS V22.0 SPSS. Frequencies and percentages and cross-tabulation of variables were obtained.

**Ethical consent:** Each participant has consented before the personal interview. The proposal of the study was

approved by the Ethical Committee at the College of Medicine, University of Ha'il, Hail, Saudi Arabia. Ethical Approval Number: EC-00140/CM/UOH.01/19

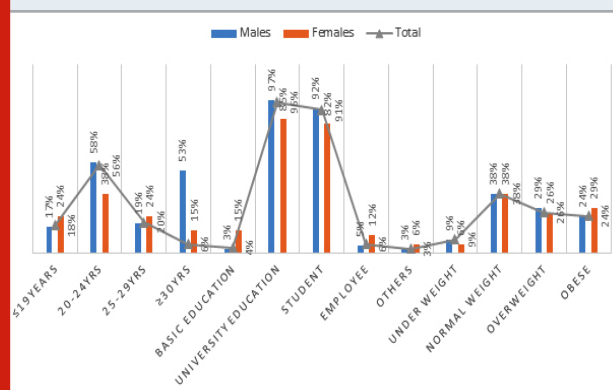
## RESULTS AND DISCUSSION

This study investigated 315 volunteers, aged 17 to 56 years with a mean age of 21 years. The majority of respondents were males 281(89%) compared to 34(11%) females. The great majority of the study subjects were aged 20 to 24 years, representing 176/315(56%), followed by age range 25-29 and ≤19 years constituting 62(20%) and 57(18%), respectively. The great majority of the participants were with the university level of education constituting 272 (86%). The great majority of the participants were students constituting 287 (91%), as shown in Table 1, Fig 1. Out of the 315 participants, 90(29%) were over wt. and 77(24%) were obese, as shown in Table 1, Fig 1.

Table 1. Distribution of the study population by demographical features

Variable	Males	Females	Total
Age			
≤19 years	49	8	57
20-24	163	13	176
25-29	54	8	62
≥30	15	5	20
Total	281	34	315
Education			
Basic education	9	5	14
University education	272	29	301
Occupation			
Student	259	28	287
Employee	15	4	19
Others	7	2	9
BMI			
Underweight	26	2	28
Normal weight	107	13	120
Overweight	81	9	90
obese	67	10	77

Figure 1: Demographical features and BMI



The most common attractant for maintaining normal body weight among the study subjects was “having a nice look” followed by “disease prevention”, “improve mood”, and “spend time”, representing 146/306(47.7%), 110/306(36%), 45/306(14.7%), and 15/306(4.9%), in that order. Out of 146 requiring “nice look”, 36/146(25%) were obese and 59/146(40%) were over wt. Out of 110 demanding “disease prevention”, 42/110(38%) were obese and 33/110(30%) were over wt. Out of 45 demanding “improve mood”, 11/45(24%) were obese and 24/45(53.3%) were over wt. The majority of those demanding “spend time” were over wt. 8/15(53.3%), as indicated in Table 2, Fig 2.

Table 2. Distribution of the study population by attractants of maintaining normal BMI

Category	Variable	Under wt.	Normal wt.	Over wt.	Obese	Total
Disease prevention	Yes	1	34	33	42	110
	No	24	81	56	35	196
	Response	25	115	89	77	306
Look Nice	Yes	4	47	59	36	146
	No	21	67	30	41	160
	Response	25	115	89	77	306
Improve mood	Yes	0	10	24	11	45
	No	25	105	65	66	261
	Response	25	115	89	77	306
Spend Time	Yes	1	3	8	3	15
	No	24	112	81	74	291
	Response	25	115	89	77	306

Figure 2: Proportions of attractants of maintaining normal BMI

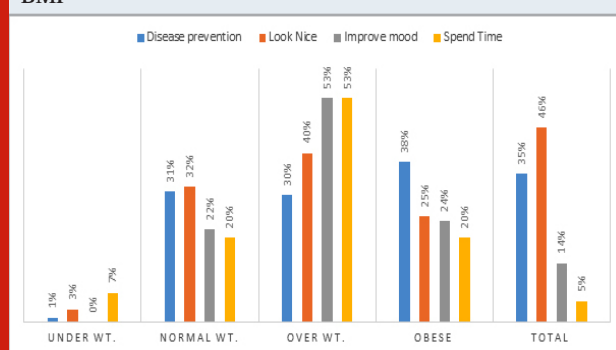


Table 3, summarized the distribution of the study population by BMI and attitude towards food intake and maintaining healthy body weight. The majority of the participants believe that “Calories’ contents knowledge”, can maintain a healthy body weight followed by “Reducing meal quantity”, “Reducing meals frequencies”, and “Reducing meals frequencies and Reducing meal

quantity”, constituting 223/315(70.8%), 210/313(67%), 161/313(51.4%), and 127/313(40.6%), respectively. Out of the 223, 210, 161, and 127, over wt./obese represented 120/223(53.8%), 120/210(57%), 94/161(58.4%), and 68/127(53.5%), correspondingly. About 153/313(49%) of participants “Did efforts to maintain healthy weight” of whom 86/153(56.2%) were over wt./obese. Around 71/313(22.7%) of participants “Did you regularly measure your wt” of whom 47/71(66.2%) were over wt./obese, as indicated in Table 3.

Table 4, summarized the distribution of the study population by BMI and the claimed causes of weight gain. About 49/308(16%), 112/314(35.7%), and 168/303(55.4%), believed that “Living alone”, “Increased appetite”, and “Food habits” are the main causes of weight gain. Out of the 49, 112, and 168 participants, 25/49(51%), 78/112(69.6%), and 122/168(72.6%) were over wt./obese.

For “meals frequencies per day”, 9/21(43%), 56/104(53.8%), 86/149(57.7%), and 16/41(39%) of over wt./obese individuals were found to take meals, once, twice, 3times and more than 3 times, respectively. For “Snacks frequencies per day”, 73/139(52.5%), 59/114(51.8%), 25/43(58%), and 6/14(43%) of over wt./obese individuals were found to take meals, once, twice, 3times and more than 3 times, respectively, see Table 4. For “Fast food frequencies”, 34/68(50%), 73/138(53%), 33/60(55%), 13/25(52%), 7/10(70%), and 7/12(58.3%) of over wt./obese individuals were found to take meals, every day, twice/week, once/week, Once/month, rare and never, one-to-one, see Table 4. For “Vegetables and fruit intake”, 23/51(45%), 52/98(53%), 40/78(51.3%), 17/25(68%), 17/49(34.7%), and 4/5(80%) of over wt./obese individuals were found to take meals, every day, twice/week, once/week, Once/month, rare and never, one-to-one, see Table 4.

The distribution of the study population by BMI and regular meal habits was summarized in Table 5, Fig 3. About 181/301(60%) didn’t use to take their breakfast (BF) regularly, of whom 98/181(54%) were over wt./obese, compared to 63/120(52.5%) over wt./obese persons among those taking their breakfast regularly. The risk of over wt./obese associated with irregular breakfast, the relative risk (RR) and 95% confidence interval (95% CI) was 1.0041 (0.8099 to 1.2449), P = 0.9703, as indicated in Table 5, Fig 3. About 196/311(63%) use to take their dinner meal regularly, of whom 103/196(52.6%) were over wt./obese, compared to 64/115(55.7%) over wt./obese persons among those taking their dinner irregularly. The risk of over wt./obese associated with regular dinner, the RR(95%CI) = 0.9443(0.7650 to 1.1655), P = 0.5935, as indicated in Table 5, Fig 3. Over wt./obese individuals represented 21/47(44.7%), 92/167(55%), 53/95(55.8%) of those used to take little, normal, and heavy dinner meal quantity, in that order, as indicated in Table 5, Fig 3.

In recent years, Obesity/overweight represented a major health issue in Saudi Arabia, particularly among the younger population. Consequently, multifarious efforts

are ongoing to find out suitable strategies to tackle the burden of obesity-related health consequences. Obesity/overweight prevention and healthy weight management are from the top recommendations. The present study attempted to explore personalized perceptions and attitudes towards healthy weight management in order to assist in the establishment of future plans and strategies to reduce the burden of obesity in the Saudi community.

In the present study, the prevalence of obesity/overweight was 53%. These findings support a previous similar study from Saudi Arabia reporting obesity/overweight prevalence of 55.1% among adults population aged 18 to 60 years old (Azzeh et al 2017). A more recent study from Saudi Arabia reported a prevalence of 65.9% for obesity/overweight (Al-Qahtani 2019).

Table 3. Distribution of the study population by BMI and attitude towards food intake and maintaining a healthy body weight

Category	Variable	Under wt.	Normal wt.	Over wt.	Obese	Total
Reducing meals frequencies						
	Yes	12	55	51	43	161
	Not sure	10	44	29	24	107
	No	6	20	9	10	45
	Response	28	119	89	77	313
Reducing meal quantity						
	Yes	14	76	58	62	210
	Not sure	10	31	23	9	73
	No	4	12	8	6	30
	Response	28	119	89	77	313
Reducing meals frequencies and Reducing meal quantity						
	Yes	14	45	42	26	127
	Not sure	12	48	32	27	119
	No	2	26	15	24	67
Calories' contents knowledge						
	Yes	16	87	67	53	223
	Not sure	11	20	15	19	65
	No	1	13	8	5	27
	Response	28	120	90	77	315
Did efforts to maintain a healthy weight						
	Yes	6	61	53	33	153
	No	22	58	36	44	160
	Response	28	119	89	77	313
Did you regularly measure your wt						
	Yes	3	21	34	13	71
	No	25	97	56	64	242
	Response	28	118	90	77	313

Figure 3: BMI and regular meals habits

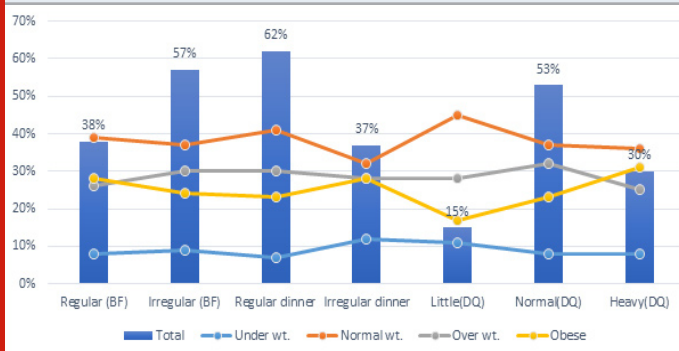


Table 4. Distribution of the study population by BMI and the claimed causes of weight gain

Category	Variable	Under wt.	Normal wt.	Over wt.	Obese	Total
Living alone						
	Yes	2	22	19	6	49
	No	25	94	69	71	259
	Response	27	116	88	77	308
Increased appetite						
	Yes	5	29	43	35	112
	No	23	91	47	41	202
	Response	28	120	90	76	314
Food habits are the main						
	Yes	7	39	62	60	168
	No	17	75	26	17	135
	Response	24	114	88	77	303
Meals frequencies per day causes of weight gain						
	Once	2	10	6	3	21
	Twice	10	38	33	23	104
	3times	11	52	41	45	149
	More than 3	5	20	10	6	41
	Response	28	120	90	77	315
Snacks frequencies per day						
	Once	12	54	35	38	139
	Twice	13	42	35	24	114
	3times	3	15	13	12	43
	More than 3	0	8	5	1	14
	Response	28	119	88	75	310
Fast food frequencies						
	Every day	8	26	20	14	68
	Twice/week	14	51	38	35	138
	Once/week	4	23	19	14	60
	Once/month	2	10	5	8	25
	Rare	0	3	2	5	10
	Never	0	5	6	1	12
	Response	28	118	90	77	313
Vegetables and fruit intake						
	Every day	4	24	11	12	51
	Twice/week	6	40	34	18	98
	Once/week	9	29	18	22	78
	Once/month	0	8	7	10	25
	Rare	7	15	16	11	49
	Never	0	1	2	2	5
	Response	26	117	88	75	306

In the present study, the most common attractant for maintaining normal body weight among the study subjects was "having a nice look" followed by "disease prevention", "improve mood", and "spend time", representing 47.7%, 36%, 14.7%, and 4.9%, in that order. Although aiming at all of these attractants has some beneficial effects on an individual's quality of life, "disease prevention" is the most important factor. Several studies have documented the role of maintaining healthy body weight in preventing diverse diseases including type 2 diabetes, cardiovascular disease, and

other miscellaneous diseases (Muralidharan et al 2019; Pallazola et al 2019). To achieve successful weight loss outcomes, adherence to multifarious approaches may increase the chance of maintaining long-term optimum weight (Coupe et al 2019). In this study, many participants believe that "Calories' contents knowledge", "Reducing meal quantity", "Reducing meal frequencies", and "Reducing meal frequencies and reducing meal quantity", have strong impacts on determining individual weight. However, meal quantity, frequencies, and calories contents are well-documented as body weight

determinant (Lopes et al 2019). Besides, the food caloric contents and quantity, the balance between consumed energy and energy expenditure is another important factor determining an individual's weight management (Lu et al 2019). Increasing meal frequencies with low caloric contents may lead to weight loss, due to the energy consumed in the metabolic process.

Approximately 56% of the participants claimed planning for weight loss. Moreover, about 66% claimed regular weight measurement. These measures indicating low

awareness of maintaining a healthy weight. In the present study, many participants were accustomed to high frequencies of snacks and fast food with relatively low intake of vegetables and fruits. Such behaviors and dietary habits can increase the possibility of weight gain (Ahmed et al 2019). In the present study meals, regularity status and quantity didn't reveal significant differences, though the risk of weight gain was elevated with breakfast irregularity and heavy dinner. The limitation of the present study includes its cross-sectional setting, younger population, and qualitative assessment.

Table 5. Distribution of the study population by BMI and regular meals habits

Category	Variable	Under wt.	Normal wt.	Over wt.	Obese	Total
Taking Breakfast(BF) regularly	Yes	9	47	31	33	120
	No	16	67	55	43	181
	Response	25	114	86	76	301
Taking dinner regularly	Yes	13	80	58	45	196
	No	14	37	32	32	115
	Response	27	117	90	77	311
Dinner quantity(DQ)	Little	5	21	13	8	47
	Normal	14	61	53	39	167
	Heavy	8	34	24	29	95
	Response	27	116	90	76	309

## CONCLUSION

Obesity/overweight is prevalent in Northern Saudi Arabia, which is behavioral and habitual determinant on most occasions. Personalized bodyweight determinant factors, including food intake habits, have a strong impact on Saudi weight management.

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