

## OVERWEIGHT STATUS: BODY IMAGE AND WEIGHT CONTROL BELIEFS AND PRACTICES AMONG FEMALE COLLEGE STUDENTS

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The prevalence of overweight and obesity among females in Saudi Arabia, especially those above the age of 40 years, has reached epidemic proportions.<sup>1,2</sup> More than three-fourths (78.4%) of the women in this age group from the Eastern Province are reported to be overnourished<sup>1</sup> and even in younger age groups (15-25 years), overweight/obesity is substantially high (30%-40%).<sup>1,3</sup> Other regions in Saudi Arabia have shown a similar trend.<sup>1,2</sup> Saudi women, in general, have a significantly higher body mass index (BMI) than their European counterparts.<sup>4</sup> Consequently, there is increasing concern among health professionals regarding the rise of obesity-related diseases in the Kingdom, such as diabetes,<sup>5-7</sup> hypertension,<sup>2,8</sup> coronary artery disease,<sup>7</sup> osteoarthritis of the knee and other functional disabilities.<sup>9</sup>

While most of the Saudi series<sup>1-4,9,10</sup> have stressed the importance of weight control programs, none of them have investigated weight-related beliefs and health practices in the local population, information that would be necessary for appropriate planning of such programs. Several studies<sup>11-13</sup> conducted in the West have pointed to the likely differences between the obese and non-obese in eating and exercise behavior, as well as in motivations to control weight. Moreover, attitudes towards body weight have their roots in adolescence or young adulthood, perhaps even in childhood.<sup>14</sup> Consequently, they have been shown to determine health behavior related to body size from early ages. The purpose of this study was to evaluate the association between the body weight of young female adults with self-reported eating behavior, weight control beliefs and practices related to dieting and exercise.

### Materials and Methods

The subjects of this study were all females pursuing a medical/nursing program at King Faisal University in Dammam, and residing at a local hostel. A questionnaire

was distributed to each student during a one-week period in May 1996. The questionnaires were self-administered. While most of the questions were closed-ended, at the end of each section of the questionnaire, an opportunity was given to the students for an open-ended response regarding the topic in question. Oral instructions and clarifications for the test instrument were provided by a group of 8 senior-level medical students who were trained to facilitate the research study.

Information was elicited from students regarding their sociodemographic data (age, nationality, academic level), satisfaction with current weight status and whether they would like to gain/lose/maintain their weight, dieting behavior to gain/lose weight, including erratic eating practices, and their beliefs about and practice of exercise. Questions related to the students' knowledge and attitude towards exercise, as well as the barriers for not exercising, were based on the theoretical structure of the Health Belief Model (HBM).<sup>15-16</sup> The questions included: 1) 13 exercise knowledge items related to the advantages and techniques of exercise; 2) 8 items related to motivation for exercise; and 3) 10 items describing personal reasons for not exercising. A correct response to each question in the exercise knowledge portion of the questionnaire was assigned a score and students were placed in either of the following three arbitrarily determined categories according to their total score (maximum 13 marks): 1)  $\leq 6$ , 2) 7-9, and 3)  $\geq 10$ . Information was sought from students regarding their exercise habits (daily/three times per week vs. never/infrequent).

The females were weighed in light clothing without shoes on a portable spring balance to the nearest 0.5 kg and height was measured against a wall with the help of a tape measure to the nearest 0.01 meter. Body mass index was determined by the formula  $\text{weight}/\text{height}^2$  ( $\text{kg}/\text{meter}^2$ ). The weight status of the students was categorized by the standard criteria suggested by Garrow:<sup>17</sup> underweight BMI  $< 20$ ; desirable range BMI 20-24.9; and overweight BMI  $\geq 25$ .

The  $\chi^2$  test of independence was computed to compare the difference in dieting practices and the perceptions and practice of exercise among the three weight categories.

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Accepted for publication 10 March 1999. Received 6 June 1998.

TABLE 1. Distribution of students by satisfaction with weight status and desire to gain or lose weight.

Weight status	Satisfied with weight (%)		Desire to gain weight (%) <sup>*</sup>		Desire to lose weight (%) <sup>**</sup>	
	Yes	No	Yes	No	Yes	No
Underweight n=21	9 (42.8)	2 (57.1)	8 (38.1)	13 (61.9)	0	21 (100)
Normal weight, n=32	18 (56.3)	14 (43.8)	1 (3.1)	31 (96.9)	12 (37.5)	20 (62.5)
Overweight n=24	3 (12.5)	21 (87.5)	1 (4.2)	23 (95.8)	10 (41.7)	14 (58.3)
Total	30 (39)	47 (61)	10 (12.9)	67 (87)	22 (28.6)	55 (71.4)

<sup>\*</sup> $P<0.001$ ; <sup>\*\*</sup> $P<0.01$ .

TABLE 2. Involvement of students in eating and weight loss behavior according to body weight status.

Behavior	Weight status (%)			
	Underweight n=21	Normal weight n=32	Overweight n=24	Total n=77
Dieting <sup>*</sup>	2 (9.5)	3 (9.4)	8 (33.3)	13 (16.9)
Bingeing <sup>**</sup>	5 (23.8)	8 (25)	12 (50)	25 (32.5)
Fasting <sup>†</sup>	1 (4.8)	2 (6.3)	3 (12.5)	6 (7.8)
Vomiting <sup>†</sup>	2 (9.5)	2 (6.3)	2 (8.3)	6 (7.8)
Exercising <sup>**</sup>	2 (9.5)	3 (12.5)	7 (29.2)	12 (15.6)

<sup>\*</sup> $P<0.05$  (significant); <sup>\*\*</sup> $P\leq 0.05$  (significant, obese vs. non-obese); <sup>†</sup> $P>0.05$  (not significant).

## Results

A total of 77 female students from King Faisal University resided in the local hostel, all of whom participated in the study. The age of the women ranged from 17-25 years (mean age 20.7 years) and they were either Saudi (59.7%) or from the neighboring Gulf countries (40.3%). The students were distributed across six levels of the medical program and four levels of the nursing program, with the largest proportion of students (23.3%) at the first level (medical/nursing program) and the sixth level (22% medical students).

Of the 77 females, 24 (31.2%) were overweight, 32 (41.5%) were of normal weight and 21 (27.3%) were underweight, according to the criteria used.<sup>17</sup> The prevalence of obesity was significantly higher among the first level of medical and nursing students (50%) compared to those in the second (25%), third (20%), fourth (16.6%), fifth (20%) and sixth (23.1%) levels ( $P<0.05$ ). Table 1 shows that dissatisfaction with current body weight was expressed by more overweight (87.5%) and underweight females (63.2%) than by the normal weight females (52%) ( $P<0.05$ ). Despite a large proportion (87.5%) of overweight females reporting dissatisfaction with their body weight, fewer than half of them (41.1%) expressed a desire to lose weight. On the other hand, the desire for a thin body image was reflected in a subgroup of normal weight females (37.5%) desiring to lose weight and 61.9% of underweight females not wishing to gain weight.

A large proportion (63.6%) of the students reported eating an improper selection and amount of food. Interestingly, more obese females (58.3%) than normal weight (18.8%) and underweight (38%) females believed they were eating a balanced diet and proper quantity of food ( $P<0.05$ ). Females who reported indulging in an improper selection of dietary items described their diet as being rich in carbohydrates and calories (particularly mentioning sweets, chocolates and regular cola drinks), but low in protein, minerals and fiber content. They often indulged in fast food, with cheese and chicken sandwiches being the most popular dietary item, while fruits and vegetables were rarely consumed. A few females (14.3%) of this group reported that the food served from the hostel cafeteria was not to their liking and so was the reason for their imbalanced diet.

Dieting to lose weight was reported by 13 of the 77 females (16.9%), with only 8 (33.3%) of the overweight group involved in this practice (Table 2). More first level students (25%) were dieting compared to those at higher levels (11.1%), but the results tailed to insignificance ( $P=0.1$ ). Erratic methods of dieting, such as fasting for 24 hours or more (46.2%) and induction of vomiting after eating (46.2%) were being practiced by nearly half of the students in this group. Others (53.8%) adopted the conventional strategy of eliminating energy-rich food items (sweets, chocolates, regular cola drinks, meat products, fatty food, fast foods and snacks) from their daily diet. Mention was also made by this group of increased daily consumption of vegetables in lieu of other food items, eating at fixed times during the day and eating slowly.

An inquiry from the students regarding bingeing (eating large amounts of food without stopping) showed that nearly one-third (32.5%) of the females were indulging in this practice (Table 2). Bingeing was significantly more common in the overweight group (50%) than in the non-obese females (24.5%) ( $P<0.05$ ). Females from the first two levels of the medical/nursing program were involved in this habit more frequently (46.7%) than those in the third and fourth (31.3%) and fifth and sixth levels (5.6%) ( $P<0.05$ ). Four students (5.2%) (3 of whom were underweight), mentioned being on a special weight-gain diet.

Table 3 shows that the overweight females scored lower in the exercise knowledge questionnaire compared to the normal ( $P>0.05$ ) and underweight ( $P>0.05$ ) students, however, the results did not reach significance. No significant variation in knowledge about exercise was observed for the various academic levels of students ( $P>0.05$ ).

A majority of females from this hostel (83.1%) either did not exercise at all or were doing so infrequently and irregularly. The regular exercisers consisted of 29.2%, 12.5% and 9.5% overweight, normal weight and underweight females, respectively, with significant differences between the overweight and the other two groups at 5% level (Table 2). Females in this category

were asked about the motivating factor(s) for their exercise habits. A majority of the females (75%-100%) across each of the three weight groups felt that not exercising would make them lazy, out of shape, overweight, vulnerable to health problems and unable "to do a lot of things." All the females in the underweight (100%) and overweight (100%) groups and 50% of the normal weight students expressed concern about developing heart problems in the future if they did not exercise.

The females who were exercising infrequently or not at all were asked about their reasons for not exercising (Table 4). The most common reason (81.2%) given was "lack of time to exercise" in their daily schedule of activities ( $P<0.05$ ). Other reasons cited were laziness (64.1%), engagement in other physical chores (59.6%) or "better things to do" (39.1%). Lack of time (52.9%), laziness (41.2%) and involvement in other physical chores (41.2%) were the most frequent responses for not exercising given by the overweight group ( $P<0.05$ ). A few females (15.9%) mentioned the lack of exercise facilities in the hostel, as well as their lack of awareness regarding exercise techniques.

### Discussion

Despite the small number of subjects examined ( $n=77$ ), the present study has shown that the high prevalence (31.2%) of overnutrition ( $BMI\geq 25$ ) among young Arab female medical and nursing students corroborates the findings of others<sup>1,3</sup> on young women from this region. Though obesity is reported to be more frequent among the illiterates or those with a low level of education in Saudi Arabia,<sup>18,19</sup> the present study supports earlier findings<sup>3</sup> that it remains a substantial health problem even among those with higher level of education. To add further to this grim situation, it has been observed that, in general, a large proportion of those who need to lose weight lack motivation. Despite a majority of the overweight females in this study expressing dissatisfaction with their weight status, fewer than half of them (41.6%) desired to lose weight, and even fewer were actually dieting (33.3%) or exercising (29.2%) for that purpose (Table 2). Similar findings were observed in the USA<sup>13,20</sup> among black females who, though largely found to be weight conscious, showed little preoccupation with dieting or exercising to lose weight. It has been observed that when obesity is a common feature of a cultural group, a strong negative social pressure limits involvement in weight control programs.<sup>13</sup> A tolerant attitude towards being overweight develops<sup>21,22</sup> and some women may even harbor an image of being attractive despite their obesity.<sup>13</sup>

A cultural preference for obesity has also been reported among the tribal women of Africa<sup>23</sup> and the traditional Arabian people,<sup>1,24</sup> who consider overnourishment in a female to be a sign of beauty, good health and wealth. Interestingly enough, the present study has shown weight-

TABLE 3. Distribution of students according to weight status and exercise knowledge score.

Weight status	Score (%)		
	≤6	7-9	≥10
Underweight (n=21)	0	12 (57.1)	9 (42.9)*
Normal weight (n=32)	1 (3.1)	18 (56.3)	13 (40.6)*
Overweight (n=24)	0	17 (70.8)	7 (29.2)*
Total (n=77)	1 (1.3)	47 (61)	29 (37.7)

\*Not significant.

TABLE 4. Distribution of students by weight status and reasons for not exercising.

Reasons for not exercising	Weight status (%)			
	Underweight n=19	Normal weight n=28	Overweight n=17	Total n=64
I am lazy	12 (63.2)	22 (78.6)	7 (41.2)	41 (64.1)
I ate too much	0	3 (10.7)	1 (5.9)	4 (6.3)
I don't have time	19 (100)	27 (96.4)	9 (52.9)	52 (81.3)
I don't feel like it	4 (21.1)	9 (32.1)	1 (5.9)	14 (21.9)
I have to do other types of work	10 (52.6)	21 (75)	7 (41.2)	38 (59.4)
I have better things to do	10 (52.6)	11 (39.3)	4 (23.5)	25 (39.1)
It makes me too tired	6 (31.6)	5 (17.9)	2 (11.8)	13 (20.3)
Once I start I end up doing it too much	2 (10.5)	4 (14.3)	2 (11.8)	8 (12.5)
It makes me sweat too much	5 (26.3)	2 (7.1)	1 (5.9)	8 (12.5)
It makes me sore	6 (31.6)	2 (7.1)	1 (5.9)	9 (14.1)

related beliefs and attitudes at the two ends of the spectrum—a tolerance of obesity on the one hand and an exaggerated concern for its occurrence on the other. Preference for the modern Western thin body image was clearly obvious in a subgroup of normal-weight females (37.5%), who expressed dissatisfaction with their weight status and wished to lose weight, as well as in nearly two-thirds (61.9%) of the underweight females who did not want to gain weight. Western studies<sup>14,25</sup> have noted such attitudes to be predominantly prevalent among white adolescents and young adults whose concern for obesity exists irrespective of their body weight and level of nutritional knowledge<sup>25</sup> and is often the reason for inappropriate eating behavior.<sup>14,25</sup> In a fast-developing country like Saudi Arabia, where basic educational facilities for females were introduced barely three to four decades ago, one would expect to find varying attitudes for the ideal female body image, from the prevailing Arabian traditional concept of beauty in the obese as well as the Western cultural preference for thinness. Such a situation calls for health awareness to correct distorted concepts of ideal body weight among the young female population.

Inappropriate eating behavior as well as perceptions of underestimation of food intake are often observed among the obese.<sup>11</sup> They frequently falsely assume that the food

they consume is appropriate in content and quantity, despite their common habits of bingeing, often on calorie-rich food.<sup>11,13,25</sup> The present study showed these perceptions to be significantly more common among the first-year medical and nursing students compared to those at higher academic levels ( $P < 0.05$ ). One of the reasons likely for this trend may be the presence of more obese females at the first-year level and their poor health awareness in the early stages of the medical education program.

Dietary changes are fast occurring in Saudi Arabia. Western fast food and food items with empty calories are now being consumed in large amounts, and are replacing the fruit and vegetable component of the traditional Arabian diet. This dietary pattern was also observed in the study population. The consequences of such a dietary transformation are apparent and suggest an awareness of healthy foods in weight-control programs.

It was discouraging to note in the study that among the students dieting to lose weight, nearly half (46.2%) of them were practicing inappropriate methods, such as fasting (>24 hours) or induction of vomiting after eating. This again, like the preference for a thin body image, indicates an influence of the West, where this type of distorted dietary behavior is commonly observed among white adolescents.<sup>14,25,28</sup>

Exercise is not part of a daily routine for women living in Saudi Arabia, a claim supported by the present study. Even among the obese of the study population, exercise was not popular, and this was combined with a poor attitude and a low level of knowledge about exercise. In general, a negative attitude and lack of motivation for exercise largely prevailed among the study subjects. Unacceptable reasons, such as laziness or lack of time, showed that students were not inclined towards physical work-outs. Judicious use of time and budgeting of time for exercise should receive special attention in health awareness programs. If young people are convinced of the benefits of exercise in terms of better physical fitness and consequently an improved ability to handle the stresses of daily chores, as well as physically and mentally demanding education programs, it might be possible to change their lifestyle.

Though the present investigation supports findings of earlier studies<sup>1-3</sup> for a common occurrence of overweight among Arab females in young adulthood, the health beliefs and practices of the study subjects may not be representative of population groups from other areas or other circumstances in Saudi Arabia, since university women, largely unmarried and in the narrow age range of 17-25 years, are a highly selective group in whom perceptions of ideal body image and eating behavior may change through maturity. The current investigation could, however, serve as a pilot study (after validating the questionnaire) to conduct research on larger samples and

on wider age ranges for a more comprehensive perspective of the problem in the local population.

Nevertheless, subjects of this study who will be the future health workers and mothers of tomorrow need to be targeted for health education programs related to an awareness of appropriate body size, weight consciousness, healthy lifestyle and obesity control. Students who are strongly motivated towards appropriate eating and exercise behavior should take a lead role in influencing their peers. Adequate facilities for physical activity programs and healthy foods need to be provided in institutions. Healthy practices adopted early in life will not only control weight and improve health and physical fitness in the younger years, but would also enhance the psychological readiness to participate in healthy behavior in later life.

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