

# Young urban women and the nutrition transition in Jordan

Hala N Madanat<sup>1,\*</sup>, Ryan Lindsay<sup>2</sup> and Tiffany Campbell<sup>1</sup>

<sup>1</sup>Graduate School of Public Health, College of Health and Human Services, San Diego State University, 5500 Campanile Drive, San Diego, CA 92182, USA; <sup>2</sup>San Diego State University/University of California San Diego Joint Doctoral Program, Public Health (Global Health), San Diego, CA, USA

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## Abstract

*Objective:* To determine the nutrition transition stage of female Jordanian college students.

*Design:* A cross-sectional survey was used to assess eating styles, disordered eating attitudes and behaviours, body esteem and dissatisfaction, and media influence.

*Setting:* Public and private universities in Jordan.

*Subjects:* A total of 255 subjects were recruited through a government-initiated youth campaign.

*Results:* The majority of participants had a normal BMI (70.6%) with almost all (99.4%) reporting restrained eating behaviour. Scores on the Eating Attitudes Test (EAT-26) indicated that 45.2% of these female college students should be screening for eating disorders. Subscales of the Body Esteem Scale (BES) showed that these women did not have substantial body esteem issues and mean scores on the Sociocultural Attitudes Towards Appearance Questionnaire (SATAQ-3) indicated that overall these women did not feel the media was dictating the way their body should look. Where Jordanian women did feel pressure from Western media, there was a 6.7-fold increase in the likelihood that they wanted to lose weight. In addition, 48.2% of the female college students desired to lose weight and 14.4% desired weight gain, indicating a certain level of body dissatisfaction.

*Conclusions:* With low levels of overweight and obesity and a propensity towards eating based on external hunger cues, college-aged Jordanian women may be less advanced in their development through the nutrition transition than the general population of women. However, high levels of restrained eating and disordered eating attitudes and behaviours indicate the need for an intervention to address healthy weight-loss strategies, assess eating disorders and help maintain healthy body esteem.

## Keywords

Middle East  
Restrained eating  
External eating  
Disordered eating attitudes or  
behaviours  
Body dissatisfaction

Throughout the developing world the nutrition transition is occurring at a rapid pace guided by various factors including economic changes, modernization and urbanization<sup>(1–3)</sup>. This transition away from traditional diets that consisted largely of a healthy balance of grains, fibre, fruits and vegetables to a more Westernized diet rich in fat, sugar and salt is cause for concern for many public health officials<sup>(4–6)</sup>. Shifts in dietary patterns combined with increasingly sedentary lifestyles incurred through changes in occupation and improved technology have led to increased rates of obesity and diet-related non-communicable diseases (such as diabetes, stroke, CVD) in countries whose previous focus had been to fight infectious disease<sup>(7)</sup>. Furthermore, Western influences encourage the transition by providing a global market that relies heavily on its ability to change attitudes and create demand with the use of media and advertising<sup>(8,9)</sup>.

Two previous studies<sup>(10,11)</sup> have indicated that Jordan is progressing quickly through the nutrition transition, as shown by escalating rates of overweight, obesity and diet-related non-communicable diseases. The pace of the nutrition transition has had a stronger effect on Jordanian women, who have shown higher rates of obesity than men across all age groups over the past decade<sup>(12)</sup>. In addition, Jordan's rising trend towards urbanization and a dramatically increasing younger demographic, caused by improvements in infant mortality and fertility rates, have helped to further accelerate Jordan's movement through this transition. As expected in a country going through the nutrition transition, high rates of restrained eating and disordered eating attitudes and behaviours, such as dieting and emotional eating, have been observed in the population<sup>(10)</sup>. However, the women in that sample showed 'reasonable and healthy' attitudes in regard to

\*Corresponding author: Email hmadanat@mail.sdsu.edu

body size, preferring a 'normal' body size; and overall had normal levels of body esteem and low levels of body dissatisfaction. Researchers suggest that as Jordan moves through the nutrition transition, women will struggle between embracing more modern and Westernized cultures of diet and body size preferences that promote thinness and retaining traditional cultural norms that favour a customary diet and a normal body size<sup>(10)</sup>. Furthermore, women in Jordan are faced with an influx of media and advertising whose purpose is to influence dietary attitudes and promote Western ideals<sup>(8,9)</sup>.

Jordan's large young and urban demographic is particularly susceptible to the increasing trend of obesity and inactivity as they proceed through the transition. Studies have shown that young women's dieting behaviours and the development of eating disorders are supported by cultural values and attitudes, which become conflicted by an increasing presence of Western media and advertising and an eager acceptability to conform to modern behaviours<sup>(13)</sup>. Moreover, studies of American universities have shown higher rates of chronic dieting, binge and purging, and bulimia nervosa among female college students than in the general population<sup>(14)</sup>. For this reason, to aid in the development of educational programmes to increase dietary knowledge and intervene in the increasing epidemic of overweight and obesity, we must understand the role of the nutrition transition among college-aged women in Jordan and the impact of Western media and advertising on their dietary values and body image attitudes. A model of nutrition transition which follows economic and demographic transitions developed by Hawks *et al.*<sup>(15)</sup> describes a shift from 'physical' eating to 'external' and 'emotional' eating (eating in the absence of hunger) occurring simultaneously with changes in diet composition and eating styles. The model suggests that Western media influences the nutrition transition in part by altering perceptions of ideal body size and shape, leading to restrictive dieting and consequently emotional eating to compensate for food deprivation. Using Hawks *et al.*'s model<sup>(15)</sup> as a framework, the purpose of the present study was to evaluate the nutrition transition among college females in Jordan.

## Materials and methods

### Sample

The sample for the current cross-sectional study was taken from undergraduate students attending both public and private universities in Jordan. Since identifying a database of college-aged females was difficult, we partnered with the 'We are all Jordan' youth commission, a government campaign aimed at increasing youth participation in agenda setting. The campaign leadership reviewed the survey instruments. A female research assistant was sent to the meetings and all female attendees were asked to participate in the data collection. There were 255 surveys

completed and returned, representing 90% of the distributed surveys. An informed consent form was provided to the participants explaining the purpose of the study, the voluntary nature of participation and that personal identifying information was not requested. Data were collected using paper-and-pencil surveys, entered manually into a spreadsheet and rechecked for accuracy.

### Instruments

As indicated in previous work, no single scale exists to measure Hawks *et al.*'s nutrition transition model<sup>(10)</sup>. Thus, the present survey contained a variety of validated instruments, including the Motivation for Eating Scale (MFES), the Restraint Scale (RS), the Eating Attitudes Test (EAT-26), the Sociocultural Attitudes Towards Appearance Questionnaire (SATAQ-3) and the Body Esteem Scale (BES). MFES measures the individual's motivations for eating including physical, external and emotional eating, while the RS measures dietary restraint. EAT-26 was used to measure disordered eating attitudes and behaviours and SATAQ-3 was used to assess the impact of societal and media influences on body image and eating disturbances. Finally, BES assesses general feelings about appearance, weight satisfaction and evaluations attributed to others about one's body and appearance. These instruments have been previously validated among Jordanian women<sup>(10)</sup>. Furthermore, selected demographic variables were included in the questionnaire, as well as Stunkard *et al.*'s body silhouettes<sup>(16)</sup>. Further descriptions of these instruments have been given elsewhere<sup>(10)</sup>.

Body size preferences were measured using Stunkard's silhouettes<sup>(16)</sup>. Participants were asked three questions: (i) 'Which figure represents your current size?'; (ii) 'Which figure represents your ideal size?'; and (iii) 'Which figure best represents a healthy figure?' Desired change was calculated based on a difference between current size and ideal size. Respondents were then categorized into three groups: those who desired to lose weight, those who desired to gain weight and those who desired no change in their weight.

Another variable of interest was BMI. Respondents were asked to indicate their height and weight, which were used to calculate BMI. Based on the WHO guidelines four different categories of BMI were used: underweight (BMI < 18.5 kg/m<sup>2</sup>), normal (BMI = 18.5–24.9 kg/m<sup>2</sup>), overweight (BMI = 25.0–29.9 kg/m<sup>2</sup>) and obese (BMI ≥ 30.0 kg/m<sup>2</sup>). Due to low numbers in the overweight and obese categories, these two groups were subsequently merged into one group labelled 'overweight or obese'.

### Data analyses

Data were analysed using the SPSS statistical software package for personal computers release 16.0 (SPSS Inc., Chicago, IL, USA). Conventional frequency tables, *t* tests and ANOVA were employed to summarize and describe the data. Linear and logistic regression analyses were

performed controlling for demographic variables to understand the impact of selected variables on eating styles and body size preferences. The level of significance was set at 0.05.

**Results**

**Demographics**

Table 1 presents the demographic distribution of the sample. The female college students were on average 21 (SD 3) years of age. The majority were single (94.7%), from medium- to high-income families (67.1%), in their senior year (43.4%) and from urban settings (87.8%). In addition, most female college students fell in the normal BMI category (70.6%) with low levels of overweight (7.7%) and obesity (5.6%) and a relatively high rate of underweight (16.1%).

Table 2 presents the mean score and standard deviation for the various scales and subscales, while Table 3 presents the distribution of respondents according to their level of restrained eating, disordered eating attitudes and behaviours, and desired change in body size. Contradictory to our expectations, female college students were more likely to eat based on physical and external hunger cues than based on emotional eating. However, the highest score was on external eating, reflecting a higher rate of social and environmental eating. In addition, they had an alarming rate of restrained eating with 99.4% of the sample scoring higher than the cut-off point of 10 for restrained eating. In addition, disordered eating attitudes and behaviours as measured by EAT-26 indicated that

approximately half of these female college students should be screened for eating disorders since they had scored higher than the cut-off point of 20.

Furthermore, the mean scores for the BES subscales indicated that these women did not have substantial body esteem issues. For the three subscales, the mean scores were closer to 2 (disagree) and ranged from 2.21 to 2.34. The mean scores for all of the SATAQ-3 subscales fell between 2 (disagree) and 3 (agree), and ranged from 2.49 and 2.92. While 48.2% of the female college students desired to lose weight and 14.4% desired weight gain indicating a certain level of body dissatisfaction, the mean desired body silhouette change was 0.49 (losing less than one body silhouette).

To better understand the role of Western advertising and media on the nutrition transition stage, we performed

**Table 2** Mean scores on the different scales and subscales: female college-aged students, Jordan

Scale/subscale	Mean	SD
MFES		
Physical	2.8800*	0.5752
External	2.9058*†	0.8070
Emotional	2.3390	0.7577
EAT-26	20.8300	15.3660
RS	24.2800	2.2480
SATAQ-3		
Information	2.4860	1.1229
Pressures	2.9202	1.2365
Internalization – general	2.8950	1.2693
Internalization – athlete	2.6720	1.2052
BES		
Body esteem – appearance	2.2500	0.9676
Body esteem – weight	2.3400	1.0400
Body esteem – attribution	2.2110	0.9889
BMI	22.3125	5.8762
Desired change	0.4892	1.0992

MFES, Motivation for Eating Scale; EAT-26, Eating Attitudes Test; RS, Restraint Scale; SATAQ-3, Sociocultural Attitudes Towards Appearance Questionnaire; BES, Body Esteem Scale.

\*Mean value was significantly different from that of emotional eating ( $P < 0.05$ ). †Mean value was significantly different from that of physical eating ( $P < 0.05$ ).

**Table 1** Distribution of participants according to selected demographic variables: female college-aged students, Jordan

Variable	Percentage (n 255)
Age (mean = 21, SD = 3 years)	
18–20	40.6
21–23	50.7
24+	8.7
Marital status	
Single*	94.7
Married	5.3
Annual income (Jordanian Dinars)	
Low income (0–499)	34.9
Medium income (500–999)	40.4
High income (1000+)	24.7
Year in school	
Freshman	6.6
Sophomore	23.8
Junior	26.2
Senior	43.4
Area of residence	
Urban	87.8
Rural	12.2
BMI (mean = 22.3, SD = 5.9 kg/m <sup>2</sup> )	
Underweight	16.1
Normal weight	70.6
Overweight	7.7
Obese	5.6

\*Includes one divorced female.

**Table 3** Distribution of respondents according to restrained eating, disordered eating attitudes and behaviours, and desired change in body size: female college-aged students, Jordan

Variable	Percentage
RS	
Restrained eating (score 10+)	99.4
No restrained eating (score <10)	0.6
EAT-26	
Disordered eating attitudes and behaviours (score 20+)	45.2
No disordered eating attitudes and behaviours (score <20)	54.8
Desired change in body size	
Weight loss (difference between current and ideal silhouette >0)	48.2
No change (no difference between current and ideal silhouette)	37.4
Weight gain (difference between current and ideal silhouette <0)	14.4

RS, Restraint Scale; EAT-26, Eating Attitudes Test.

**Table 4** Unstandardized coefficients in linear regression models for independent variables and external eating, restrained eating and EAT-26 total score, and odds ratio in logistic regression models for independent variables and desired change in body size: female college-aged students, Jordan

Variable	External eating		Restrained eating		EAT-26		Desired change	
	<i>B</i>	<i>P</i>	<i>B</i>	<i>P</i>	<i>B</i>	<i>P</i>	OR	<i>P</i>
Area of residence								
Urban			2.027	0.016				
Rural								
SATAQ-3								
Information					2.846	0.001		
Pressures			2.533	0.012			6.687	0.038
Internalization – general			2.504	0.014	1.941	0.046		
Internalization – athlete								
BMI								
Underweight								
Normal weight								
Overweight or obese			2.027	0.035	1.227	0.020	4.188	0.003
Marital status								
Married								
Single	1.871	0.036						
Annual income								
Low income								
Medium income			1.797	0.047	2.377	0.025		
High income	1.924	0.025	2.607	0.001	3.206	0.003		
Year in school								
Freshman								
Sophomore								
Junior	2.991	0.003						
Senior	2.376	0.019						
Constant	8.324	<0.001	14.543	<0.001	21.934	<0.001		
<i>R</i> <sup>2</sup> adjusted/–2LL		0.130		0.210		0.138		170.5
<i>N</i> /df		255		255		255		2

EAT-26, Eating Attitudes Test; SATAQ-3, Sociocultural Attitudes Towards Appearance Questionnaire.

the regression of three main independent variables – area of residence, BMI and Western advertising and media (SATAQ-3 scores) – *v.* four dependent variables: external eating, restrained eating, EAT-26 scores and desired change. Linear regression models were employed on the dependent variables external eating, restrained eating and EAT-26 scores. Logistic regression was used for desired change. We also controlled for demographic variables. These included age, marital status, income and education level. Age was insignificant in all of the models and was thus dropped from the final models. Results are presented in Table 4.

#### **External eating model**

The first model, external eating, revealed that none of the three main independent variables regressed significantly affected the external eating score. However, three demographic variables were associated with the external eating score: (i) single women scored 1.871 points ( $P=0.036$ ) more on the external eating subscale than married women; (ii) women in the high income bracket scored 1.924 points ( $P=0.025$ ) higher on the external eating subscale compared with women in the low income bracket; and (iii) junior and senior women scored 2.991 ( $P=0.003$ ) and 2.376 ( $P=0.019$ ) points more, respectively, than freshmen women.

#### **Restrained eating model**

In this model, all three main independent variables regressed on the restrained eating scale score were significant. First, the effect of living in urban *v.* rural settings was significant only in this model and indicated that women living in urban areas scored 2.027 points ( $P=0.016$ ) more on the restrained eating scale compared with those women living in rural areas. Second, for every point scored on pressures from the media and internalizing general images in the media, there was an increase of 2.533 ( $P=0.012$ ) and 2.504 ( $P=0.014$ ) points, respectively, on the restrained eating scale, indicating the women were more likely to refrain from eating or restrict their energy intake. Being overweight or obese compared with normal weight resulted in a restrained eating score that was 2.027 points higher ( $P=0.035$ ). Increases in income also led to increases in the restrained eating score. Those with medium and high incomes scored 1.797 ( $P=0.047$ ) and 2.607 ( $P=0.001$ ) points more, respectively, than those with low income.

#### **EAT-26 model**

In this model, two of the three main independent variables regressed were significantly associated. For every point scored on media information regarding body image and internalizing the general images in the media, college-aged Jordanian women scored 2.846 ( $P=0.001$ ) and 1.941

( $P=0.046$ ) points higher, respectively, on the EAT-26 scale, indicating elevated disordered eating attitudes and behaviours. Being overweight or obese, compared with normal BMI, resulted in an increase of 1.227 points ( $P=0.020$ ) on the EAT-26 scale. Similar to the two previous models, increases in income level resulted in higher scores in the EAT-26 model. Those with medium and high incomes scored 2.377 ( $P=0.025$ ) and 3.206 ( $P=0.003$ ) points more, respectively, higher than those with low income.

### ***Desired change model***

The desired change model indicated that for every point scored on pressures from the media, there was a 6.7-fold ( $P=0.038$ ) increased likelihood that college-aged Jordanian women wanted to lose weight. Those who were overweight or obese, as compared with those of normal weight, were also 4.2 times ( $P=0.003$ ) more likely to want to lose weight. All models resulted in directional consistency with expected results based on previous data.

### **Discussion**

As previous studies have shown, Jordan is rapidly progressing through the stages of the nutrition transition<sup>(11,12)</sup>. Therefore, it is not unexpected that this movement away from traditional values is affecting body image attitudes and dietary behaviours in college-aged women in Jordan. The BMI distribution of college women in this sample may be linked to their eating behaviours. Our findings revealed that the study population of college-aged women showed high levels of restrained eating and disturbing rates of disordered eating attitudes and behaviours even above those of Jordanian adolescents<sup>(17)</sup>. This may explain the relatively high rates of underweight in the sample. However, these college-aged women were more likely to eat based on external and physical hunger cues than emotional hunger cues, contrary to what was previously observed in the general population of Jordanian women<sup>(10)</sup>, suggesting that college-aged women may be less advanced in their development through the nutrition transition. This can also be seen by their relatively low rates of overweight and obesity.

That college-aged women in the high- and medium-income brackets are more prone to external eating, restrained and disordered eating reflects correctly the nutrition transition which proposes that those more affluent in society are affected first. College-aged women who were not married and those college-aged women who were more progressed in their education were also more prone to external eating. One reason for this might be that college females who are juniors and seniors and those who are single may have developed stronger social networks that lead to higher rates of external eating. Also increases in stress levels may explain a portion of the rise in restrained and disordered eating<sup>(18)</sup>. Since external eating among college women has been

associated elsewhere with a higher intake of fatty foods than restrictive or emotional eating<sup>(19)</sup>, a propensity towards external eating as one progresses through college provides rationale for an intervention in the freshman year of college.

As seen in the general population of Jordanian women, college-aged women retained normal levels of body esteem and low levels of body dissatisfaction, signifying that the women may preserve traditional attitudes that favour a 'normal' body size<sup>(10)</sup>. Additionally, those women who did desire changes in body size maintained healthy and reasonable attitudes regarding weight loss and weight gain, preferring changes that measured less than one body silhouette and stayed closer to the previously mentioned 'normal' body size. Overall, college-aged women sustained body esteem levels that were normal despite the high rates of restrained eating and disordered eating attitudes and behaviours that indicate the possible development of future eating disorders.

Although in general Jordanian women did not believe that exposure to Western media directly influences their body esteem and dietary attitudes, we can consider that Western concepts and ideals that promote thinness may be internalized and these women may not recognize how they are being persuaded by media messages<sup>(10)</sup>. College-aged women may be specifically susceptible as evidenced by comparing these results with the general population of Jordanian women. The pressures felt to have a certain body type from Western media as measured by mean scores from the SATAQ-3 instrument were 2.92 in the present study of college-aged women as opposed to 2.11 in a previous study from Jordanian women of all ages<sup>(10)</sup>. The shift in direction in mean scores for the SATAQ-3 instrument suggests that Western media is beginning to be recognized among the younger generation as having some effect and is consistent with trends in Jordanian adolescents<sup>(20)</sup>. It seems for this population that Western advertising and media explains, in part, the nutrition transition as it relates to eating style (restrained eating but not external eating) and body size preferences among Jordanian college-aged females.

Furthermore, college-aged women may be experiencing the same cultural conflict as seen in the general population of Jordanian women; they are torn between traditional values that dictate cultural norms regarding body size and beauty and a Westernized society that promotes thinness and increased access to pre-packaged and larger portions of food<sup>(10)</sup>. College-aged women may be simply unaware of their own struggle and why they may be partaking in certain dieting behaviours such as the high rates of restrained eating found in the present study.

### ***Limitations***

Although the cross-sectional study design introduces the possibility of selection bias, randomized sampling of students from multiple institutions across Jordan presents



challenges as no database exists from which to sample. The sample included participants from both public and private institutions across Jordan, increasing the representation of varying types of college-aged women. Consequently, the sample matched well with the general population demographically but had an over-representation of students with middle-to-high income which may be due to the incorporation of private universities into the sampling frame. Private universities in Jordan are expensive and are often exclusive to middle- to high-income families who are able to afford it.

### **Implications and future research**

Our findings reveal that, without proper intervention, college-aged women's rates of overweight and obesity have the potential to increase as they enter adulthood given their reported attitudes and behaviours. Therefore, it is necessary to develop public health interventions for this age group to promote appropriate dieting behaviours and help to maintain healthy body esteem. Additionally, there is a need to increase awareness of the negative psychological and physical consequences of restrained dieting and disordered eating attitudes and behaviours, emphasizing that such behaviour may lead to greater weight fluctuations, reduced body esteem and the development of more serious eating disorders<sup>(21,22)</sup>. Education regarding media images of ideal body size and its impact on body satisfaction may also be warranted.

Future research needs to measure the current levels of eating disorders within the population as well as develop measures to understand the impact of Western influences on body image and daily food intake. Additionally, similar research needs to be extended to include males and adolescents who may also be experiencing changes in dietary behaviour and body image. Of particular importance are adolescents who, compared with their parents, will have greater and longer exposure to Western media over their lifetime and will be further removed from traditional values that include dietary behaviour and attitudes as the nutrition transition progresses in Jordan. This information combined with our results may form the basis of future nutrition education interventions that aim at improving dietary behaviours and perceptions of ideal body size while curbing overweight and obesity rates.

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