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The impact of ongoing westernization on eating disorders and body image dissatisfaction in a sample of undergraduate Saudi women

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The impact of ongoing westernization on eating disorders and body image dissatisfaction in women in non-western cultures: The example of Saudi Arabia

Abstract

Purpose: This study addressed the prevalence of eating disorders and levels of eating pathology, body image and psychological comorbidities in undergraduate women in Saudi Arabia. It examined the role of the current internalization of western culture that is under way in that country, focusing on political and economic issues rather than on issues such as media exposure per se.

Method: Participants were 503 Saudi female university students (mean age = 19.78 years). Each completed a diagnostic measure of eating disorders and measures of disordered eating attitudes and behaviours, body image, depression, social anxiety and self-esteem. They also completed a measure of the internalization of western culture, specific to current political and cultural developments in Saudi Arabia.

Results: Eating disorder prevalence and pathology rates among undergraduates females were comparable to western levels, though the pattern was more one of bulimic than anorexic pathology. Internalization of western values was associated with eating pathology, body image and psychological comorbidities.

Conclusion: Eating disorders are not an exclusively western issue, as the levels in Saudi undergraduate women are similar to those in western cultures (though they tend more towards bulimic than anorexic presentations). Internalization of western values appears to be key to this pattern.

Keywords: Westernization; Saudi Arabia; eating disorders; young women.

Evidence-based medicine: Level III - Evidence obtained from a well-designed cohort study

Declarations

Funding

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Conflicts of interest

The authors have no interests to declare.

Availability of data and material

The data used are available on reasonable request to the corresponding author.

Code availability

Not applicable.

The impact of ongoing westernization on eating disorders and body image dissatisfaction in women in non-western cultures: The example of Saudi Arabia

Eating disorders are an increasing problem among women around the world. Identification rates are on the rise, mainly for younger women [1, 2, 3]. In particular, prevalence is increasing in non-western countries. For example, in Japan the prevalence of anorexia nervosa increased from 0.11 to 0.43% between 1982 and 2002 [4]. To better understand eating disorders and body image across cultures, it is important to understand related behavioural, cognitive and psychological factors. These include psychological correlates such as depression, low self-esteem and anxiety [5, 6].

The term 'Western' is used to describe things, people, ideas, or ways of life that come from or are associated with the United States, Canada, and the countries of Western, Northern, and Southern Europe [7]. Most of the data to date come from western cultures and cannot be assumed to apply to other cultural and ethnic groups. Nor do they reflect any change in levels of eating problem and body image as cultures change – particularly as they adopt Western values. 'Westernization' is defined as a change in the social structure where individualism and liberal values are replacing collectivism, and where personal status and identity are determined more by self-determination and achievement, and less by gender and kinship [8]. Westernization in non-western countries contributes to the development of higher rates of eating disorders. For example, western media exposure and socioeconomic changes were associated with eating disorders and body dissatisfaction in women in Fiji and Curacao [9, 10].

While westernization itself is commonly seen as related to rates of eating pathology, the nature of westernization varies across cultures. In some, it involves the introduction of western media: in others, it is about broader social and political change. It is critical to understand the degree to which individuals internalize the values associated with changes in their own culture. Therefore, it is important to consider how internalization of western values relates to the

development of eating and related pathology, and to monitor longitudinal associations of such internalization with the development of eating problems as the culture changes over extended periods of time.

Saudi Arabia is an example of a non-western country undergoing westernization via a process of socio-political cultural and legal transformation, rather than via the simple introduction of western media. Saudi women's experience of westernization is based on internal reforms relevant to women rights, beginning in the latter part of the decade from 2010-2020. Therefore, the current changes in their social context are beyond Tsai's [8] definition of westernization. The current political and social changes are aimed at modernizing the relatively conservative Saudi society, which previously viewed women's empowerment as undermining men's patriarchal domination and reducing men's position of power [11, 12]. Until recently, Saudi women were excluded from strategic planning inside and outside their work place, due to cultural and organizational barriers [13]. The local culture did not allow for freedom of mobility, which limited women's opportunities to acquire skills and obtain higher professional positions [13]. Furthermore, Saudi organizations centralized power around positions occupied by men, and did not provide regulations and policies to support women's professional growth [14].

The current changes in Saudi Arabia aim to enable the society to achieve a national transformational programme [15], which is predicated on women being a great asset to the country. It aims to put an end to social and organizational barriers so that women can contribute the best of their abilities [15]. This program provides women with greater participation in the labor market and with equal education, employment, entrepreneurship and enterprise opportunities. For example, women were first allowed to drive in 2018, and it was only in 2019 that they were allowed to register a marriage, birth or divorce, or could be issued with a passport to travel without a male guardian. In the same year the government appointed the first female

ambassador. This pattern of westernization could be argued to be more pervasive and fundamental than that in other societies (such as Fiji, where the availability of western media was a key factor – [9]).

As Westernization occurs, there are cultural changes in body size preference [16]. People from non-Western cultures start to follow Western ideals, particularly of thinness [17]. As a consequence of adopting this thin ideal, young women become driven to achieve slimness and develop disordered eating as a result [18]. It is important to remember that social changes are more likely to have effects on individuals who internalize the new values, and hence experience potential conflicts more. Given the relatively fundamental nature of the societal changes in Saudi Arabia, it is necessary to consider current levels of internalization of western values, and how they relate to eating disorders and body image. Longer-term research is also needed to monitor patterns of change in eating pathology and how they are related to that internalization of western values. However, such research requires a solid foundation of understanding current patterns of eating pathology and eating disorders in Saudi Arabia. Unfortunately, there are few data on those features of the Saudi population, with limitations related to very weak sample sizes, inappropriate measures, and invalid assumptions regarding diagnostic validity [19-22]. Therefore, to understand the impact of internalization of western values in the Saudi population, it will also be necessary to identify the prevalence of eating disorders and levels of eating pathology and body image dissatisfaction, using contemporary, valid and reliable measures.

While mood in general needs to be understood as being relevant to the development and maintenance of eating disorders, a specific potential mechanism that might explain the impact of cultural factors on the individual is social anxiety. Social anxiety is commonly comorbid with eating disorders [23-29]. In a culture such as Saudi Arabia, where social norms are changing rapidly, it is necessary to consider that women might be at a high risk of social anxiety

due to cultural change [30]. This places them at greater risk of developing bulimic eating pathology [31].

We hypothesize that anorexia nervosa and atypical anorexia nervosa cases will be less prevalent than bulimia nervosa and binge eating disorders. This difference is hypothesized because there are religious prohibitions in Islam on starvation and harming the human body ("Do not throw your selves into lethality by your own hand" – [32], "Oh God, I seek refuge in You from hunger, for it is the misery of the lost" – [33]). Furthermore, Arabic beauty norms do not currently encompass extreme thinness [34]. In contrast, there is a social pattern of overeating due to the hospitality norm of Islamic, Arabic and Saudi culture, where food is served in frequent social events [35, 36]. Therefore, it is likely that young Saudi women are more used to overeating, then purging if dissatisfied with their weight. Finally, we anticipate that body image dissatisfaction levels will be similar to those in other cultures, because rapid social changes increase body dissatisfaction in non-western cultures [18].

Given the issues raised above, this study will address the following questions in young Saudi women:

1. What is the prevalence of typical and atypical eating disorders in undergraduate women?
2. What are the levels of eating pathology, body image dissatisfaction and psychological comorbidities among undergraduate women, and are they similar to those in other cultures?
3. What is the level of internalization of western values in undergraduate women, and is it related to eating and body image dissatisfaction?

Methods

Ethical Approval

This project was approved by the University of Sheffield's Ethics Review Procedure

(Psychology Department) and by the Scientific Research Ethics Committee in Princess Noura bint Abdulrahman University (Basic Sciences Department). Participants were given an information sheet, and were asked to give informed consent.

Design

The study used a cross-sectional survey design, including correlational and comparative elements.

Participants

Female undergraduates represent 81.6% of the total young female population in Saudi Arabia. The female population (age 20-24) is estimated at 948,271 [37], and the number of female university students is 773,501 [38].

The initial sample (n = 504) consisted of female undergraduates. Participants were drawn from different departments of the community college in Princes Noura bint Abdulrahman University, a public university in the capital city of Saudi Arabia. Participation in this study was on a voluntary basis. Participants were recruited via an email that was sent their departments for circulation to all students (n = 1843). Thus, the participants self-selected. The response rate was 27%. One participant was excluded due to providing impossible scores, resulting in a final sample of 503 young women. Their mean age was 19.78 years (*SD* = 2.05, range = 18-49). Nearly all (99.2%) were Saudis, while 0.8% were of other Arabic nationalities.

Sample size calculation was performed for cross sectional studies assessing prevalence [39]. The sample size calculation was based on the assumption of a 10% prevalence of eating disorders (based on [40]), 5% precision, a confidence interval of 95%, and an estimated accuracy of 4%. Assuming a non-response rate of 20%, the minimum target sample size was 259. Therefore, the study was adequately powered.

Measures

In keeping with the hypotheses, the participants completed self-report measures of

height and weight, eating disorder diagnostic features, eating pathology, body image, and comorbid problems (depression, social anxiety, and low self-esteem). All measures were translated from English to Arabic, and back-translation was used to ensure accuracy of the Arabic versions used.

Eating Disorders Diagnostic Scale (EDDS) - DSM-5 version. The EDDS contains 22 items, which assess the DSM-5 criteria of eating disorder symptoms and produce a diagnostic category for each individual [41]. EDDS scores were used to group participants into five diagnostic categories: anorexia nervosa, atypical anorexia nervosa, bulimia nervosa, atypical bulimia nervosa, binge-eating disorder, or atypical binge-eating disorder. The internal consistency of the overall scale in this study was $\alpha = .666$, compared to Stice and colleagues' [41] Cronbach's $\alpha = .759$. The reason for this lower internal consistency might be that the EDDS is culturally specific to Western cultures, or that the translation was not perfect.

Eating Disorder Examination-Questionnaire (EDE-Q, version 6.0). The EDE-Q is a self-report measure of eating disorder psychopathology [42]. It contains 28 items investigating eating disorder behaviours and attitudes during the past 28 days. It has satisfactory psychometric properties. The internal consistency of the overall scale in this study was $\alpha = .80$, compared to Peterson et al.'s [43] $\alpha = .90$. It has a strong test-retest reliability [44], and validity in clinical and non-clinical populations [45, 46]. The participants' mean Global score on the EDE-Q was 1.92 (SD = 1.28), consistent with western non-clinical norms [47].

Body Shape Questionnaire (BSQ-8C). Body image dissatisfaction was measured using the BSQ-8C, a short version of the full Body Shape Questionnaire [48]. It is an eight-item self-report questionnaire, addressing body satisfaction over the past four weeks. It had a high internal consistency in this study $\alpha = .927$, which is similar to Pook et al.'s [49] $\alpha = .91$ Pook et al. also showed that the BSQ-SC had excellent test–retest reliability ($r = .95$) and high convergent validity ($r = .90$, $p < .001$). It can be used in community and clinical populations

[50].

Brief Version of the Fear of Negative Evaluation Scale (BFNE). The BFNE [51] measures social anxiety, in terms of fear of negative evaluation by others. It contains 12 items describing anxious cognitions. BFNE has an acceptable factor structure. The internal consistency of the overall scale in this study was α = .872 compared to Weeks et al.'s [52] Cronbach's α = .81. It has good test-retest reliability (*r* = .75) [47].

Patient Health Questionnaire (PHQ-9). Depression was assessed with the PHQ-9 [53], which measures the severity of depression over the past two weeks. It contains nine items that correspond with the major depressive episode criteria described in the Diagnostic and Statistical Manual of Mental Disorders [54]. The PHQ-9 has strong psychometric properties. The internal consistency of the overall scale in this study was α = .888, which is equal to Zuithoff et al's [55] α = .88. It also has strong test-retest reliability (r = 0.94) [55].

Rosenberg Self-Esteem Scale (RSES). The RSES [56] is a 10-item self-report instrument that measures global self-worth. The internal consistency in this study was α = .761. compared Sinclair et al.'s [57] α = .91. The total score is the sum of scores on all the items (range = 10-40). A higher score means a lower self-esteem.

Internalization of Western Values Scale (IWVS). The IWVS is an 11-item self-report measure, developed for this study. The items reflect separate aspects of internalization of western values that are currently relevant to Saudi women, given contemporary cultural, legal and political changes. The items were selected to reflect the social and political changes that have been outlined above (e.g., women having the right to drive cars, travel alone, and work in higher political positions). Categorical responses were used because the items represent things that people either can or cannot do.

Each item is scored 1 for 'yes' and 0 for 'no', and the total score is the sum of scores on all the items (range = 0-11). A higher score means that the participant has a greater level of

internalization of western values. Table 1 presents the scale items and participants' responses in this study.

The internal consistency of the overall scale in this sample was acceptable (α = .711). The mean overall score for this sample was 6.13 (SD = 2.56). The items were divided into three subscales, which had more variable internal consistency: Political changes (items 1, 10 and 11 - α =.580); Economic changes (items 6, 7, 8 and 9 - α = .716); and Media changes (items 2, 3, 4 and 5 - α =.507).

Insert Table 1 about here

Procedure

Following initial email contact, participants accessed the survey (using Qualtrics software). At the start of the study, participants gave informed consent. They then answered demographic questions and completed the study measures in one session. Data collection took place in March 2019. The studies to be compared were chosen because they used the same measures that were used in this study, with a comparable sample in terms of gender and age group.

Data analysis

SPSS (v.26) was used for all descriptive and inferential data analyses. The aims were addressed using a mixture of descriptive, comparative, correlational and regression analyses. There were no missing data, because all items had to be completed.

Results

Prevalence of typical and atypical eating disorder diagnoses among undergraduate women (Question 1)

The prevalence of anorexia nervosa, atypical anorexia nervosa, bulimia nervosa, atypical bulimia nervosa and binge-eating disorder were calculated, based on EDDS responses. The prevalence of all eating disorders across this sample of 503 young women was 6.96% (N = 35). Bulimia nervosa was the most common diagnosis (N = 22; 4.4%; 95% CI = 2.61-6.19%), followed by binge-eating disorder (N = 8; 1.6%; 95% CI = 0.5-2.70%), atypical bulimia nervosa (N = 4; 0.8%; 95% CI = 0.02-1.68%), and atypical binge-eating disorder (N = 1; 0.2%; 95% CI = -0.02-0.6%). No cases of anorexia nervosa or atypical anorexia nervosa were identified.

As shown above, nobody met criteria for either anorexia nervosa or atypical anorexia nervosa. This is probably because the sample had relatively low levels of restrained attitudes (mean score of restraint subscale of the EDE-Q = 1.47, SD=1.60) and behaviours (only 3.3% reported extreme scores on the EDE-Q restrained eating item). The mean BMI of the group was 23.44 (SD = 5.51, Minimum = 14.09, Maximum = 55.78).

Those with and without eating disorders were compared on their levels of eating pathology, body image dissatisfaction, BMI and comorbid problems (Table 2). *t*-tests were used to determine whether the differences in scores were significant. Those with any eating disorder diagnosis reported higher levels of eating attitudes and behaviours, body image dissatisfaction, BMI, depression and social anxiety, and lower self-esteem.

Insert Table 2 about here

Levels of eating pathology, body image dissatisfaction, psychological comorbidities among undergraduate women in Saudi Arabia relative to other countries (Question 2)

Table 3 shows the scores of the Saudi sample relative to comparable western samples on the EDE-Q Global, bingeing and compensatory behaviours, body image dissatisfaction,

social anxiety, depression and self-esteem. The samples had broadly comparable scores on all measures, indicating that the pathology of this sample was similar to that found in other cultures.

Insert Table 3 about here

Association of internalization of western values with eating and body image problems in undergraduate women (Question 3)

In order to understand whether internalization of western values is related to eating disorders, eating pathology, body image and related psychological difficulties, the total IWVS score was correlated (Pearson's *r*) with each of the other scales. Table 4 shows that the overall internalization of western values was associated with eating attitudes and compensatory behaviours. It was also correlated with body dissatisfaction and comorbidities.

Insert Table 4 about here

Over all the effect of the potential role of internalization of western political, economic and media values on eating pathology, body image dissatisfaction and psychological comorbidities are fairly small. Table 4 shows that the largest effects are for internalization of western media and economic values, while internalization of western political values appears to have less influence.

Discussion

This study has examined levels of eating disorders and pathology among undergraduate

women in Saudi Arabia. This basic level of enquiry was necessary due to the lack of reliable or valid baseline information about eating and body image issues in this country. A key aim was to determine whether internalization of western values in response to current cultural developments is associated with greater levels of such pathology as Saudi Arabia undertakes westernization. Using well-validated measures to allow comparison with Western countries, the study has demonstrated that cases of eating disorders are present in Saudi Arabia, but that they are more likely to be non-anorexic disorders. It is also apparent that Saudi women's disordered eating is associated with depression, social anxiety and low self-esteem, as found in western cultures [5, 26, 61]. Finally, internalization of western values was linked to eating pathology, body image and comorbidities, but not with binge-eating or low self-esteem.

While there is no similar study of eating and body image issues in Saudi Arabia to date, the comparability of levels of pathology and the pattern of links to westernization [18, 62] indicate that Saudi women are currently experiencing a more western pattern of eating and body concerns than women in non-western cultures, particularly where those women are influenced by western values. Saudi young women show more bulimic behaviours and diagnoses than anorexic. The likely reason for this difference is that it is more culturally normative to over-eat in Saudi Arabia, as detailed above [35, 36]. It also appears that different cultural issues might have different impacts on eating and body shape, with internalization of western media and economic values being more closely related to body and eating issues than internalization of western political values. This difference might suggest that many women in Saudi Arabia are less engaged with political changes than they are with economic and media changes, as has been concluded from a qualitative study of women working in Saudi higher education settings [63].

It is important to note that the proportion of female undergraduates in comparison to the total population of young adult females in Saudi Arabia is large, compared to most Western

countries. The main reason for this discrepancy is that joining higher education for males and females is encouraged as part of cultural change in Saudi Arabia. Saudi students have free access to state universities, and they are supported financially with a monthly wage during their period of study. To support this, over recent years the Saudi government has established new universities and colleges nationally, in urban and rural areas. A university degree is a typical level of education for a young Saudi to enter a desirable job in the private or government sectors.

The introduction of western values to women's lives can be a great empowerment, but it should not be forgotten that the associated cultural changes can have negative impacts on mental health [64, 65]. If that is what is happening for Saudi women, longitudinal research should demonstrate more firmly whether greater westernization and internalization of western values are associated with the development of eating pathology and other issues, as well as resulting in positive benefits for women in that society. The pattern of internalization of Western values should be followed in future years, to determine the pattern of internalization and its link to eating and related issues.

It is important to note that these results cannot be taken to indicate overall Saudi prevalence. While undergraduates make up a large proportion of young Saudi women, they do not represent the whole of Saudi female population. Future research should also consider other populations such as women from other demographics, men and children. It would be helpful to undertake longitudinal research to improve understanding of the causation of eating disorders, eating pathology and body image dissatisfaction in Saudi Arabia. Using interview data and qualitative data might enhance the understanding of the developing experience of Saudi women.

Furthermore, it would be a mistake to assume that all of Saudi Arabia is experiencing westernization at the same rate. The speed of westernization is likely to be considerably slower

in rural areas than in urban areas, and that should be considered further. Finally, Saudi Arabia is only one country undergoing such changes, and has a different pattern of westernization from other non-western cultures. It will be important to acknowledge that westernization is not a single process with universal impact, but one that emerges differently across cultures, with varied patterns of impact and potentially different outcomes.

These findings have potential value in the assessment and treatment of eating disorders in Saudi Arabia. When a case presents in a clinical setting, then understanding it might be enhanced by evaluating the individual's cultural background, and the degree to which they have internalized the western values detailed here. It would also be worth considering the potential value of adapting prevention programmes [66, 67] to reduce the risk of eating disorder development in cultures such as Saudi Arabia, where the internalization of Western values might be a target for psychoeducation- and dissonance-based work.

Limitations

There are potential limitations that need to be noted in this study, in addition to points raised above. We used translated versions of the Eating Disorders Diagnostic Scale (EDDS) - DSM-5 version, Eating Disorder Examination-Questionnaire (EDE-Q, version 6.0) and Body Shape Questionnaire (BSQ-8C) because there were no Arabic versions or version that had been used with an Arabic sample. Further validation of these new translations is needed.

Second, we chose specific Western-based studies for comparison because they used the same measures with a comparable sample. For example, Tatham et al. [58] was not used for comparison of behaviours due to differences in the timeframe used, so we used Isomaa et al. [59] for this purpose for most bulimic behaviours.

Third, some scales appear to need further validation, given the findings raised above. In particular, the Internalization of Western Values Scale (IWVS) needs further development, and the cultural specificity of the Eating Disorders Diagnostic Scale (EDDS) needs further

exploration.

Conclusion

This study has shown that eating pathology is relatively common in young Saudi Arabian women, with a prevalence of 6.96% and patterns of comorbidity that are similar to those in Western cultures. However, such pathology is more likely to involve bulimic rather than anorexic presentations. These patterns are related to the internalization of Western values, as hypothesized.

1. What is already known on this subject?

Little is already known about the eating disorders and body image dissatisfaction among young women in Saudi Arabia, or the role of Westernization.

2. In two or three sentences, explain what the state of scientific knowledge was in this area before you did your study and why this study needed to be done. Be clear and specific.

a) We had limited understanding of eating pathology in Saudi Arabia.

b) We did not know anything about westernization's impact.

c) We did know whether westernization's pattern was media- or culture-based.

3. What does this study add?

This study adds baseline data about prevalence of eating disorders, levels of disordered eating and body image dissatisfaction in young women in Saudi Arabia, and how they are related to internalization of western values.

4. Give a simple answer to the question "What do we now know as a result of this study that we did not know before?". Be brief, succinct, specific, and accurate. You might use the last sentence to summarize any implications for practice, research, policy, or public health.

We know that the prevalence of eating disorders and the levels of eating and body issues among Saudi young women are comparable to those in Western cultures, but they are more bulimic than anorexic in nature. We know now that internalization of Western values is associated with greater levels of eating and body issues in Saudi Arabia.

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Table 1

Internalization of Western Values Scale items and the sample's responses

	Item	Yes	No
1	I go out on my own	261	242
2	I wear western fashion	123	380
3	I like to meet western beauty standards as much as I can	172	331
4	I watch western movies and TV shows	347	156
5	I eat western food and drink western coffee	300	203
6	I want to have the choice of the number of children I will have	368	135
7	I want to have equal education opportunities to those that men have	318	185
8	I want to have equal job opportunities to those of men	327	176
9	I want to have equal salary scales to those of men	350	153
10	I am willing to vote in a political election	239	264
11	I will nominate myself for a political position if I want to	282	221

Table 2

Differences in women with or without a clinical diagnosis (based on Eating Disorders Diagnostic Scale scores) on eating pathology, body image dissatisfaction and comorbidity measures.

Measure	Non-clinical group (n=468)		Clinical group (n=35)		*t*	*P*	*d*
	M	*(SD)*	*M*	*(SD)*			
EDEQR	1.37	(1.54)	2.82	(1.88)	5.31	.001	0.92
EDEQWC	2.35	(1.44)	3.90	(1.15)	6.33	.001	1.09
EDEQEC	1.07	(1.15)	2.69	(1.37)	7.92	.001	1.38
EDEQSC	2.49	(1.54)	4.09	(1.26)	6.02	.001	1.05
EDEQ Global	1.82	(1.23)	3.38	(1.15)	7.30	.001	1.27
Binge frequency	3.12	(5.80)	8.31	(7.71)	4.96	.001	0.87
Binge days	2.63	(4.86)	9.06	(8.93)	7.01	.001	1.22
Vomit	0.48	(2.57)	2.74	(7.32)	4.10	.001	0.72
Laxative use	0.38	(2.32)	3.20	(7.99)	5.24	.001	0.92
Exercise	4.27	(7.74)	17.3	(36.5)	6.16	.001	1.07
Body dissatisfaction	17.4	(9.47)	31.1	(8.69)	8.44	.001	1.45
BMI	23.1	(5.40)	26.9	(5.90)	3.93	.001	0.69
Social anxiety	26.4	(9.98)	32.5	(11.8)	3.45	.001	0.60
Depression	9.57	(6.43)	14.1	(6.62)	4.14	.001	0.70
Self-esteem	19.52	(4.79)	23.11	(6.13)	4.18	.001	0.73

Key: EDEQR, Eating Disorders Examination Questionnaire Restraint subscale; EDEQWC, Eating Disorders Examination Questionnaire Weight Concerns subscale; EDEQEC, Eating Disorders Examination Questionnaire Eating Concerns subscale; EDEQSC, Eating Disorders Examination Questionnaire Shape Concerns subscale; EDEQ Global, Eating Disorders Examination Questionnaire Global score; BMI, Body Mass Index. All behaviours are per 28 days

Table 3

Levels of eating attitudes, eating behaviours, body image dissatisfaction and psychological comorbidities in the Saudi group against groups from other cultures

	Saudi Group		**Western Group**		**(Resource)**	**Country**
Measure	*M*	*(SD)*	*M*	*(SD)*		
EDE-Q Global	1.92	(1.28)	1.61	(1.32)	Tatham et al. [58]	United Kingdom
Binge frequency	3.47	(6.12)	2.57	(1.96)	Tatham et al. [58]	United Kingdom
Vomit	0.64	(3.19)	0.01	(0.12)	Isomaa et al. [59]	Finland
Laxatives use	0.58	(3.15)	0.19	(1.25)	Isomaa et al. [59]	Finland
Exercise	5.17	(12.6)	0.42	(2.48)	Isomaa et al. [59]	Finland
Body dissatisfaction	18.3	(9.98)	20.0	(10.0)	Welch et al. [50]	Sweden
Social anxiety	26.8	(10.2)	35.7	(8.10)	Leary [51]	United States
Depression	9.82	(6.49)	15.62	(5.53)	Keum and Inkelas [60]	United States
Self-esteem	19.77	(4.97)	22.8	(5.41)	Sinclair et al. [57]	United States

Key: EDE-Q Global, Eating Disorders Examination Questionnaire Global score. Behaviours are per 28 days

Table 4

Correlations between Internalization of Western Values Scale and subscales scores with measures of eating pathology, body dissatisfaction and associated states.

Measures	**IWVS Global score**	**Political-subscale**	**Economic-subscale**	**Media-subscale**
	r	***r***	***r***	***r***
EDE-Q Global	.167**	.053	.161**	.138**
Binge frequency	.087	.103*	.082	.004
Binge days	.077	.005	.088*	.065
Vomiting	.127**	.074	.083	.119**
Laxatives	.122**	.072	.069	.126**
Exercise	.151**	.115**	.074	.146**
Body image dissatisfaction	.184**	.091*	.139**	.166**
Social anxiety	.205**	.094*	.187**	.155**
Depression	.178**	.065	.177**	.134**
Self esteem	.069	-.043	.065	.119**

**.Correlation is significant at the 0.01 level (2-tailed).

*.Correlation is significant at the 0.05 level (2-tailed).

Key: EDE-Q Global, Eating Disorders Examination, Questionnaire Global score.

Behaviours are per 28 days