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The arabic version of the fat phobia scale—short form: reliability and structural validity

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Abstract

Background Weight bias, often known as fat phobia or weight stigma, refers to unfavorable attitudes and stereotypes that are associated with, and applied to, larger bodies. Fat phobia can include an unreasonable and abnormal dread of being overweight or being associated with obese people. Currently, there is no validated tool available to measure fat phobia in Arabic. Measuring fat phobia in Arabic-speaking populations is crucial, because cultural attitudes toward body weight can be quite negative and discriminatory; these negative attitudes can negatively impact mental health. The current study aimed to adapt, translate, and assess the structural validity of the Fat Phobia Scale—Short Form (*F*-Scale 14) in Arabic.

Methods The gold standard approach to translation was used. Forward translation involved translation from the English language to the Arabic language by independent translators. Subsequently, a back-translation review was performed on the translated Arabic version for comparison with the original language. A cross-sectional study was conducted online that included 1246 participants from 22 Arabic countries, of whom 74% were female, 66% single, 83% university graduates, with a mean age of 35 ± 6 years.

Results The *F*-Scale 14 demonstrated good reliability in the Arabic language, with a Cronbach’s α of 0.82 (95% CI 0.80–0.83), comparable to the original scale. The test–retest reliability of the scale was 0.92 (95% CI 0.90–0.94). According to the fit indices, the *F*-Scale 14 demonstrated a satisfactory level of structural validity in Arab cultures. Fit indices are statistical measures used in confirmatory factor analysis (CFA) to assess how well a proposed model fits the observed data. The scale showed a small improvement in factorial structure after the removal of some items. The two items removed were self-indulgent versus self-sacrificing and disliking food versus likes food. The correlation between *F*-Scale 14 and the figure rating scale was $r = 0.76$ ($p < 0.001$), suggesting adequate convergent validity.

Conclusions The *F*-Scale 14 is a crucial indicator of attitudes and opinions concerning obese or overweight individuals. Based on increased internal consistency reliability and the problematic cultural relevance of two items, we recommend adopting a 12-item version of the scale for better cultural relevance in Arabic populations. It is anticipated that the *Arabic F*-Scale-12 will be highly useful for research and clinical purposes. Future research should test and adapt the Fat Phobia Scale for diverse Arabic populations to ensure its cultural relevance. Exploring its application in clinical settings will enhance our understanding of weight stigma and inform targeted interventions that promote body positivity. By addressing these areas, we can develop effective strategies to foster healthier attitudes toward body image in Arabic communities.

Level V: Evidence obtained from a cross-sectional descriptive study.

Keywords Attitudes · Factor analysis · Fat phobia · Obesity · Reliability

Abbreviations

AIC Akaike Information Criterion
AGFI Adjusted Goodness-of-Fit Index

AI Artificial Intelligence
CFA Confirmatory Factor Analysis
CFI Comparative Fit Index
CI Confidence Interval
F-Scale Fat Phobia Scale
FRS Figure Rating Scale
GFI Goodness-of-Fit Index
IFI Incremental Fit Index

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Extended author information available on the last page of the article

IRB	Institutional Review Board
NFI	Normed Fit Index
NNFI	Non-normed Fit Index
PNFI	Parsimony Normed Fit Index
RFI	Relative Fit Index
RMSR	Root Mean Square Residual
RMSEA	Root Mean Square Error of Approximation
RNI	Relative Noncentrality Index
TLI	Tucker–Lewis Index

Background

Obesity is considered an epidemic multifactorial complex disease [1, 2]. Early assessment and identification of obesity and its consequences are very important for preventing the progression of obesity-associated comorbidities such as type 2 diabetes [3], cardiovascular disease [4], hypertension [5], sleep apnea [6], and certain types of cancer [7].

Both developed and developing countries have high prevalence and incidence rates, suggesting that obesity is a global health problem [1, 8, 9]. Health insurance companies consider obesity to be one of the main contributors to poor public health—leading to greater health system utilization [10].

The terms *fat phobia*, *anti-fat weight bias*, *weight stigma*, *fat shaming* [11, 12] refer to unfavorable attitudes and stereotypes applied to people with larger bodies. These terms are used to describe the prejudice faced by overweight or obese individuals—a prejudice damaging to those on the receiving end—leading to a cycle of generalization, exclusion, and marginalization of larger-bodied individuals [13]. Fat phobia is a pervasive issue contaminating modern Arabic society that needs to be addressed.

The origins of fat phobia can be traced back centuries, but in recent years, fat phobic attitudes in Arabic society have been amplified by cultural norms, media, and marketing—setting unrealistic standards of beauty, particularly for women [14, 15]. In Arabic society, individuals who are overweight or obese often face negative stereotypes that include assumptions about their motivation, health, and lifestyle choices. These perceptions contribute to stigma and discrimination, reinforcing harmful attitudes that label larger-bodied individuals derogatorily [16]. We believe that these unfavorable stereotypes fuel prejudice and discrimination against larger-bodied individuals.

Weight stigma, the social devaluation and denigration of individuals perceived as carrying excess weight, have profound negative consequences on physical and mental health [17, 18]. Research indicates that individuals who face weight discrimination are 2.5 times more likely to report symptoms of major depression than those who do not experience stigma [19]. In addition, weight bias hinders healthcare

access; studies show that nearly 30% of individuals with obesity avoid medical care due to fear of judgment from healthcare providers [20]. In Arabic-speaking countries, this stigma is reinforced through media portrayals and derogatory language [21]. From our lived experience, we often hear terms such as “dub” or “dubbah” (meaning bear-sized) used to describe overweight individuals. The internalization of weight stigma can lead to increased stress, depression, anxiety, and disordered eating behaviors [22]. Moreover, it creates barriers to healthcare access and quality, as weight bias among healthcare providers may result in suboptimal care for overweight people [23]. The pervasive nature of weight stigma also impacts social relationships and economic opportunities, with overweight individuals facing discrimination in employment and education settings [17, 18, 24]. These multifaceted effects of weight stigma set the stage for understanding the broader concept of “fat phobia” and its societal implications [16, 21, 22, 25].

Fat phobia is rooted in the idea of “othering” fat people, and this type of prejudice is often expressed in subtle or harmful language demeaning those with larger bodies [26]. Fat phobic language often leads to feelings of insecurity and self-doubt, which can cause long-lasting psychological damage [27]. In addition, stigmatizing individuals with fat bodies is counterproductive, as it not only perpetuates dangerous habits of self-harm, but also reinforces self-hate and shame in people with larger bodies [27].

Fortunately, various measures can be taken to examine this system of oppression [28]. Diverse representation in the media and elsewhere is one critical aspect, as are challenging beliefs that view fat bodies as inferior and shameful [29]. Our belief is that if we are to progress as a society, we must recognize our biases and do our best to be more body positive and accepting of diverse bodies [25, 30].

The Fat Phobia Scale, a 50-item 5-point semantic differential scale measuring negative attitudes toward obese individuals, was developed by Robinson, Bacon and O'Reilly in 1993 [31]. After demonstrating equivalent reliability and high correlations with the original 50-item scale, a shortened 14-item version of the scale was developed by the original authors [32] to increase the use and accessibility of the scale. Renamed the *F-Scale 14*, the scale has been translated into at least two languages—German/Deutsch [33] and Spanish [34]. The *F-Scale 14* has been cited in more than 300 scientific research articles over the past 20 years according to Web of Science of scales [31, 32].

In Arabic-speaking nations (the East Mediterranean, Arabian Peninsula, and northern Africa), there is growing concern about obesity and the illnesses it is associated with, as well as the potential risk factors that may contribute to it, such as alterations in social and cultural environments, education, physical activity, diet, and nutrition, as well as differences in income and time commitment [35]. This

manuscript focuses on the unique manifestations of fat phobia in Arabic society while situating this discussion within a broader global context. In Western cultures, for example, fat phobia often intersects with media portrayals that idealize thinness, leading to widespread dieting behaviors and body dissatisfaction.

Unfortunately, there is limited research on fat phobia in the Arabic-speaking world, largely due to the absence of validated measures. The purpose of this study was to translate, adapt and validate the Fat Phobia Scale—Short Form (*F*-Scale 14) into Arabic.

Methods

Translation process

We obtained permission from one of the scale's developers, who is also a coauthor of this paper, to translate the *F*-Scale 14 from its initial English language version into Arabic. In our methods, we employed a rigorous translation process based on Beaton's methodology. The forward–backward translation approach was used for the translation process [36]. The scale was first independently translated from English to Arabic by two authors (AFA, HJ). The scale was then translated backward by two other authors (HG, MH). Versions were harmonized, and the grammar was corrected by a certified translator while preserving the semantic context in accordance with Arabic linguistic, social, and cultural norms. During the harmonization process, the certified translator compared the forward and back-translated versions to identify discrepancies in terminology and phrasing. This comparison addressed minor variations that could influence the interpretation of the scale items. Figure 1 displays the process flow diagram for translation. HG, MH, AFA, and HJ formed an expert panel specializing in Arabic culture, language, and obesity stigma to review the translated items for cultural sensitivity and relevance. The research team also engaged cultural consultants to provide insights on potential biases or culturally specific issues that they had not previously considered. This collaborative effort ensured the scale's cultural appropriateness and accuracy. Moreover, a pilot study using the Arabic version was conducted with a sample of 20 individuals (acquaintances and family members of the research team) to determine whether the questionnaire was understandable and easy to complete. To mitigate bias, we blinded participants to the specific aims of the research and did not inform them about the study's objectives. However, we acknowledge that using acquaintances and family members may still introduce potential bias, as they might provide more favorable feedback. As a result of the acceptability of the pilot study, no changes were made to the questionnaire, and the same questionnaire was used

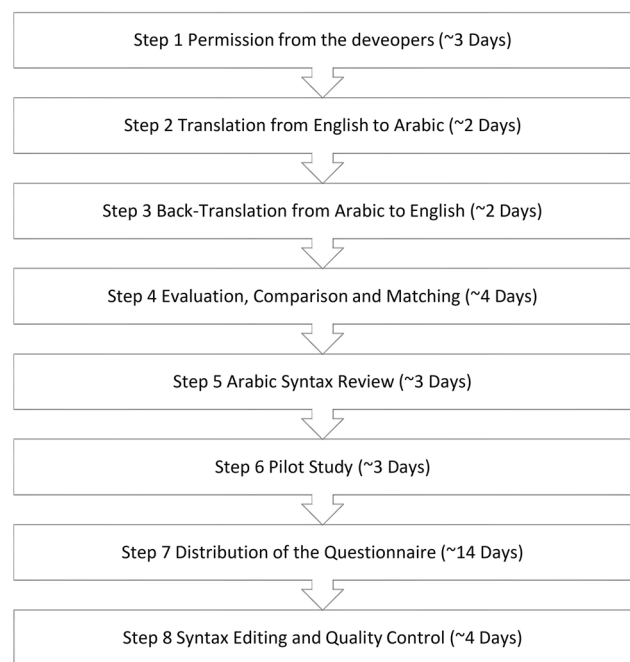


Fig. 1 Translation process

for the main study. Participants evaluated the acceptability of the questionnaire by providing feedback on the clarity and comprehensibility of the questions, as well as their overall experience in completing it. They indicated that the questions were clear, direct, and relevant to their understanding of fat phobia, which affirmed the scale's appropriateness for the target population.

Sample, sample size, and data collection

We advertised the study through social network platforms (*e.g.*, Instagram, Facebook, Discord, Twitter) and instant messaging services (*e.g.*, WhatsApp, Viber, Signal) by our research network in 22 Arabic-speaking countries. We recruited participants using social network platforms and instant messaging services, avoiding any specific targeting of groups or demographics. We did not limit recruitment to any particular affiliations or universities. Participants needed to be adults aged 18 years or older, have proficiency in Arabic to ensure comprehension of the scale, and reside in an Arabic-speaking country. In addition, they had to provide informed consent to participate. Exclusion criteria included individuals who did not speak or understand Arabic, those under the age of 18, and participants who submitted incomplete survey responses.

Participants responded to our online survey of the Arabic version of the 14-item *F*-Scale in a Google form created by the first author. Participants provided informed consent

and provided basic demographic information (*i.e.*, age, sex, country of residence, education, and marital status).

Simulations of factor analytic studies suggested that 1000 participants would be needed to validate questionnaires using structural equation modeling [37].

A subsample ($n=350$) of the total sample was required to complete the *F*-Scale 14 twice, with a 1-week interval between administrations, to assess the test–retest reliability of the scale. We selected this size based on feasibility and effectiveness. Conducting repeated measures on a smaller, randomly selected group enabled us to gather robust data without overwhelming participants. Choosing 350 participants aligns with prior research, which indicates that a minimum of 300–400 respondents is generally sufficient for achieving reliable results in structural equation modeling and factor analysis [38].

In addition, this subsample completed the Figure Rating Scale (FRS), also known as the Stunkard scale [29], to assess body image [39]. The FRS was originally developed in 1983 to communicate about the unknown weights of a research subject's absent relatives and has since been adapted as a psychometric measurement of body image. The visual nature of this scale makes it less dependent on verbal skills compared to questionnaire-based assessments [40]. When tested for reliability, the scale shows high consistency in measuring current body shape perceptions, with test–retest scores ranging from 0.89 to 0.92. For ideal body shape perceptions, the reliability scores are moderately high, ranging from 0.71 to 0.82, with no variations between men and women [41]. This scale has been previously employed in studies involving Arabic populations and has been deemed an acceptable tool for assessing body image perceptions in this cultural context [42].

The FRS in this research was recreated using the artificial intelligence (AI) art module to present nine nonbinary gender figures ranging from very thin to very large. To use this scale, research participants were instructed to examine the silhouettes and identify which one they believed most closely matched the ideal body size. Since the FRS measures perceptions of ideal body size, individuals with higher fat phobia are likely to select slimmer figures as their ideal body type. Analyzing the correlation between the FRS scores and the *F*-Scale 14 scores allows us to assess whether the scales converge on similar constructs, providing evidence of the *F*-Scale's validity. Having this subsample complete both the *F*-Scale 14 and the FRS allowed for convergent validity testing between the two scales.

Ethical issues

All procedures were carried out in accordance with the Helsinki Declaration of 1964 and its subsequent amendments (1975, 1983, 1989 and 1996). The research was reviewed

and approved by the University of Jordan's Institutional Review Board in Amman, Jordan (Code: 100-2022). Participation was entirely voluntary, and participants could withdraw from the study at any time without any penalty.

Statistical analyses

The validation of the original *F*-Scale 14 required a rigorous process that involved the collection and analysis of data from a large, diverse sample of participants. Reliability and validity statistics (*e.g.*, Cronbach's alpha and confirmatory factor analysis) were calculated to determine the internal consistency and factor structure of the scale.

To prepare for analysis, the data were examined visually using a box plot to search for any outliers and explore normality. Counts and percentages were displayed for categorical data, and arithmetic means and standard deviations were reported for continuous data. To assess reliability, Cronbach's alpha [43] and McDonald's omega [44] coefficients were determined. Internal consistency was assessed by both coefficients using different approaches [44]. As it represents the tau-equivalence hypothesis, Cronbach's alpha was used to examine the correlation between a set of items [43]. McDonald's omega coefficient, assuming a congeneric model, considers the degree and direction of connection between elements [44]. Both coefficients are judged outstanding if > 0.9 (90%), good if $0.8–0.9$ (80–90%), acceptable if $0.7–0.8$ (70–80%), adequate if $0.6–0.7$ (60–70%), poor if 0.5 (50–60%), and uncreatable if < 0.5 (50%) [44]. During the sensitivity analysis, one item at a time was removed to check whether Cronbach's alpha or McDonald's omega coefficient changed [44]. Intraclass correlation coefficients were calculated between the scores from the first and second administrations to quantify the test–retest reliability of the scale [45]. Intraclass correlation coefficients provided an index of the reliability of measurements over time by comparing the variability between repeated measures to the total variation across all measures and subjects [45]. Values can range from 0 to 1, with higher values indicating greater test–retest reliability [45].

Confirmatory factor analysis (CFA) was performed to substantiate the suitability of the principal factor analysis provided by exploratory factor analysis (EFA) and to further confirm the correlational relationship of the Arabic scale [46]. Several additional methods were produced and displayed to describe multivariate techniques used in scientific investigations to test and evaluate validity [47, 48]. The indices were derived from the residuals, such as the standardized root mean square residual (RMSR) and Steiger–Lind's root mean square error of approximation (RMSEA) were employed [47–49]. Values of 0.01 (excellent), 0.05 (good), and 0.08 (average) were used to suggest different levels of fit [47–49].

Comparison tests between the target model and the null model, as well as relative/incremental indices (such as the Bentler-normed Bonett's fit index, abbreviated NFI; the Bentler-nonnormed Bonett's fit index, abbreviated NNFI; the Tucker–Lewis index, abbreviated TLI; the Bentler's comparative fit index, abbreviated CFI, must exceed 0.90 to indicate a good fit [47–49].

Goodness-of-fit measures or predictive fit indices from information theory, which included the Joreskog goodness-of-fit index (GFI), the Akaike information criterion (AIC), and the Joreskog's GFI or adjusted GFI (AGFI), were used to determine fitness [47–49]. The Pearson's product moment correlation coefficient was used to test convergent validity with FRS [50].

R version 4.2.2, a suite for statistical computation and visualization offered by the R Foundation, was used to carry out all analyses. A *p* value of 0.05 or less was considered to indicate statistical significance for all analyses.

Results

Characteristics of the study sample

A total of 1246 adult participants took part in the study: 74% were females, 66% were single, and 83% held a university graduate degree. The mean age was 35 ± 6 years. The responses most notably came from numerous Arab countries: Egypt ($n = 423$; 34%), Jordan ($n = 329$; 26%), Bahrain

($n = 216$; 17%), and other Arab countries ($n = 278$; 23%) (*i.e.*, Saudi Arabia, Kuwait, Tunisia, Morocco, the UAE).

Reliability and validity of the F-Scale-14

Cronbach's alpha reliability was 0.82 (95% CI 0.80, 0.83), and McDonald's omega was 0.83 [0.81, 0.84] (Table 1). The test–retest reliability was 0.92 (95% CI 0.90, 0.94). The fit indices for the 14 items of the translated *F-Scale* showed satisfactory results. The CFI = 0.79, TLI = 0.76, NNFI = 0.76, NFI = 0.78, PNFI = 0.66, RFI = 0.74, IFI = 0.79, and RNI = 0.79 (Table 2).

Two items, items 9 (self-indulgent vs. self-sacrificing) and 10 (disliking food vs. liking food), negatively affected

Table 2 Confirmatory factor analysis

Index	Results	
	<i>F-Scale</i> 14 items	<i>F-Scale</i> 12 items*
Comparative Fit Index (CFI)	0.79	0.86
Tucker–Lewis Index (TLI)	0.76	0.83
Bentler–Bonett Non-normed Fit Index (NNFI)	0.76	0.83
Bentler–Bonett Normed Fit Index (NFI)	0.78	0.85
Parsimony Normed Fit Index (PNFI)	0.66	0.69
Bollen's Relative Fit Index (RFI)	0.74	0.81
Bollen's Incremental Fit Index (IFI)	0.79	0.86
Relative Noncentrality Index (RNI)	0.79	0.86

*Items 9 and 10 were removed from the original *F-Scale-14*

Table 1 Reliability statistics

Item	Description	McDonald's ω		Cronbach's α	
		14 items 0.83 (0.81, 0.84)	12 items 0.86 (0.85, 0.87)	14 items 0.82 (0.80, 0.83)	12 items 0.86 (0.84, 0.87)
<i>F-Scale</i> , Items #1	Lazy versus industrious	0.81	0.85	0.80	0.84
<i>F-Scale</i> , Items #2	No will power versus has willpower	0.81	0.84	0.80	0.84
<i>F-Scale</i> , Items #3	Attractive versus unattractive	0.82	0.85	0.81	0.85
<i>F-Scale</i> , Items #4	Good self-control versus poor self-control	0.81	0.85	0.80	0.84
<i>F-Scale</i> , Items #5	Fast versus slow	0.81	0.85	0.80	0.84
<i>F-Scale</i> , Items #6	Having endurance versus having no endurance	0.82	0.85	0.80	0.85
<i>F-Scale</i> , Items #7	Active versus inactive	0.80	0.84	0.79	0.84
<i>F-Scale</i> , Items #8	Weak versus strong	0.81	0.85	0.80	0.84
<i>F-Scale</i> , Items #9	Self-indulgent versus self-sacrificing	0.84	–	0.84	–
<i>F-Scale</i> , Items #10	Dislikes food versus likes food	0.84	–	0.83	–
<i>F-Scale</i> , Items #11	Shapeless versus shapely	0.81	0.85	0.80	0.85
<i>F-Scale</i> , Items #12	Undereats versus overeats	0.83	0.86	0.81	0.86
<i>F-Scale</i> , Items #13	Insecure versus secure	0.81	0.85	0.80	0.84
<i>F-Scale</i> , Items #14	Low-self-esteem versus high self-esteem	0.81	0.84	0.80	0.84

The following items were reverse scaled: #3, #4, #5, #6, #7, #10, and #12

Items 9 and 10 were removed to increase the reliability and validity of the scale

the factor structures (*i.e.*, reduced reliability and validity indices). After removing these two items, the Cronbach's alpha reliability coefficient increased slightly from 0.82 to 0.86 (95% CI 0.84, 0.87), and McDonald's omega increased slightly from 0.83 to 0.86 (95% CI 0.85, 0.87) (Table 1). Fitness indices also improved: CFI = 0.86, TLI = 0.83, NNFI = 0.83, NFI = 0.85, PNFI = 0.69, RFI = 0.81, IFI = 0.86, and RNI = 0.86 (Table 2). All the fitness indices improved (Table 2).

The correlation between the Arabic *F*-Scale-12 score and the FRS score was $r = 0.76$ ($p < 0.001$).

Discussion

Due to its strong psychometric characteristics, the *F*-Scale 14 has been often used to measure the attitudes people have toward obese individuals [31, 51]. The *F*-Scale 12 (Arabic translation) demonstrated good psychometric properties in our sample, with high reliability and acceptable structural validity.

Cultural considerations in item exclusion/improving psychometrics

We acknowledge the cultural considerations and adjustments made to the *F*-Scale-14 to ensure its relevance for Arabic-speaking populations. Specifically, we removed two items due to cultural inappropriateness and adapted the scale to create the Arabic *F*-Scale-12. This adaptation process involved careful translation and validation to maintain the scale's construct validity while respecting cultural differences. This study argues that these modifications enhance the scale's applicability and reliability in a different cultural context, making the item content more suitable for the targeted population.

Items 9 and 10 (self-indulgent vs. self-sacrificing and disliked food vs. liked food) were excluded from the Arabic version of the scale due to cultural inappropriateness. Item 9 was particularly seen as offensive, as self-indulgence is discouraged in Islam for potentially leading to excess and harmful behaviors. Moderation and self-control are encouraged in all aspects of life, including around desires and pleasure [52]. Muslims are expected to live a balanced life, taking care of themselves, their families, their communities, and their faith. Self-indulgence can undermine self-discipline, which is essential in Islam for spiritual growth. Acts like fasting and praying foster a deeper connection with Allah and inner peace. Similarly, Item 10 (dislikes/likes food) contradicts cultural norms against expressing negative feelings about food, which is viewed as a gift from Allah and should be treated with respect. Disliking or wasting food

is generally seen as inappropriate, highlighting the need to consider such beliefs when developing culturally relevant measures.

We recommend that future studies validate the Arabic *F*-Scale 12 in special populations, including clinical and subclinical groups, to ensure that the scale remains psychometrically sound and culturally relevant in different contexts. By conducting such research, we can ensure that the scale is useful and valid for most individuals, regardless of their cultural background or clinical status.

The *F*-Scale 12 offers a reliable tool for gauging attitudes toward obesity, enabling researchers and practitioners to evaluate the effectiveness of educational initiatives, body positivity campaigns, and other interventions within diverse Arabic-speaking populations. Educational initiatives can dismantle harmful stereotypes by providing accurate information about obesity and directly addressing negative attitudes associated with it. Promoting body positivity challenges societal perceptions and fosters acceptance of all body sizes. Encouraging physical activity and healthy eating can be framed as inclusive strategies for well-being rather than punitive measures against larger bodies.

Understanding fat phobia in arabic societies

Fat phobia and stigma are widely recognized as major problems in Arabic society today [21]. There is a pervasive attitude that larger bodies are less worthy of respect, admiration, and love than smaller bodies [33, 53]. These negative and fat phobic attitudes lead to an unhealthy and dangerous sense of shame felt by many people with larger bodies [17, 25, 54]. Fat phobia has been around for centuries, but in modern times, it has been amplified by the diet industry, which has perpetuated the idea that being thin is the only way to be attractive, healthy and successful [13, 31, 33, 34, 51, 55].

Fat phobia and stigma can have devastating effects on people's physical and mental health [56], leading to depression, anxiety and eating disorders [51, 57]. Furthermore, research has shown that fat stigma often leads to poorer self-esteem, body image issues, and a lack of access to healthcare [17, 18, 25, 27]. People of larger body sizes often suffer discrimination in employment and social interactions, which can lead to further feelings of isolation and worthlessness [17, 22, 27]. Having an instrument that can be used to measure the attitudes people have toward obese people in Arabic is a very important starting point for interventions in Arabic countries.

In the Arab world, there has been increasing awareness of the damaging effects of fat phobia and stigma. Many organizations and activists are working to challenge the cultural norms around body size and ultimately create a more inclusive environment for all body sizes and shapes [21, 58]. One potential intervention involves educational initiatives

addressing the myths and stigma about obesity [17]. Culturally accepted, accurate information about obesity can help to reduce feelings of isolation and shame that people with obesity often experience, as well as educate the lay public about the complicated causes of, and ineffective treatments for, obesity [17, 18, 25]. In addition, educational interventions can address the physical, mental, and social consequences associated with obesity, further helping to reduce stigma and foster acceptance [25].

Interventions to address fat phobia

Another desirable intervention would be to promote a positive body image for fat people [59]. This could involve decreasing media and cultural pressures that urge individuals to conform to stringent appearance expectations [60, 61], as well as using positive role models and language that celebrates body diversity and engages in conversations that teach people to accept and celebrate their bodies [55].

Finally, encouraging physical activity and healthy eating habits through interventions such as health education classes, exercise classes, and nutrition counseling can have a positive impact on body image and self-confidence [62]. Such interventions may help to reduce the health risks associated with obesity and provide an opportunity for individuals to feel validated and accepted [62].

Limitations and future studies

Several limitations should be noted and addressed in future investigations. First, the study relied on self-reported data, which may be subject to biases such as social desirability or inaccurate recall. Second, the use of convenience sampling through social network platforms and instant messaging services might not fully represent the broader population of Arabic-speaking countries. Third, while the study achieved a substantial sample size, the specific demographics of the sample (*e.g.*, the high percentage of university graduates) may limit the generalizability of the findings. Fourth, the adaptation process took cultural considerations into account, particularly by removing items that were culturally inappropriate, such as those conflicting with Islamic values. Removing two culturally inappropriate items from the *F*-Scale 14 significantly enhanced the psychometric properties of the newly adapted Arabic *F*-Scale 12 affirming the scale's reliability and structural validity and ensuring its cultural relevance for Arabic-speaking populations. While most Arabic citizens are Muslim, the study did not explicitly measure the role of religion in the construct of fat phobia. Future research should explore how religious beliefs might influence attitudes toward body size and weight stigma, as this could provide valuable insights for further refining the scale and enhancing its cultural relevance.

The sample in this study included a large proportion of female participants and university graduates. While we note this demographic information, we must acknowledge that this imbalance may limit the generalizability of the results to the broader population. The overrepresentation of women and individuals with higher education levels may not accurately reflect the attitudes and experiences of all Arabic-speaking individuals regarding fat phobia. To address this limitation, future research should include a more diverse sample that encompasses a wider range of genders, educational backgrounds, and socioeconomic statuses, ensuring that the findings better represent the general population.

Conclusion

In conclusion, fat phobia is a pervasive problem in Arabic societies that may have far-reaching negative effects. It is important to address this issue and consider potential interventions that could reduce fat phobia and its associated effects; the *Arabic F*-Scale 12 is an important tool in developing and measuring the impact of such interventions. Interventions could include educational initiatives, promoting positive body image, and encouraging physical activity and healthy eating habits. By taking these steps, it is essential to foster a culture of acceptance and celebrate body diversity in the Arabic world.

To address fat phobia in Arabic societies, we must acknowledge the cultural nuances that shape perceptions of body image and weight, influenced by traditional values, media portrayals, and societal norms. Recognizing these cultural contexts improves our understanding of fat phobia and highlights the need for culturally tailored interventions that promote acceptance and celebrate body diversity within the Arabic world.

What is already known about this subject?

Weight bias and fat phobia are pervasive issues globally, with validated tools like the *F*-Scale 14 widely used to measure anti-fat attitudes in Western contexts. However, Arabic-speaking populations lack a culturally adapted instrument, despite evidence of weight stigma in these regions influenced by cultural norms, media, and religious values. Existing translations of the *F*-Scale 14 in German and Spanish demonstrated reliability, but cultural differences in body image perceptions and language necessitate region-specific adaptations.

What does this study add?

This study provides the first validated Arabic version of the *F*-Scale 14, modified to a 12-item scale (Arabic

F-Scale-12) after removing culturally inappropriate items (e.g., those conflicting with Islamic values). The adapted scale demonstrated strong psychometric properties (Cronbach's $\alpha = 0.86$, test–retest reliability = 0.92) and structural validity, addressing a critical gap in measuring fat phobia in Arabic-speaking populations. It highlights the necessity of cultural adaptation in psychometric tools and offers a resource for research, clinical practice, and interventions targeting weight stigma in Arab societies.

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Availability of data and materials The data that support the findings of this study are available from the corresponding author based upon request.

Declarations

Ethics approval and consent to participate The research received approval from the Institutional Review Board at the University of Jordan's Institutional Review Board in Amman, Jordan (Code: 100-2022). All methods were carried out in accordance with relevant guidelines and regulations. The study procedures adhered to the ethical guidelines outlined in the Helsinki Declaration of 1964 and its subsequent amendments (1975, 1983, 1989, and 1996). Informed consent was obtained from all subjects.

Consent for publication Not applicable.

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