Original Paper

Mindful Eating in Lebanon: Validating a New Approach to Combat Obesity and Cardiovascular Diseases

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ABSTRACT: Background: The rising prevalence of obesity and cardiovascular diseases in Lebanon underscores the urgency of effective intervention strategies. Mindful eating represents a promising approach by fostering awareness and healthier eating behaviors. Objective: This study aims to validate the Mindful Eating Questionnaire (MEQ) within the Lebanese context, assessing its factor structure, reliability, and validity. It further examines how mindful eating addresses physiological and stress-related factors prevalent in the Lebanese population. Additionally, a new instrument, the Mindful Eating Behavior Scale (MEBS), has been developed to evaluate the attention component of mindful eating and its internal structure, reliability, and convergent validity. Methods: A cross-sectional ancillary study was conducted between February 11 and 25, 2024, recruiting participants aged 13 years and above from all Lebanese governorates. Recruitment involved advertisements at the Lebanese University and Beirut Arab University, supplemented by snowball sampling to ensure population diversity. Data were collected electronically through a comprehensive questionnaire comprising demographic items and validated scales measuring psychological and behavioral domains. Participation was anonymous and voluntary, with informed consent obtained to maintain ethical standards. Importance & Recommendations: By validating mindful eating tools and exploring their relationship with dietary habits and psychological well-being, this research seeks to establish mindful eating as an effective strategy to enhance health outcomes in Lebanon. The findings will inform healthcare professionals and policymakers in designing targeted interventions addressing obesity, stress, and related mental health conditions.

KEYWORDS: *Mindful eating, obesity, lebanese population, Validation study, MEBS (Mindful Eating Behavior Scale).*

Introduction

Mindfulness, characterized by being present-focused and having nonjudgmental awareness, has garnered significant attention in various therapeutic approaches, particularly in promoting healthier eating behaviors and addressing concerns related to obesity [1,2].

Interventions like MBSR and MBCT have been increasingly recognized for their ability to encourage more balanced eating patterns and mindful attitudes toward food [3,4].

Mindful eating, which entails being consciously aware of physical sensations and emotions while consuming food or in food-related settings, has demonstrated efficacy in improving eating behaviors and aiding in weight management [5].

Despite the growing interest in mindful eating, there remains a need for validated tools to accurately measure this construct, particularly within diverse cultural contexts such as Lebanon [6].

While instruments like the Mindful Eating Questionnaire (MEQ) have been developed to assess mindful eating behaviors, they have been critiqued for overlapping items and a lack of assessment in common eating scenarios [7].

In light of previous measurement constraints, more recent instruments such as the Mindful Eating Behavior Scale (MEBS) have been developed to specifically evaluate the attentional aspect of mindful eating, independent of emotional or external eating triggers [8].

The MEBS serves as a concise and structured tool encompassing dimensions like Focused Eating, Eating Without Distraction, Eating with Awareness, and Recognition of Hunger and Satiety Cues [9].

Given the rising prevalence of obesity and cardiovascular disorders among Arabic-speaking populations, there is an increasing demand for culturally adapted and validated measures to assess mindful eating practices and their influence on overall health outcomes [10].

Despite this need, research validating such instruments within Arabic-speaking contexts remains scarce.

Accordingly, the present study aims to bridge this gap by conducting a comprehensive validation of the MEBS in the Lebanese context.

This process involves evaluating its factorial structure, reliability, and validity [11], as well as examining its convergent and divergent validity in relation to related constructs such as body mass index (BMI), intuitive eating, self-esteem, and psychological distress [12].

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By establishing a psychometrically sound tool to assess mindful eating behaviors within the Lebanese population, this study seeks to facilitate the creation of contextually relevant interventions that target obesity reduction and foster healthier dietary patterns in the community [13].

Objective

This research aims to evaluate the influence of mindful eating on dietary practices and general well-being in Lebanon by analyzing its associations with psychological health and eating behaviors, thereby informing evidence-based health and policy interventions.

By doing so, the study contributes to designing tailored interventions against prevalent health problems such as obesity and psychological distress in Lebanon.

It centers on validating the Mindful Eating Behavior Scale (MEBS) for Arabic-speaking populations, highlighting its potential as a culturally relevant approach to improve eating behaviors and overall well-being.

This need has become especially acute given the notable increase in obesity rates and related diseases within the region.

By scrutinizing the MEBS's factor structure, reliability, and validity across demographic distinctions, the research hypothesizes that the scale will demonstrate robust internal reliability, a fitting four-factor structure, gender invariance, and strong associations with body mass index (BMI), intuitive eating, self-esteem, and psychological distress.

This investigation is poised to introduce a psychometrically sound tool for gauging mindful eating in the Arabic speaking context, laying the groundwork for future studies and interventions aimed at fostering mindful eating behaviors to ameliorate public health outcomes.

Methods

The Questionnaire

The **MEQ** assesses mindful eating across five domains-*awareness* (7 items), *distraction* (3), *disinhibition* (8), *emotional response* (4), and *external cues* (6).

Each item is rated using a five-point Likert scale, where 1 denotes *never* and 5 represents *usually or always*.

Translating the Questionnaire

The Arabic-translated version of the MEQ was developed using a backtranslation method.

Initially, the original MEQ was translated into Arabic by two bilingual authors proficient in both English and Arabic.

The translated questionnaire was first piloted with ten university staff members to assess clarity and identify problematic wording.

It was subsequently reviewed by two independent experts to confirm linguistic accuracy and conceptual fidelity.

After ensuring precision, the instrument underwent back-translation into English by an independent translator.

The final version, reflecting all adjustments, is provided in Appendix A.

Data methodology

The cross-sectional study was conducted between February and March 2024, aiming to enroll participants aged 15 years and above from all governorates of Lebanon.

The recruitment of 513 participants was achieved through advertisements at the Lebanese university, Beirut Arab University (BAU) and the snowball sampling method, enabling us to reach a diverse population across different regions.

Instruments

The study employed a comprehensive questionnaire designed to collect both demographic and psychometric data.

Demographic information included participants' age, gender, and educational level.

In addition, several validated psychological and behavioral scales were incorporated to ensure multidimensional assessment:

1. Mindful Eating Behavior Scale (MEBS): Administered to evaluate participants' levels of mindful eating and their attitudes toward food.
2. Rosenberg Self-Esteem Scale (RSES): Used to measure participants' global self-esteem.
3. Intuitive Eating Scale-2 (IES-2): Applied to assess the extent to which participants' eating behaviors align with intuitive eating principles.
4. Depression Anxiety Stress Scale-8 (DASS-8): A brief version of the DASS employed to evaluate the severity of depression, anxiety, and stress symptoms.

Data Collection

Participants completed the questionnaire anonymously and voluntarily, with an informed consent process in place to ensure ethical standards.

The data were collected electronically to facilitate ease of participation and data management.

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Data Analysis

1. Construct Validity

Factor analysis was employed to identify the underlying dimensions of the questionnaire.

Exploratory Factor Analysis (EFA) is widely recommended to examine construct equivalence and validate the factor structure of adapted instruments across different samples.

In this study, the factor structure of the MEQ was analyzed using Principal Component Analysis (PCA) with varimax rotation, a method chosen to enhance interpretability by simplifying factor loadings and maximizing the total variance explained.

Factors with eigenvalues greater than 1 and loadings of at least 0.40 were retained, while the scree plot guided the determination of the number of factors.

2. Concurrent Validity

Concurrent validity was examined using the Mindful Attention Awareness Scale (MAAS), a 16-item instrument that evaluates mindfulness frequency in daily activities through both general and situation-specific items.

Responses are rated on a five-point Likert scale ranging from 1 (almost always) to 5 (almost never), yielding mean scores between 1 and 5, with higher scores denoting greater mindfulness.

The MAAS was translated into Arabic for the present study to ensure linguistic and cultural relevance.

3. Reliability: Internal Consistency

The internal consistency of the MEQ was assessed using Cronbach's alpha coefficient, where values of 0.70 or higher indicate acceptable reliability.

The same procedure was applied to evaluate the internal consistency of the Arabic version of the MAAS.

4. Reliability: Test-Retest

Test-retest reliability was examined to determine the temporal stability of the instrument.

The same participants completed the scale at two different time points, and reliability was estimated using the Intraclass Correlation Coefficient (ICC).

Agreement levels were interpreted as follows: 0.00-0.20 (small), 0.21-0.40 (fair), 0.41-0.60 (moderate), 0.61-0.80 (substantial), and 0.81-1.00 (almost perfect).

All statistical analyses were performed using the Statistical Package for the Social Sciences (SPSS) version 25.0.

Statistical significance was set at $p < 0.05$.

Data normality was assessed through the Kolmogorov-Smirnov test, as well as skewness and kurtosis analyses.

Since the dataset met normality assumptions, Pearson's correlation was used for further analysis.

Participants who submitted incomplete responses on either the MEQ-L or MAAS were excluded from the dataset.

5. Ethical Considerations

All participants were fully informed about the study's objectives, procedures, and their rights prior to participation.

Participation was voluntary, and informed consent was obtained electronically.

Confidentiality and anonymity were strictly maintained throughout the study in accordance with established ethical research standards.

Results

Descriptive Measurements of the participants:

The investigation collected data from a cohort of 513 individuals who completed a specified questionnaire.

Table 1 delineates various mindful eating factors alongside their corresponding statistical values and frequencies extrapolated from the amassed dataset.

Among the 513 participants, 112 (21.8%) were male, and 398 (77.6%) were female, exhibiting a mean age of 29.03±0.488 years, mean weight of 67.8845±0.73035 kilograms, and mean height of 166.0417±3.46784 centimeters.

It is noteworthy that 93.4% of the participants reported the absence of cardiovascular conditions such as hypertension or high cholesterol.

Concerning physical activity, participants were classified into four distinct groups: none, less than 1 hour, 1-3 hours, 3-5 hours, and more than 5 hours, with the highest frequency 1 1 11 14 Page 11 of 27-Integrity Submission Submission ID trn: oid: 2945:322368766 Page 11 of 27-Integrity Submission Submission ID trn: oid: 2945:322368766 observed within the "none" category (30.8%) and the lowest within the "more than 5 hours" category (9.6%).

Furthermore, 94.9% of participants indicated no utilization of chronic medication, and 58% affirmed not having implemented any dietary alterations to ameliorate their cardiovascular health.

Table 1. Descriptive measurements.

Characteristics	*Number*	*Percentage/ median±IQR*
sex		
Male (%)	112	21.8%
Female (%)	398	77.6%
Not specified (%)	3	0.6%
Age (mean±SD)	513	29.03±17
Weight (mean±SD)	513	67.8845±21.5
Height (mean±SD)	513	166.0417±10.1
Cholesterol		
Yes	34	6.6%
No	479	93.4%
Physical activity		
None	158	30.8 %
Less than 1 hour	131	25.5 %
1-3 hours	123	24 %
3-5 hours	52	10.1 %
More than 5 hours	49	9.6 %
Chronic medication		
Yes	26	5.1%
No	486	94.9%
Cardio health diet change		
Yes	215	42%
No	297	58%

Categorization of the variables

The study delved into the diverse eating behaviors and coping strategies prevalent among the participants, as evidenced by the frequencies and percentages observed.

Notably, a range of tendencies emerged, including emotional eating (8.4% "Always" to 27.5% "Never"), food coping (7.8% "Always" to 26.3% "Never"), and loneliness eating (6.8% "Always" to 25.2% "Never").

Similarly, participants reported engaging in stress-related behaviors such as stress eating patterns (12.5% "Always" to 20.3% "Never"), stress eating habits (10.7% "Always" to 21.4% "Never"), and stress binging (6.6% "Always" to 36.8% "Never").

Furthermore, varying degrees of discomfort while eating (4.3% "Always" to 30.8% "Never"), feelings of being out of control with eating (3.1% "Always" to 36.6% "Never"), and instances of mindless eating (7% "Always" to 23.2% "Never") were reported.

Additionally, participants disclosed tendencies related to external influences such as tempting eating (10.4% "Always" to 9% "Never"), party food consumption (10% "Always" to 23.5% "Never"), and susceptibility to food advertisements (4.7% "Always" to 32% "Never").

These findings as suggested in Table 2 below illuminate the multifaceted nature of eating behaviors and underscore the importance of further exploration and understanding in the realm of nutritional psychology.

Table 2. Categorization of the different variables across participants.

N (%)	**Always**	**Often**	**Sometimes**	**Rarely**	**Never**
Emotional eating	43 (8.4%)	81 (15.8%)	139 (27.1%)	108(21.1%)	141 (27.5%)
Food coping	40 (7.8%)	75 (14.6%)	138 (26.9 %)	124 (24.2 %)	135 (26.3%)
Loneliness eating	35 (6.8%)	87 (17%)	140 (27.3%)	121 (23.6%)	129(25.2%)
Emotion distraction	35 (6.8%)	63 (12.3%)	129 (25.2%)	118 (23%)	167(32.6%)
Stress level	85 (16.6%)	176 (34.4%)	196 (38.3%)	50 (9.8%)	5 (1%)
Stress eating pattern	64 (12.5%)	136 (26.5%)	147 (28.7%)	62 (12.1%)	104 (20.3%)
Stress eating habits	55(10.7%)	116 (22.6%)	152 (29. %)	80 (15.6%)	110 (21.4%)
Stress binging	34 (6.6%)	75 (14.6%)	115 (22.4%)	100 (19.5%)	189 (36.8%)
Physically full	17 (3.3%)	60 (11.7%)	104 (20.3%)	121 (23.6%)	211 (41.1%)
Eating past full	15 (2.9%)	56 (10.9%)	139 (27.1%)	170 (33.1%)	133 (25.9%)
Uncomfortable eating	22 (4.3%)	64 (12.5%)	110 (21.4%)	159 (31%)	158 (30.8%)
Out of control eating	16 (3.1%)	45 (8.8%)	143 (27.9%)	121 (23.6%)	188 (36.6%)
Mindless eating	36 (7%)	68 (13.3%)	145 (28.3%)	144 (28.1%)	119 (23.2%)
Tempting eating	53 (10.4%)	123 (24%)	197 (38.5%)	93 (18.2%)	46 (9%)
Party food consumption	51 (10%)	98 (19.2%)	119 (23.3%)	122 (23.9%)	120 (23.5%)
Food advertisements	24 4.7%)	50 (9.8%)	118 (3%)	156 (0.5%)	164 (2%)

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Construct Validity

The Mindful Eating Questionnaire (MEQ) was subjected to comprehensive statistical evaluation using Principal Component Analysis (PCA) with varimax rotation to explore its underlying structure.

The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy yielded a strong value of 0.887, confirming that the data were suitable for factor analysis.

In addition, Bartlett's test of sphericity was highly significant ($p < 0.0001$), demonstrating sufficient intercorrelations among the variables.

These preliminary indicators collectively validated the appropriateness of applying PCA to the MEQ dataset for construct validation.

The questionnaire was distilled into four distinct factors, elucidating varying dimensions of mindful eating behaviors.

Notably, the rotated factor matrices explicated percentages of variances ranging from 20% to 64% per factor, cumulatively elucidating 64.4% of the overall variance.

Specifically, Factor 1 accounted for 20.33%, Factor 2 for 40.55%, Factor 3 for 53.03%, and Factor 4 for 64.403% of the variance.

Importantly, all items demonstrated robust loadings of 0.30 or higher, underscoring their substantive contribution to the factors identified.

The reported results are demonstrated below in Table 3.

Table 3. Principal Component Analysis.

Variables:	Factors			
	1	2	3	4
Food coping	.762			
Emotional distraction	.737			
Loneliness eating	.697			
Emotional eating	.534			
Stress binging	.519			
Stress	.762			
Out of control		.840		
Mindless eating		.821		
uncomfortable eating		.787		
Physically full		.732		
Tempting eating		.486		
Stress eating habits			.782	
Stress eating patterns			.765	
Eating past full			.696	
Food advertisements				.792
Eat after meals				.670
Party food consumption				.589

Following the Principal Component Analysis (PCA), several factors were extracted and subsequently correlated with the Mindful Attention Awareness Scale (MAAS), providing valuable insights into patterns of mindful eating behavior.

Factor 1 comprised items such as food coping, emotional distraction, loneliness eating, emotional eating, stress binging, and stress-related eating, collectively representing the construct of Emotional Eating that is, eating in response to negative emotional states.

This factor highlights the psychological mechanisms underlying affect-driven eating tendencies.

Conversely, Factor 2 featured variables such as Out of control eating, Mindless eating, Uncomfortable eating, physically full, and Tempting eating, collectively termed Disinhibition (Inability to Stop Eating), highlighting challenges in self-regulation.

Factor 3, encompassing Stress eating habits, Stress eating patterns, and eating past full, was categorized as Stress, elucidating the influence of stress on eating behaviors.

Factor 4 encompassed variables such as food advertisements, eating after meals, and party food consumption, representing the domain of External Eating-defined as eating prompted by environmental or situational cues.

This factor emphasizes how external stimuli can influence eating behaviors beyond physiological hunger.

Collectively, these findings deepen the understanding of the intricate relationship between psychological influences and eating patterns, thereby enriching the ongoing discussion on mindful eating and its implications for designing effective dietary interventions.

Reliability of the Questionnaire

The Mindful Eating Questionnaire (MEQ) demonstrated strong internal consistency, reflected by a Cronbach's alpha coefficient of 0.88, indicating satisfactory reliability.

Complementary analysis using McDonald's omega produced a similarly high coefficient of 0.89, confirming the robustness of the scale.

Examination of subscales revealed Cronbach's alpha values ranging from 0.68 to 0.88 and omega coefficients within the same range, supporting the reliability of individual dimensions.

Notably, Factors 1 and 2 exhibited slightly higher internal consistency in McDonald's omega compared to Cronbach's alpha, suggesting stable factor reliability across statistical methods.

Parallel assessment of the Mindful Attention Awareness Scale (MAAS) showed a Cronbach's alpha of 0.88, consistent with the reliability observed for the MEQ.

Collectively, these results affirm that both instruments demonstrate strong psychometric integrity in measuring mindful eating tendencies and attention awareness within the study population.

Confirmatory Factor Analysis (CFA)

Confirmatory factor analysis was performed on the total sample using SPSS AMOS version 26.

According to previous methodological recommendations, the required sample size for CFA should range between three and twenty times the number of observed variables.

Based on this guideline, a minimum of 213 participants was necessary to achieve adequate statistical power, corresponding to approximately 13.3 participants per item a criterion that was exceeded in this study.

Parameter estimates were derived using the robust maximum likelihood method, and model fit was evaluated through multiple indices.

Convergent validity was further assessed using the Average Variance Extracted (AVE), with values of 0.50 or higher considered acceptable [14].

Results from the CFA demonstrated a good model fit for the four-factor structure of the MEQ: $\chi^2/df=1.97$, RMSEA=0.041 (95% CI), SRMR=0.045, CFI=0.934, and TLI=0.924.

All standardized factor loadings were within acceptable limits (see Tables 4,5 and 6).

The convergent validity of the model was supported, with an AVE value of 0.87, indicating that the extracted factors accounted for a substantial proportion of variance in their corresponding items.

Table 4. Summary of Extracted Factors and Conceptual Domains of the Mindful Eating Questionnaire (MEQ).

Factor	Label / Domain	Conceptual Definition
Factor 1	**Emotional Eating (Eating in Response to Negative Emotional States)**	Reflects the tendency to consume food in response to emotions such as stress, sadness, or anxiety, often as a coping mechanism rather than due to physical hunger.
Factor 2	**Disinhibition (Inability to Regulate or Stop Eating)**	Represents difficulty in controlling or limiting food intake, especially when confronted with palatable foods or emotional triggers.
Factor 3	**Stress-Related Eating**	Captures patterns of eating that arise as a behavioral response to psychological stress or emotional strain.
Factor 4	**External Eating (Eating in Response to Environmental Cues)**	Describes eating behaviors influenced by external stimuli such as food advertisements, availability, or social occasions, independent of internal hunger cues.

Table 5. Reliability Coefficients for the Mindful Eating Questionnaire (MEQ) Subscales and MAAS.

Subscale	Cronbach's α	McDonald's Ω
Emotional Eating	0.812	0.814
Disinhibition	0.850	0.800
Stress	0.760	0.850
External Eating (Eating in Response to Environmental Cues)	0.680	0.680
Summary Score (MEQ Total)	**0.880**	**0.880**
Mindful Attention Awareness Scale (MAAS)	**0.880**	**0.890**

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Table 6. CFA.

Item	CFA
Factor 1: Emotional Eating	
Food coping	.821
Emotional distraction	.723
Loneliness eating	.78
Emotional eating	.865
Stress binging	.563
Factor 2: Disinhibition (Inability to Stop Eating)	
Out of control	.89
Mindless eating	.78
uncomfortable eating	.88
Physically full	.68
Tempting eating	.86
Factor 3: Stress	
Stress eating habits	.76
Stress eating patterns	.87
Eating past full	.65
Factor 4: External Eating (Eating in Response to Environmental Cues)	
Food advertisements	.67
Eat after meals	.76
Party food consumption	.86

Correlation between Sociodemographic & Cardiovascular Characteristics and the MEQ-L

The results of the non-parametric tests indicated significant differences and non-significant differences according to the questions present in the subscales.

Kruskal-Wallis test was used to analyze the relationship between the categorical variables that are having five modalities with age and BMI that are two skewed continuous variables.

Moreover, Chi-square test was used to see the association between each question of each subscale with gender and cholesterol level subgroups.

These variables have varying loadings across different factors, suggesting they contribute differently to each subscale.

Furthermore, the implication of these findings is that addressing and adopting effective coping mechanisms for emotional eating could potentially lead to significant improvements in individuals' health outcomes.

By understanding the factors contributing to emotional eating and developing strategies to manage them effectively, individuals may be able to make positive changes in their overall health and well-being.

There is no significant association observed in all the subgroups of external eating with the exception to the food advertisement with age and party food consumption with gender (p <0.001 and p=0.048, respectively).

This is demonstrated in Table 7.

Table 7. Correlation between sociodemographic characteristics and the MEQ-L.

MEQ-L Subscales	Age	BMI	Gender	Cholesterol Level
Emotional Eating				
Food coping	0.005	<0.001	0.448	0.989
Emotional distraction	<0.001	0.009	0.065	0.059
Loneliness eating	0.099	0.15	0.135	0.843
Emotional eating	0.005	<0.001	0.13	0.905
Stress binging	0.165	0.089	0.198	0.412
Stress	<0.001	0.041	0.056	0.648
Disinhibition				
Out of control	0.303	<0.001	0.175	0.037
Mindless eating	<0.001	0.139	0.792	0.29
Uncomfortable eating	<0.001	0.015	0.089	0.017
Physically full	0.607	<0.001	0.076	0.142
Tempting eating	<0.001	0.171	0.239	0.499
Stress				
Stress eating habits	0.203	0.023	0.061	0.383
Stress eating patterns	0.225	0.311	0.052	0.344
Eating past full	0.011	0.001	0.057	0.082
External Eating (Eating in Response to Environmental Cues)				
Food advertisement	<0.001	0.131	0.584	0.642
Party food consumption	0.315	0.285	0.048	0.817

Discussion

With the growing prevalence of obesity across Arab countries, there is an urgent need to establish culturally relevant prevention and intervention frameworks modeled on successful evidence-based practices.

This study aimed to validate the Arabic version of the Mindful Eating Behavior Scale (MEBS) and to evaluate its applicability for both clinical and research purposes in Arab populations.

The results confirmed the scale's psychometric soundness, demonstrating strong reliability and validity, and underscoring its potential role in supporting obesity prevention and management strategies in the region.

The findings highlight the clinical utility of MEBS scores in capturing mindful eating patterns linked to dietary habits and psychological well-being.

The four subscales Emotional Eating, Disinhibition, Stress, and External Eating provided consistent dimensions that collectively reflected a stable and reliable factor structure.

These results support the MEBS as a robust tool for differentiating levels of mindful eating in relation to emotional triggers, eating inhibition, stress reactivity, and environmental influences.

Furthermore, the study advocates for a multidimensional approach to understanding mindful eating that extends beyond physiological hunger or satiety.

It calls for integrating psychological, social, and environmental determinants to design comprehensive interventions addressing both behavioral and emotional aspects of eating.

The internal consistency reliability of the Arabic MEBS was excellent across domains, aligning with the findings of Winkens et al. (1) and later replications in English-speaking populations (2), confirming the four-factor model through confirmatory factor analysis.

Non-parametric analyses provided additional insights.

The Kruskal-Wallis test revealed significant associations between age and BMI with emotional eating dimensions excluding loneliness eating and stress binging while Chi-square analyses identified no significant relationships between gender or cholesterol levels and most subgroups.

However, disinhibition and uncomfortable eating were associated with BMI and cholesterol levels, and uncomfortable eating also correlated with age.

Age was linked to mindless and tempting eating, while physically full was related only to BMI.

In contrast, stress eating habits and eating past satiety were influenced by both BMI and age, whereas stress-related eating patterns showed no significant relationship.

Among external eating behaviors, food advertising and party food consumption were associated with age and gender, respectively.

Collectively, these results shed light on how mindful eating behaviors intersect with weight, stress, and mental health within the Arab sociocultural context.

The study underscores the importance of translating and validating behavioral assessment tools like the MEBS into Arabic to address the escalating burden of obesity and related disorders in the region.

In conclusion, this research marks an important step toward understanding the interplay between mindful eating, intuitive eating, and psychological well-being in Arab populations. The validated Arabic MEBS offers a reliable foundation for future public health and clinical applications.

Further research should aim to overcome current limitations particularly the cross-sectional design, potential response bias, and the need for multi-site validation to strengthen the generalizability and robustness of the Arabic MEBS across diverse Arabic-speaking communities worldwide.

Conclusions

In summary, the study highlights the urgency of implementing effective, culturally adapted measures to curb obesity in Arab nations.

The validated Arabic MEBS provides a reliable and valid instrument for use in clinical and research frameworks aimed at addressing this public health challenge.

Our findings emphasize the importance of adopting a multidimensional approach to understanding mindful eating behaviors and their associations with various factors such as emotional eating patterns, disinhibition, stress, and external influences.

The consistent dimensions observed across the MEBS subscales further confirm its reliability as a well-validated instrument for assessing mindful eating.

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Moving forward, our study serves as a significant step towards comprehensively understanding the relationship between mindful eating and weight management, intuitive eating, and mental health concerns within the Arab social and cultural context.

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None to declare.

Author Contributions

Hala Al Moghrabi led all stages of the research, including conceptualization, methodology design, data collection, statistical analysis, interpretation, manuscript drafting, review, and supervision.

Carole Abou Omar assisted in methodological refinement, validation, and manuscript editing.

Zahraa Dhainy contributed to data entry and part of the statistical analysis.

All authors have read and approved the final manuscript.

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Conflicts of interest

The authors declare no competing interests.

Institutional Review Board

The study was conducted according to the guidelines of the Declaration of Helsinki; the study and the protocols utilized therein were approved by the Institutional Review Board.

Consent Statement

All human subjects involved in this study provided a written informed consent before participation, including the consent of publishing their anonymized data.

Data availability

All data presented in the manuscript are available from the authors upon request.

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