

Higher Physician Body Mass Index is Associated with Increased Weight Bias in an Arab Country with High Prevalence of Obesity

Abstract

Background: Obesity is a worldwide problem. The Arab world, and particularly the Middle East, has witnessed a recent dramatic rise in obesity and obesity-related diseases. Yet, little is known about physician attitudes toward or management of obesity in this region of the world. The purpose of this study is to explore physician perceptions and attitudes toward obesity in the United Arab Emirates (UAE). **Methods:** A cross-sectional, self-administered anonymous survey of primary care physicians was performed between December 2015 and January 2017 at academic medical centers in the UAE. **Results:** A total of 573 of 698 physicians (82% response rate) completed the survey. Thirty-seven percent of respondents met body mass index (BMI) criteria for overweight and 12% for obesity. Physicians had sufficient knowledge but lacked training in obesity management. Physician subspecialty impacted knowledge with internal medicine physicians showing better obesity knowledge (Chi-square 392, df 210, $P = 0.00$). There was no significant relationship between knowledge and attitudes with physician age, gender, or nationality. Attitudinal responses toward obesity management were generally positive. However, there was an inverse correlation between physician BMI and positive attitudes toward obesity management (Chi-square 1551, df 323, $P = 0.00$). **Conclusions:** Although our study did not find significant weight bias, negative attitudes were directly correlated with physician BMI, a significant concern as half of physicians surveyed reported BMIs consistent with overweight and obesity.

Keywords: Attitudes, obesity, physician, weight bias

Introduction

Obesity is a worldwide problem and ranks as the second leading cause of preventable death in developing countries.^[1] There are complex sociocultural and behavioral contributors to the global obesity epidemic; yet, several important drivers have been identified. Specifically, changes in the world's food system have resulted in an increased supply of convenient and affordable, energy-dense foods,^[2] while concurrent technologic advancements have led to more efficient transportation and more sedentary lifestyles.^[2] Cultural body size preferences may help further explain differences in obesity prevalence between populations.^[3] Obesity is a significant public health concern. It has been identified as a major risk factor for noncommunicable diseases, including cardiovascular disease, diabetes, hypertension, and several cancers.^[1] Worldwide, obesity is associated with increased hospitalizations, higher mortality, and increased health-care

expenditures.^[4] It has been well documented that even modest weight loss from diet and exercise can improve patient health outcomes,^[5] and that physician counseling is associated with healthy behavior changes including improved diet, increased physical activity, and weight loss.^[5,6] Yet, studies consistently report physicians' failure to recognize obesity in their patients or to counsel patients about exercise or weight loss.^[6] Multiple barriers by physicians have been cited including knowledge gaps, lack of time for appropriate intervention, lack of training, and low self-efficacy.^[4] Studies also report negative attitudes and bias toward patients with obesity by health-care providers,^[4] including beliefs that obese patients are nonadherent to medications and less likely to benefit from counseling.^[4-7]

Although obesity is a global health concern, the majority of published literature focuses on Western physician behaviors and practices, and little is known about physician management of obesity in the Arab world. A recent study conducted

Satish
Chandrasekhar
Nair¹,
Saba Munib
Sheikh²,
Halah Ibrahim^{1,3}

¹Department of Academic Affairs, Tawam Hospital-Johns Hopkins Medicine Affiliate, Al Ain, UAE, ²Department of Obstetrics and Gynecology, Tawam Hospital, Al Ain, UAE, ³Health Professional Education, Johns Hopkins School of Education, Baltimore, MD, USA

Address for correspondence:
Dr. Halah Ibrahim,
Johns Hopkins Graduate School
of Education, Baltimore, MD,
USA.
E-mail: hibrahi4@jhu.edu

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in the United Arab Emirates (UAE) showed that obesity was consistently under-recognized and undertreated by the Internal Medicine Residents, and also suggested that weight biases and feelings of incompetence existed among the UAE physician participants.^[8] The purpose of this study is to further explore the UAE physician perceptions and attitudes toward obesity. Specifically, we sought to characterize physician attitudes regarding obesity and the impact of physician gender and weight.

Methods

A cross-sectional, self-administered anonymous survey was conducted from December 2015 to January 2017. The survey included knowledge questions, derived from the Guidelines on the Identification, Evaluation, and Treatment of Overweight and Obesity in Adults from the National Heart, Lung and Blood Institute,^[9] and attitudinal questions developed through review of the relevant literature.^[4-9] Psychometric reliability of the questionnaire was calculated through a pilot with 20 local physicians who did not participate in the final study. The final version of the survey included 21 questions assessing knowledge, attitudes (including self-efficacy and comfort/bias), and training in treating obesity. Responses were marked on a 5-point Likert scale from one or “strongly disagree” to five or “strongly agree.” Demographic information on the respondents was also obtained.

The survey was conducted at two academic medical centers and one large multispecialty clinic in Al Ain, Abu Dhabi. These institutions were chosen because they are the only academic centers in the city and are Government health centers that serve the majority of the patient population in Al Ain. Physicians in specialties dealing first line with obesity and its related comorbidities were purposively sampled, primarily family medicine, general surgery, internal medicine, obstetrics/gynecology, and pediatrics. Respondents were asked to self-report weight and height. Body mass index (BMI) was calculated by the research team using the standard formula of weight in kilograms divided by the square of height in meters (kg/m^2). The World Health Organization (WHO) International Classification of adult overweight and obesity according to BMI was used for this study.^[10] Overweight was defined as $\text{BMI} = 25\text{--}29.9$ and obesity was defined as $\text{BMI} \geq 30$.^[10] Surveys were self-administered and anonymous. Printed questionnaires were distributed and collected in a secure envelope by a research team member during scheduled educational conferences and staff meetings.

Data were analyzed using SPSS Statistical Software Version 22 (SPSS Inc. Chicago, USA). The domains were identified using factor analysis. Mean values were calculated by dividing the sum of the values in each set by the total number of values in that set. The widely used principal component analysis (PCA) was used as the extraction method to undertake factor analysis,

and varimax rotation was used to rotate the factors to better fit the data. Convergent validity, to assess if the survey items converged to measure a construct, was also conducted using the correlation coefficient matrix method. The percentage of total variance by each factor was calculated and pattern matrix was used to identify the domains. Kaiser-Meyer-Olkin (KMO) sampling adequacy and Bartlett's test (to assess the strength of the relationship among the variables) were also applied to the 21-point questionnaire. The reliability of the inventory and its subscales were tabulated using Cronbach's alpha. Correlation between physician BMI and responses was analyzed using Chi-squared test (SPSS Version 22) and significance recorded. The study was approved by the Al Ain Medical District Human Research Ethics Committee.

Results

The consistency of the 21-point questionnaire was measured using the PCA, obtaining a KMO value of 0.78, reaching statistical significance. Bartlett's test of sphericity was significant (0.000). The PCA revealed the presence of a component with an eigenvalue of 10.9, explaining 72.2% of total variance, and correlation coefficient indicating relationship between the items. Cronbach's α was 0.81 indicating high reliability.

Of the 698 eligible physicians, 573 (82%) completed the survey. Characteristics of the study population are described in Table 1. Notably, 38% of the participants were

Table 1: Demographic characteristics of physician survey respondents physicians (n=573)

	n (%)
Gender	
Male	233 (41)
Female	340 (59)
Age	
18-30	182 (32)
31-50	261 (45.5)
51-70	130 (22.7)
BMI	
Underweight (<18.5)	24 (4.1)
Normal	241 (40.2)
Overweight (25-29.9)	232 (38.7)
Obese (≥ 30)	73 (12.7)
Specialty	
General surgery	46 (8)
Internal medicine	324 (56)
Obstetrics/gynecology	137 (23.9)
Pediatrics	66 (11.5)
Nationality	
Asia	91 (15.9)
UAE	305 (53.2)
Other middle east	147 (25.7)
Other	30 (5.2)

BMI=Body mass index, UAE=United Arab Emirates

overweight (BMI 25–29.9) and 12% were obese (BMI \geq 30). Table 2 reports participant responses. The overall average response rate for knowledge questions was high (mean response 4.2 ± 0.03 , $t = 3.21899$, $P = 0.003$, statistically significant at $P < 0.05$). Attitudinal responses toward obesity management were generally positive. There was no significant relationship between knowledge and attitudes with other variables, including age, gender, and nationality (data not shown). Of note, there was an inverse correlation (Chi-square 1551, df 323, $P = 0.00$, data not shown) between physician BMI and positive attitudes toward obesity management. Overweight and obese physicians expressed negative reactions (12.6%) toward the appearance of obese patients, as compared to normal weight physicians (7.0%, $P = 0.000$). In addition, physicians with higher BMIs reported frustration in treating obese patients and were less likely to feel empathy for obese patients [Table 3].

Discussion

The rapidly increasing prevalence of obesity and obesity-related diseases is one of the most challenging concerns currently facing physicians in the UAE. The study findings reveal that despite lack of formal training, UAE physicians had appropriate knowledge of obesity issues, and did not report negative attitudes. As little is known regarding obesity management in the Arab world, this study adds to the existing body of obesity literature.

The literature has been inconclusive regarding the impact of physician gender on obesity attitudes. The study findings

do not suggest gender differences in physician attitudes toward obesity. Studies also note differences in obesity attitudes between medical specialties.^[11] Accordingly, our results indicate a significantly higher knowledge of obesity among the internal medicine physician respondents. As internists are often first line in treatment of obesity and its comorbidities, it is reassuring that they did not reveal knowledge gaps. Physicians surveyed indicated lack of obesity education, consistent with other studies that reported $<1/3^{\text{rd}}$ of physicians receive training in obesity management.^[4-8] The literature suggests that physicians who receive obesity-related training during residency are more likely to counsel obese patients regarding diet and exercise.^[4-7] Accordingly, medical school and residency training are optimal settings to provide high-quality obesity-related education and dispel negative opinions.

Negative attitudes of health professionals toward obesity can impact the medical care provided.^[4-7] Healthcare avoidance in patients with obesity has been reported, including decreased preventive services, such as cancer screenings, with patients citing negative physician attitudes, and disrespect from health-care providers as reasons.^[12] Obesity-related cancers, including colon and breast cancer are highly prevalent in the Middle East.^[13] In fact, the WHO predicts that within the next 15 years, the Middle East is likely to experience the highest increase in cancer incidence among the WHO regions, with predictions as high as 100%–180% increases.^[13] Given the importance of

Table 2: Mean physician responses to survey questions (n=573). Responses marked on a 5-point Likert scale from one or ‘strongly disagree’ to five or ‘strongly agree’

Domain	Items	Mean response \pm SEM
Knowledge	Obesity is a major health problem in the UAE	4.5 \pm 0.035
Knowledge	Obesity is a chronic disease	4.2 \pm 0.038
Knowledge	Obesity is associated with serious medical conditions	4.7 \pm 0.026
Knowledge	Obesity is an independent risk factor for type 2 diabetes	4.3 \pm 0.046
Knowledge	Obesity is an independent risk factor for hypertension	4.2 \pm 0.043
Knowledge	Obesity is an independent risk factor for coronary artery disease	4.2 \pm 0.042
Knowledge	Obesity is an independent risk factor for several cancers	3.6 \pm 0.046
Practice	I believe it is necessary to educate obese patients on the health risks of obesity	4.6 \pm 0.034
Practice	I feel uncomfortable when examining an obese patient	3.2* \pm 0.052
Practice	I feel competent to treat obese patients	3.5 \pm 0.036
Practice	I feel successful in treating patients for obesity	3.1 \pm 0.038
Attitude	I have negative reactions toward the appearance of obese patients	2.5* \pm 0.041
Attitude	It is difficult for me to feel empathy for an obese patient	2.2* \pm 0.039
Attitude	Most obese patients could reach a normal BMI if motivated	3.9 \pm 0.041
Attitude	Obesity is primarily caused by behavioral factors	3.7 \pm 0.041
Attitude	Most obese patients will not lose a significant amount of weight (>10% of their body weight)	2.8* \pm 0.047
Attitude	Treating obese patients is very frustrating	2.9* \pm 0.041
Attitude	The best role for a physician in weight management is to provide treatment rather than referral	3.7 \pm 0.035
Attitude	Physicians should be role models for their patients by maintaining a normal weight	4.3 \pm 0.027
Training	I have received training in obesity during medical school	3.1 \pm 0.049
Training	I have received training in obesity during residency	2.5 \pm 0.044

*Indicates negatively phrased questions. SEM=Standard error of the mean, UAE=United Arab Emirates, BMI=Body mass index

Table 3: Correlation between physician body mass index and perceptions of obesity

Domain	Items	Responses, n (%)				Significance (P)
		Under and normal weight (BMI <25)		Over weight and obese (BMI)		
		Strongly disagree/disagree	Agree/strongly agree	Strongly disagree/disagree	Agree/strongly agree	
Practice	I believe it is necessary to educate obese patients on the health risks of obesity	16 (2.8)	265 (46.4)	26 (4.6)	305 (53.4)	0.048
Practice	I feel uncomfortable when examining an obese patient	4 (0.7)	120 (21.0)	0 (0.0)	130 (22.8)	0.00
Attitude	I have negative reactions towards the appearance of obese patients	136 (23.8)	40 (7.0)	156 (27.3)	72 (12.6)	0.00
Attitude	It is difficult for me to feel empathy for an obese patient	188 (32.9)	45 (7.9)	192 (33.6)	79 (13.8)	0.00
Attitude	Most obese patients will not lose a significant amount of weight (>10% of their body weight)	92 (16.1)	100 (17.5)	126 (22.1)	91 (15.9)	0.00
Attitude	Treating obese patients is very frustrating	115 (20.1)	67 (11.7)	137 (24.0)	125 (21.9)	0.00
Training	I have received training in obesity during residency	101 (17.7)	62 (10.9)	215 (37.7)	32 (5.6)	0.00

BMI=Body mass index

early screening and treatment, healthcare avoidance should be minimized. As such, the apparent lack of weight bias among the UAE physicians is quite reassuring.

Although the vast majority of physician respondents (94.7%) believed they should be role models for their patients, 37.2% were overweight and 12.7% met BMI criteria for obesity. This is similar to other studies worldwide which found high rates of overweight and obesity among health-care professionals.^[14] This finding has several implications. First, studies have documented that physicians with normal BMI have higher self-efficacy and are more likely to discuss weight loss with their patients at lower levels of BMI.^[15] It is further notable that negative attitudes toward obesity increased as physician BMI increased, a disturbing trend that has also been noted in recent studies.^[15] A possible explanation is that physicians with higher BMIs may have personally been victims of weight bias and are projecting this stigma onto their patients. This suggests that interventions that target physician well-being and personal health promotion behavior, including stress reduction and diet and exercise, may positively impact obesity management. As such, health-care facilities in the UAE could improve patient care by implementing physician well-being initiatives. Furthermore, professional development opportunities for physicians that focus on implicit weight bias awareness and improving interpersonal and communication skills are essential.

The literature also suggests that patients have weight biases and consider overweight or obese physicians less credible or trustful,^[16] making patients less likely to accept counseling

or medical advice from overweight or obese physicians. Patients treated by obese physicians have also reported feeling judged due to their weight.^[16] This is concerning given the prevalence of overweight and obesity in the physicians studied. Whether patients in the Arab world have similar negative perceptions of obese physicians remains an important area for future research. Further studies should also explore cultural factors that may impact UAE patient and physician attitudes toward obesity.

This study has several limitations. First, findings are based on data from three institutions, which limits generalizability. Cross-sectional surveys address associations and not causality. Furthermore, the survey relies on self-reporting, which may underestimate weight. However, previous studies have found physician self-reporting of weight and behaviors to be reliable and valid.^[17] Further, we attempted to limit social desirability bias by assuring respondent anonymity.

Conclusions

Obesity is a growing epidemic in the UAE. Attitudes regarding obesity management were not affected by physician age, gender or subspecialty, and physicians in the UAE did not express significant weight bias. Yet, negative attitudes toward patients with obesity were directly correlated with physician BMI, a significant concern as half of physicians surveyed reported BMIs consistent with overweight, and obesity.

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Conflicts of interest

There are no conflicts of interest.

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