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Health Beliefs and Obesity Bias as Determinants of Attitudes Toward the Rising Tides of GLP-1 Medications: Mounjaro and Ozempic

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Introduction: Glucagon-like peptide-1 (GLP-1) receptor agonists including Mounjaro and Ozempic, are increasingly used for weight management. Assessing the attitudes and beliefs of current and future healthcare professionals is important considering their roles in recommending and prescribing these drugs. This study aimed to investigate the attitudes toward Mounjaro and Ozempic and its correlation with obesity/overweight bias among healthcare professionals and students in medicine and pharmacy in Arab countries.

Methods: This cross-sectional study was based on a self-administered online questionnaire with participants recruited via a convenient snowball sampling approach. Attitudes towards Mounjaro and Ozempic were evaluated using a newly developed construct termed Mini Health Beliefs and Attitudes toward GLP-1 Drugs Scale (mini-HBAGS), alongside a novel scale to assess obesity/overweight bias (OOB). The new constructs' validity was assessed via content validity, principal component analysis (PCA), and Cronbach's α.

Results: The study included 413 participants predominantly from Kuwait (32.8%), Egypt (20.9%), Saudi Arabia (18.8%), and Jordan (15.4%). Familiarity with Mounjaro and Ozempic was high (83.6%), with 17.2% recommending them. Weight management drug use was 14.0%, including 5.9% for Mounjaro and Ozempic. Among participants familiar with Mounjaro and Ozempic, the mean OOB score was 3.83±0.62 (range: 1.00–5.00), indicating agreement, while the mean score for the mini-H-BAGS was 2.70±0.716 (range: 1.00–5.00), indicating a slightly unfavorable attitude. PCA identified perceived benefits and barriers, and subjective norms and attitudes, as key determinants of attitudes toward Mounjaro and Ozempic.

Conclusion: This study revealed slightly negative attitudes toward Mounjaro and Ozempic among healthcare professionals and students in Arab countries. The negative attitudes observed likely reflect concerns about side effects, cost, and accessibility of these medications. The findings highlighted the need for targeted education in Arab countries to address obesity bias and encourage a balanced evaluation of the benefits and risks of GLP-1 drugs for weight management.

Keywords: obesity BIAs, GLP-1 medications, mounjaro, ozempic, health beliefs, weight management, pharmacological interventions

Introduction

Social norms and expectations often integrate weight into body image, framing it as a key determinant of perceived health, beauty, and personal worth.[1–3] Thinness is frequently idealized by society, culture, and media as an important standard of health, beauty, and personal value, perpetuating restrictive and often unattainable body image ideals.[2,4] This

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cultural influence, conveyed through media, health messaging, and social interactions, often pressures individuals to prioritize weight loss, even resorting to extreme measures.[5–8] Such approaches are frequently pursued with little consideration for potential health risks.[9,10]

The perception that a lower body weight signifies personal virtue and discipline can lead to harmful psychological and physical consequences.[11,12] For example, the negative perception of overweight and obesity often stigmatizes obese individuals.[13,14] This stigma reinforces the belief that weight loss is inherently beneficial and universally desirable, irrespective of individual health circumstances.[3,15,16] Additionally, the language used in popular media, social media, medical advice, and public health messaging often equates thinness with health.[6,17] This messaging reinforces the notion that obese individuals should aspire to lose weight, perpetuating weight stigma and a narrow view of health.[15,18,19]

Amid sociocultural pressures surrounding body image ideals, the use of anti-diabetic medications, such as glucagon-like peptide-1 (GLP-1) receptor agonists, has gained significant attention.[20,21] Marketed under names like Ozempic and Wegovy (semaglutide) and Mounjaro and Zepbound (tirzepatide), these GLP-1 receptor agonists with the "-tide" suffix, have surged like a rising tide in popularity as highly effective weight-loss interventions.[22–24] Global trends highlight the expanding use of GLP-1 receptor agonists in weight management, particularly for non-diabetic patients.[24–27]

Initially developed for the management of type 2 diabetes mellitus (DM), GLP-1 receptor agonists have demonstrated significant efficacy in promoting weight loss, including in individuals without DM.[23,28,29] So far, this dual benefit has led the US Food and Drug Administration (FDA) to approve two GLP-1 receptor agonists for medical management of obesity under specified conditions.[30–33] In terms of mechanism of action, these drugs mimic the action of the GLP-1 hormone, which plays an evident role to regulate appetite and insulin secretion.[34,35] In turn, GLP-1 receptor agonists result in reduced caloric intake and weight loss.[31] In December 2023, *Science* labeled GLP-1 receptor agonists as the Breakthrough of the Year.[36] This notable distinction highlighted the recognized potential of GLP-1 receptor agonists in the management of obesity.[30,37]

The evaluation of the perspectives of healthcare professionals, particularly physicians and pharmacists, is valuable to understand the dynamics of adoption and recommendation of newly introduced medications.[38] To understand the factors influencing the use and recommendation of GLP-1 agonists for weight management, the Health Belief Model (HBM) and the Theory of Planned Behavior (TPB) appear as suitable scientific frameworks for this research area.[39–41] These models provide valuable frameworks to analyze health-related behaviors and decision-making within contexts shaped by societal influences, including weight-focused norms, benefits, and risks.[42–45]

The HBM suggests that health behaviors are influenced by perceived susceptibility to a condition, its perceived severity, the perceived benefits of a particular action, and the perceived barriers to taking that action.[46] In the context of GLP-1 medications, individuals who perceive obesity as a significant health risk may be more inclined to endorse their use, despite the known risks and adverse events.[47–49] Simultaneously, the stigma surrounding obesity may amplify its perceived severity, positioning GLP-1 medications as a necessary intervention to tackle both health and social consequences of obesity.[13]

The TPB expands on HBM by highlighting the roles of attitudes, subjective norms, and perceived behavioral control in shaping intentions to use or recommend new medications.[41] Within the TPB framework, attitudes toward GLP-1 drugs (eg, viewing them as effective and socially acceptable) and subjective norms (eg, societal endorsement of weight loss medications) play key roles. Additionally, perceived control over accessing these drugs can influence both personal use and willingness to recommend them. From a socio-cultural perspective that idealizes thinness, subjective norms may exert significant pressure on individuals to conform.[50] In turn, this would normalize the off-label use of GLP-1 medications as a socially acceptable way to achieve the desired body weight.

This study hypothesized that a greater endorsement of obesity and overweight bias might be positively associated with favorable attitudes toward GLP-1 receptor agonists, including Mounjaro and Ozempic. This hypothesis is especially relevant for health professionals and future practitioners, such as medical and pharmacy students, who would significantly influence patient perceptions towards these medications. We postulated that health sciences students, pharmacists, and physicians who exhibit higher levels of obesity and overweight bias would view GLP-1 medications more favorably, potentially underestimating their associated risks.

This research is particularly relevant in Arab countries, where obesity is highly prevalent, and GLP-1 medications are widely used.[51–55] Alarmingly, emergency departments across the Gulf Cooperation Council (GCC) countries have reported increasing complications from the misuse of these drugs.[56] This notable trend highlights the need for both healthcare professionals and community awareness on judicious use of GLP-1 receptor agonists.[57]

Based on the above-mentioned points, the objectives of this study were as follows: (1) to assess obesity and overweight bias beliefs among healthcare professionals and students in Arab countries; (2) to evaluate their beliefs about GLP-1 receptor agonists using a newly developed scale tailored for this purpose, grounded in constructs of the HBM and the TPB; and (3) to explore possible associations between attitudes toward Mounjaro and Ozempic and various demographic factors, prior recommendation or use of these medications, and obesity/overweight bias.

Materials and Methods

Survey Design, Ethics, and Participant Recruitment

This cross-sectional survey study targeted medical students, pharmacy/PharmD students, physicians, and pharmacists residing or working in Arab countries. Participants were required to meet the following inclusion criteria: (1) being 18 years of age or older, (2) currently studying or practicing in the medical or pharmaceutical fields, and (3) residing or working in an Arab country. Eligibility was confirmed by participants through acknowledgment of the inclusion criteria outlined in the questionnaire introduction and proceeding to complete the survey.

Recruitment employed a convenience-based snowball sampling method, using social media and messaging platforms, including Facebook, X (formerly Twitter), Instagram, LinkedIn, Messenger, and WhatsApp. The initial survey distribution began within the authors' professional networks in Egypt, Jordan, Kuwait, and Saudi Arabia, with participants encouraged to share the survey further. This approach followed established methodologies, as described by Leighton et al.[58]

Data collection took place from November 12 to December 2, 2024. Ethical approval was obtained from the Institutional Review Board (IRB) at the Deanship of Scientific Research, Al-Ahliyya Amman University, Jordan, in adherence to the Declaration of Helsinki. Participation was voluntary, with no monetary incentives, and all respondents provided electronic informed consent.

The survey introduction detailed the study objectives, estimated completion time based on pilot testing results (5 minutes), and assurances of confidentiality for participants. The survey was hosted on SurveyMonkey (SurveyMonkey Inc., San Mateo, California, USA) and offered in both Arabic and English. To ensure data reliability, access was restricted to one response per IP address, and all items required mandatory responses. Rigorous quality control (QC) measures were implemented, including setting a minimum response time of 120 seconds in response filtration process, informed by a median pre-filtration response time of 187 seconds and a 5th percentile benchmark of 97.2 seconds. Responses were screened for internal consistency; participants who reported being "not at all familiar" with GLP-1 medications but simultaneously indicated recommending or using these medications were excluded from the analysis due to possible carelessness in response.

Collection of Demographic Data and Awareness of Mounjaro and Ozempic

Demographic data were collected, including age (18–24 vs 25–34 vs 35–44 vs 45–54 vs 55–64 vs 65 years or older), sex (male vs female), current role in the healthcare field (eg, medical student, pharmacy/PharmD student, physician, or pharmacist/PharmD), nationality, and self-reported financial status of household (low vs middle vs high). Participants were also asked to report their approximate body mass index (BMI) with the following options (Under 18.5 (underweight) vs 18.5–24.9 (normal weight) vs 25.0–29.9 (overweight) vs 30 or above (obesity) vs I do not know vs I prefer not to say).

Awareness and experience with Mounjaro and Ozempic were assessed through a series of questions as follows. (1) Have you ever used any medications or treatments specifically for weight loss? (yes vs no); (2) How familiar are you with Mounjaro and Ozempic? (very familiar vs somewhat familiar vs not at all familiar); (3) Have you ever used Mounjaro and Ozempic drugs for weight loss? (yes vs no); and (4) Have you ever recommended Mounjaro and Ozempic drugs for weight loss? (yes vs no).

Survey Instrument Design

To minimize possible respondents' fatigue, we developed two concise constructs for the survey.[59,60] The first construct was designed to assess what we termed "obesity/overweight bias" (OOB), informed by an ad hoc literature review conducted by the first and senior authors (Kholoud Al-Mahzoum and Malik Sallam) using Google Scholar on 17 October 2024 using the following search terms: obesity bias, obesity stigma, weight bias, weight stigma.[14–16,19,61–65]

The definition of OOB was guided by the seminal work of Rebecca M. Puhl on weight stigma and was operationalized as the negative attitudes toward being overweight or obese, encompassing both stigmatizing views and fear of associated health risks.[14–16,19,66–69] To check and confirm the content and language validity of the OOB items, a panel of experts in pharmacy reviewed the construct in English, confirming the suitability of its content. Following this, the items were translated into Arabic by two bilingual authors (Mohammed Sallam and Malik Sallam). An independent translator, unaware of the original English version, then back-translated the Arabic items into English. Discrepancies between the original and back-translated versions were reviewed and resolved collaboratively among three authors (Kholoud Al-Mahzoum, Mohammed Sallam, and Malik Sallam), to ensure the linguistic consistency across the two languages.

The final OOB construct included the following items originally developed in English: (1) It is very important to keep a low body weight to stay healthy; (2) Being overweight or obese often shows a lack of self-control; (3) People who are overweight or obese are often less active and productive; (4) People who are overweight or obese face serious health risks; and (5) I worry about the health risks of being overweight or obese.

The development of the second construct herein termed "mini-HBAGS" (Mini Health Beliefs and Attitudes toward GLP-1 Drugs Scale) followed the same approach as the one mentioned above, with items selected based on constructs from the HBM and the TPB.[39,41] The construct comprised the following eight items: (1) Mounjaro and Ozempic work well for weight loss (based on HBM Perceived Benefits); (2) The benefits of Mounjaro and Ozempic for weight loss are worth the risks (based on HBM Perceived Benefits and Barriers); (3) Mounjaro and Ozempic cost too much for most people to use long-term (based on HBM Perceived Barriers); (4) The side effects of Mounjaro and Ozempic make them less appealing for weight loss (based on HBM Perceived Barriers); (5) If people I know recommended Mounjaro and Ozempic for weight loss, I would think about using them (based on TPB Subjective Norms); (6) Positive news about Mounjaro and Ozempic would make me more likely to accept them for weight loss (based on TPB Subjective Norms and Behavioral Intentions); (7) Using Mounjaro and Ozempic is a good way to help people lose weight (based on TPB Attitude); and (8) I feel positive about recommending Mounjaro and Ozempic for weight loss (based on TPB Attitude).

The items for both constructs were measured using a 5-point Likert scale, with response options ranging from strongly disagree, disagree, neutral/no opinion, agree, to strongly agree. The survey instrument was pilot-tested with five individuals, including a pharmacist, a physician, and three medical students in English. Based on their feedback, minor language modifications were made to enhance clarity of items. The complete survey form is available in the (Supplementary Figure).

Sample Size Calculation

The sample size for this cross-sectional study was determined to ensure reliable estimation of attitudes toward Mounjaro and Ozempic among healthcare professionals and students, considering their estimated population size, margin of error (ME), and confidence interval (CI). Based on established survey methodology, a CI of 95% and an acceptable ME of 5% were selected. For a population of healthcare professionals and students in Arab countries, a target sample size of at least 384 participants was required to achieve the desired precision and confidence level based on Serdar et al.[70]

Data Analysis

The primary measures of the study were the OOB score and the mini-HBAGS score (based on HBM-TPB constructs) while the secondary measures were the demographic data among participants who were at least somewhat familiar with GLP-1 drugs, specifically Mounjaro and Ozempic.

Principal Component Analysis (PCA) with Promax rotation was used to assess the factorability of items within each construct. Suitability for PCA was evaluated using the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett's test of sphericity. Internal consistency of the constructs was assessed using Cronbach's α.

The OOB score was calculated as the sum of item scores divided by five, using a 5-point Likert scale where strongly agree = 5 and strongly disagree = 1. For the mini-HBAGS scale, two items were reverse-scored to align higher scores with stronger agreement and to reflect the favorable attitude to these medications, and the overall score was calculated as the average of all eight items.

Statistical Analysis

The statistical analyses were performed using IBM SPSS Statistics for Windows, Version 26.0 (Armonk, NY: IBM Corp). Measures of central tendency (mean) and dispersion (standard deviation (SD)) were used to describe scale variables. Normality of the data was assessed using the Kolmogorov–Smirnov (K-S) test. Due to the non-normal distribution of the scale variables ($p<0.001$ for the two variables based on the K–S test), the Mann–Whitney *U*-test (M-W) and Kruskal–Wallis *H*-test (K-W) were used to evaluate associations between scale variables and categorical variables. The associations between categorical variables was checked using the chi-squared (χ^2) test.

Spearman's ρ correlation was applied to assess the relationship between the two scale variables, OOB and mini-HBAGS scores. Variables with $p<0.100$ in univariate analysis were included in multivariate analysis using linear regression, with the average mini−HBAGS score reflecting the overall attitude of participants to Mounjaro and Ozempic as the dependent variable. Multicollinearity was assessed using variance inflation factors (VIF) to ensure the reliability of the regression model. Statistical significance was set at $p\leq0.050$.

Results

Final Sample Description Following QC Checks

Following exclusion of responses that were deemed unacceptable based on fast response that did not entail careful reading of the survey, contradictory responses, incomplete responses, the final study sample comprised 494 respondents (Figure 1).

The study sample predominantly consisted of respondents aged 18–24 years (75.7%), with females comprising 67.2% of participants. The majority were students, including medical students (39.7%) and pharmacy or PharmD students (33.8%), while physicians and pharmacists accounted for 11.1% and 15.4%, respectively. Respondents represented various nationalities, with the largest proportions from Kuwait (32.8%), Egypt (20.9%), Saudi Arabia (18.8%), and

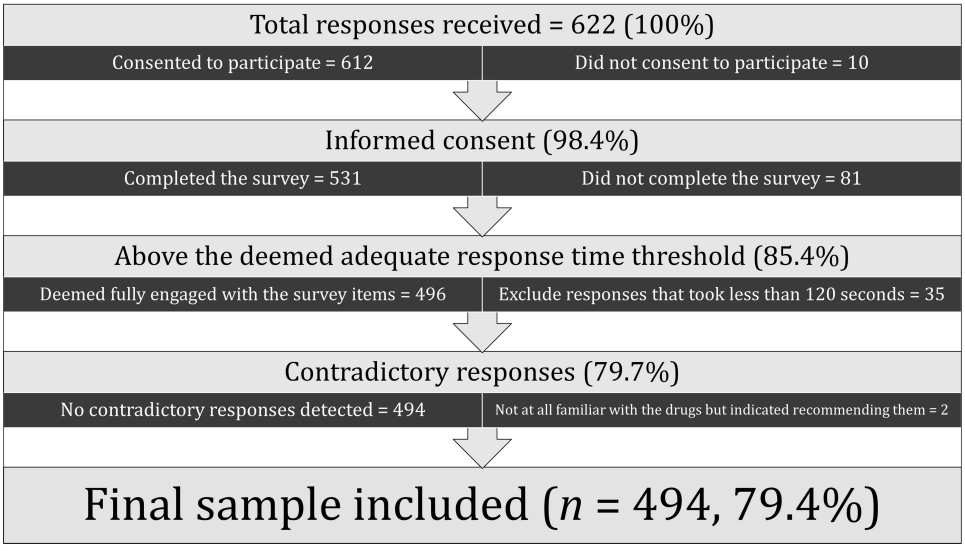

Figure 1 Filtration algorithm based on quality control measures to reach the final study sample.

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Jordan (15.4%). Most self-reported a middle-income financial status (78.5%), and nearly half had a self-reported BMI within the normal range (49.6%). Familiarity with Mounjaro and Ozempic for weight loss was high, with 27.1% being very familiar and 56.5% somewhat familiar. Despite this, only 5.9% reported using these medications, while 17.2% had recommended them for weight loss (Table 1).

Table 1 General Features of the Study Sample (N = 494)

Variable	Category	Count (%)
Age	18–24	374 (75.7)
	25–34	72 (14.6)
	35–44	29 (5.9)
	45–54	17 (3.4)
	55–64	2 (0.4)
Sex	Male	162 (32.8)
	Female	332 (67.2)
What is your current role in the healthcare field?	Medical student	196 (39.7)
	Pharmacy or PharmD student	167 (33.8)
	Physician	55 (11.1)
	Pharmacist or PharmD	76 (15.4)
Nationality	Jordan	76 (15.4)
	Kuwait	162 (32.8)
	Egypt	103 (20.9)
	Saudi Arabia	93 (18.8)
	Others[a]	60 (12.1)
How would you describe the financial status of your family?	Low	17 (3.4)
	Middle	388 (78.5)
	High	89 (18.0)
What is your approximate Body Mass Index (BMI)?	Under 18.5 (Underweight)	36 (7.3)
	18.5–24.9 (Normal weight)	245 (49.6)
	25.0–29.9 (Overweight)	119 (24.1)
	30 or above (Obesity)	37 (7.5)
	I do not know	48 (9.7)
	I prefer not to say	9 (1.8)
Have you ever used any medications or treatments specifically for weight loss?	Yes	69 (14.0)
	No	425 (86.0)

(*Continued*)

Table 1 (Continued).

Variable	Category	Count (%)
How familiar are you with Ozempic or Mounjaro?	Very familiar	134 (27.1)
	Somewhat familiar	279 (56.5)
	Not at all familiar	81 (16.4)
Have you ever used Ozempic or Mounjaro drugs for weight loss?	Yes	29 (5.9)
	No	465 (94.1)
Have you ever recommended Ozempic or Mounjaro drugs for weight loss?	Yes	85 (17.2)
	No	409 (82.8)

Notes: [a]Others: Included Iraq, the United Arab Emirates (UAE), Palestine, Qatar, Bahrain, Sudan, and other unspecified countries.

Significant demographic differences emerged regarding the familiarity, use, and recommendation of Ozempic and Mounjaro as follows. Participants aged 18–24 were the least familiar, 20.1% being not familiar at all, while familiarity increased significantly with age, peaking among participants aged 35–44, where 93.1% were very or somewhat familiar ($p<0.001$).

Nationality showed marked variation, with Egyptians reporting the highest familiarity (69.9% very or somewhat familiar) and recommendation rates (18.4%), in contrast to participants from Saudi Arabia who were the least familiar (27.7% not familiar at all, $p<0.001$) and reported the lowest use of weight-loss medications (4.3%).

Notably, Kuwaiti participants demonstrated the highest use of weight-loss medications (18.5%, $p=0.009$). Healthcare roles significantly influenced familiarity and recommendation behaviors. Pharmacists had the highest familiarity (100% very or somewhat familiar, $p<0.001$) and recommendation rates (31.6%, $p<0.001$), while pharmacy students exhibited lower familiarity (74.9% very or somewhat familiar) and recommendation rates (9.6%, $p<0.001$).

BMI was a strong determinant, with obese participants (BMI ≥30) showing the highest use of weight-loss medications (51.4%, $p<0.001$) and the highest likelihood of recommending GLP-1 drugs (29.7%, $p=0.088$, Table 2).

Factor Analysis of the OOB Construct

The analysis included participants who were at least somewhat familiar with Mounjaro and Ozempic (n = 413). Factor analysis using the PCA of the OOB scale yielded two components explaining 62.74% of the total variance. Component 1 involved attitudes toward obesity, with strong loadings for the items "Being overweight or obese often shows a lack of self-control" (0.864) and "People who are overweight or obese are often less active and productive" (0.793). Component 2 reflected health-related concerns, with high loadings for the items "I worry about the health risks of being overweight or obese" (0.904) and "People who are overweight or obese face serious health risks" (0.788). The item "It is very important to keep a low body weight to stay healthy" showed weaker loadings on both components (0.467 and 0.203, respectively) and the lowest communalities (0.311). The KMO measure of sampling adequacy was 0.608, and Bartlett's test of sphericity was significant ($\chi^2=297.816$, $p<0.001$). Cronbach's α for the OOB scale was 0.611, indicating moderate reliability appropriate for the pilot exploratory nature of the study.

Among participants who were at least familiar with Mounjaro and Ozempic, the mean OOB score was 3.83±0.62 indicating an inclination to agreement with obesity bias. Significant differences in OOB scores were observed by sex, with males scoring higher than females ($p=0.006$). OOB scores also varied significantly across healthcare roles ($p=0.050$), with pharmacists reporting the highest scores (3.97±0.62) and pharmacy students the lowest (3.71±0.69). Nationality was another significant factor ($p=0.024$), with participants from Egypt scoring highest (3.97±0.57) and those from Saudi Arabia scoring lowest (3.66±0.62). No significant associations were found between OOB scores and age, financial status, BMI, prior use of weight-loss medications, or familiarity and recommendation of GLP-1 drugs (all $p>0.05$, Table 3).

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Table 2 Correlation Between Familiarity, Attitude, and Recommendation of Mounjaro and Ozempic and Participants' Demographics (N = 494)

Variable	Category	Have You ever Used any Medications or Treatments Specifically for Weight Loss?			How Familiar are You with Ozempic or Mounjaro?				Have You Ever Used Ozempic or Mounjaro Drugs for Weight Loss?			Have You Ever Recommended Ozempic or Mounjaro Drugs for Weight Loss?		
		Yes	No	*p* value, χ^2	Very Familiar	Somewhat Familiar	Not at all Familiar	*p* value, χ^2	Yes	No	*p* value, χ^2	Yes	No	*p* value, χ^2
		Count (%)	Count (%)		Count (%)	Count (%)	Count (%)		Count (%)	Count (%)		Count (%)	Count (%)	
Age	18–24	40 (10.7)	334 (89.3)	<0.001, 31.143	71 (19.0)	228 (61.0)	75 (20.1)	<0.001, 59.384	15 (4.0)	359 (96.0)	<0.001, 49.971	43 (11.5)	331 (88.5)	<0.001, 33.603
	25–34	10 (13.9)	62 (86.1)		36 (50.0)	33 (45.8)	3 (4.2)		3 (4.2)	69 (95.8)		21 (29.2)	51 (70.8)	
	35–44	10 (34.5)	19 (65.5)		17 (58.6)	10 (34.5)	2 (6.9)		5 (17.2)	24 (82.8)		9 (31.0)	20 (69.0)	
	45–54	8 (47.1)	9 (52.9)		8 (47.1)	8 (47.1)	1 (5.9)		5 (29.4)	12 (70.6)		10 (58.8)	7 (41.2)	
	55–64	1 (50.0)	1 (50.0)		2 (100)	0	0		1 (50.0)	1 (50.0)		2 (100)	0	
Sex	Male	19 (11.7)	143 (88.3)	0.316, 1.006	57 (35.2)	75 (46.3)	30 (18.5)	0.004, 10.859	12 (7.4)	150 (92.6)	0.310, 1.030	33 (20.4)	129 (79.6)	0.193, 1.694
	Female	50 (15.1)	282 (84.9)		77 (23.2)	204 (61.4)	51 (15.4)		17 (5.1)	315 (94.9)		52 (15.7)	280 (84.3)	
What is your current role in the healthcare field?	Medical student	31 (15.8)	165 (84.2)	0.016, 10.349	32 (16.3)	129 (65.8)	35 (17.9)	<0.001, 83.834	17 (8.7)	179 (91.3)	0.005, 12.781	30 (15.3)	166 (84.7)	<0.001, 22.246
	Pharmacy or PharmD student	13 (7.8)	154 (92.2)		34 (20.4)	91 (54.5)	42 (25.1)		1 (0.6)	166 (99.4)		16 (9.6)	151 (90.4)	
	Physician	8 (14.5)	47 (85.5)		19 (34.5)	32 (58.2)	4 (7.3)		5 (9.1)	50 (90.9)		15 (27.3)	40 (72.7)	
	Pharmacist or PharmD	17 (22.4)	59 (77.6)		49 (64.5)	27 (35.5)	0		6 (7.9)	70 (92.1)		24 (31.6)	52 (68.4)	
Nationality	Jordan	9 (11.8)	67 (88.2)	0.009, 13.641	14 (18.4)	44 (57.9)	18 (23.7)	<0.001, 78.180	4 (5.3)	72 (94.7)	<0.001, 21.102	7 (9.2)	69 (90.8)	0.014, 12.500
	Kuwait	30 (18.5)	132 (81.5)		34 (21.0)	108 (66.7)	20 (12.3)		20 (12.3)	142 (87.7)		30 (18.5)	132 (81.5)	
	Egypt	20 (19.4)	83 (80.6)		31 (30.1)	41 (39.8)	31 (30.1)		2 (1.9)	101 (98.1)		19 (18.4)	84 (81.6)	
	Saudi Arabia	4 (4.3)	89 (95.7)		17 (18.3)	67 (72.0)	9 (9.7)		0	93 (100)		11 (11.8)	82 (88.2)	
	Others[a]	6 (10.0)	54 (90.0)		38 (63.3)	19 (31.7)	3 (5.0)		3 (5.0)	57 (95.0)		18 (30.0)	42 (70.0)	
How would you describe the financial status of your family?	Low	1 (5.9)	16 (94.1)	0.409, 1.788	5 (29.4)	7 (41.2)	5 (29.4)	0.038, 10.143	0	17 (100)	0.421, 1.729	3 (17.6)	14 (82.4)	0.514, 1.330
	Middle	58 (14.9)	330 (85.1)		97 (25.0)	222 (57.2)	69 (17.8)		22 (5.7)	366 (94.3)		63 (16.2)	325 (83.8)	
	High	10 (11.2)	79 (88.8)		32 (36.0)	50 (56.2)	7 (7.9)		7 (7.9)	82 (92.1)		19 (21.3)	70 (78.7)	

What is your approximate Body Mass Index (BMI)?	Under 18.5 (Underweight)	1 (2.8)	35 (97.2)	<0.001, 76.574	5 (13.9)	22 (61.1)	9 (25.0)	0.045, 18.649	0	36 (100)	0.002, 19.512	2 (5.6)	34 (94.4)	0.088, 9.592
	18.5–24.9 (Normal weight)	14 (5.7)	231 (94.3)		70 (28.6)	132 (53.9)	43 (17.6)		7 (2.9)	238 (97.1)		42 (17.1)	203 (82.9)	
	25.0–29.9 (Overweight)	29 (24.4)	90 (75.6)		40 (33.6)	61 (51.3)	18 (15.1)		13 (10.9)	106 (89.1)		23 (19.3)	96 (80.7)	
	30 or above (Obesity)	19 (51.4)	18 (48.6)		10 (27.0)	24 (64.9)	3 (8.1)		6 (16.2)	31 (83.8)		11 (29.7)	26 (70.3)	
	I do not know	3 (6.3)	45 (93.8)		5 (10.4)	36 (75)	7 (14.6)		3 (6.3)	45 (93.8)		5 (10.4)	43 (89.6)	
	I prefer not to say	3 (33.3)	6 (66.7)		4 (44.4)	4 (44.4)	1 (11.1)		0	9 (100)		2 (22.2)	7 (77.8)	

Notes: [a]Others: Included Iraq, the United Arab Emirates (UAE), Palestine, Qatar, Bahrain, Sudan, and other unspecified countries.

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Table 3 Association Between Obesity/Overweight Bias (OOB) Scores with Different Study Variables (n = 413)

Variable	Category	Average OOB score	*p* value[b]
		Mean±SD	
Age	18–24	3.79±0.62	0.128
	25–34	3.98±0.60	
	35–44	3.92±0.62	
	45–54	3.84±0.78	
	55–64	4.00±0	
Sex	Male	3.93±0.65	0.006
	Female	3.79±0.60	
What is your current role in the healthcare field?	Medical student	3.87±0.55	0.050
	Pharmacy or PharmD student	3.71±0.69	
	Physician	3.80±0.63	
	Pharmacist or PharmD	3.97±0.62	
Nationality	Jordan	3.79±0.59	0.024
	Kuwait	3.90±0.60	
	Egypt	3.97±0.57	
	Saudi Arabia	3.66±0.62	
	Others	3.76±0.72	
How would you describe the financial status of your family?	Low	3.93±0.65	0.675
	Middle	3.84±0.64	
	High	3.80±0.55	
What is your approximate Body Mass Index (BMI)?[a]	Under 18.5 (Underweight)	3.70±0.63	0.333
	18.5–24.9 (Normal weight)	3.82±0.66	
	25.0–29.9 (Overweight)	3.85±0.61	
	30 or above (Obesity)	3.97±0.60	
Have you ever used any medications or treatments specifically for weight loss?	Yes	3.90±0.63	0.298
	No	3.82±0.62	
Have you ever used Ozempic or Mounjaro drugs for weight loss?	Yes	3.88±0.71	0.204
	No	3.83±0.62	
Have you ever recommended Ozempic or Mounjaro drugs for weight loss?	Yes	3.90±0.59	0.398
	No	3.81±0.63	

Notes: [a]BMI: Participants who selected "prefer not to say" or "I do not know" for their BMI were excluded; [b]*p* value: Calculated using the Mann-Whitney *U* and the Kruskal Wallis *H*-tests.

Abbreviations: OOB, obesity/overweight bias scale; SD, Standard deviation.

Factor Analysis for the Mini-HBAGS Scale

Factor analysis of the mini-HBAGS scale was also conducted among participants familiar with Mounjaro and Ozempic (n=413). The KMO measure of sampling adequacy was 0.890, indicating strong suitability for factor analysis, and Bartlett's test of sphericity was significant (χ^2=1624.706, p<0.001), confirming adequate inter-item correlations.

PCA with Promax rotation identified two components explaining a cumulative variance of 68.28%, with the first component accounting for 53.94% and the second contributing an additional 14.34%. Component 1 primarily captured positive attitudes and behavioral intentions toward Mounjaro and Ozempic, with high loadings for items such as "I feel positive about recommending Mounjaro and Ozempic for weight loss" (0.869) and "Positive news about Mounjaro and Ozempic would make me more likely to accept them for weight loss" (0.848). Component 2 reflected barriers and concerns about Mounjaro and Ozempic, including cost and side effects, with high loadings for "Mounjaro and Ozempic cost too much for most people to use long-term" (0.810) and "The side effects of Mounjaro and Ozempic make them less appealing for weight loss" (0.609). The overall internal consistency of the scale was high, with a Cronbach's α of 0.828 across the eight items.

The average mini-H-BAGS (Mini Health Beliefs and Attitudes toward GLP-1 Drugs Scale) score among the participants with at least somewhat familiarity with Mounjaro and Ozempic was 2.70±0.716 indicating slight disagreement (unfavorable attitude). The highest agreement was noticed for the items "Mounjaro and Ozempic cost too much for most people to use long-term" with a mean score of 3.77±0.85 and "The side effects of Mounjaro and Ozempic make them less appealing for weight loss" with a mean score of 3.54±0.98 while the highest disagreement was observed for the item "If people I know recommended Mounjaro and Ozempic for weight loss, I would think about using them" with a mean score of 2.42±1.13. Upon stratification per OBB two categories (agreement vs neutral/disagreement) and comparing the score for each mini-H-BAGS item, participants agreeing with OOB were more likely to believe that positive news about Mounjaro and Ozempic would increase their likelihood of acceptance for weight loss (p=0.004). Additionally, they were significantly more likely to feel positive about recommending these drugs for weight loss (p=0.042) and to consider using them if recommended by people they know (p=0.030, Figure 2).

A Spearman correlation analysis revealed a weak but statistically significant positive association between the average OOB score, and the average mini-H-BAGS score, with a correlation coefficient ρ of 0.129 (p=0.009). This suggests that higher bias toward obesity/overweight is modestly associated with more favorable attitudes and beliefs toward GLP-1 drugs.

Univariate Analysis for the Determinants of Attitude to GLP-1 Drugs

Univariate analysis revealed significant associations between mini-HBAGS scores and various study variables. Mini-HBAGS scores increased with age, with participants aged 55–64 reporting the highest average score (3.44±0.09, p<0.001). Males reported significantly higher scores than females (2.81±0.76 vs 2.65±0.69, p=0.036). Healthcare role was also significant, with physicians and pharmacists reporting the highest scores (2.98±0.66 and 2.98±0.64, respectively), compared to medical students, who had the lowest scores (2.56±0.74, p<0.001).

Nationality showed marked differences, with participants from Egypt reporting higher scores (2.94±0.68) compared to those from Saudi Arabia (2.48±0.68, p<0.001). BMI was significantly associated with mini-HBAGS scores (p=0.033), with overweight participants (25.0–29.9) scoring higher (2.82±0.70) than underweight participants (2.35±0.79). Participants who had previously used medications for weight loss reported significantly higher scores (2.96±0.80) than those who had not (2.65±0.69, p=0.001). Those who had used Mounjaro and Ozempic scored the highest overall (3.51 ±0.47, p<0.001), as did participants who had recommended these drugs for weight loss (3.19±0.62 vs 2.58±0.69, p<0.001, Table 4).

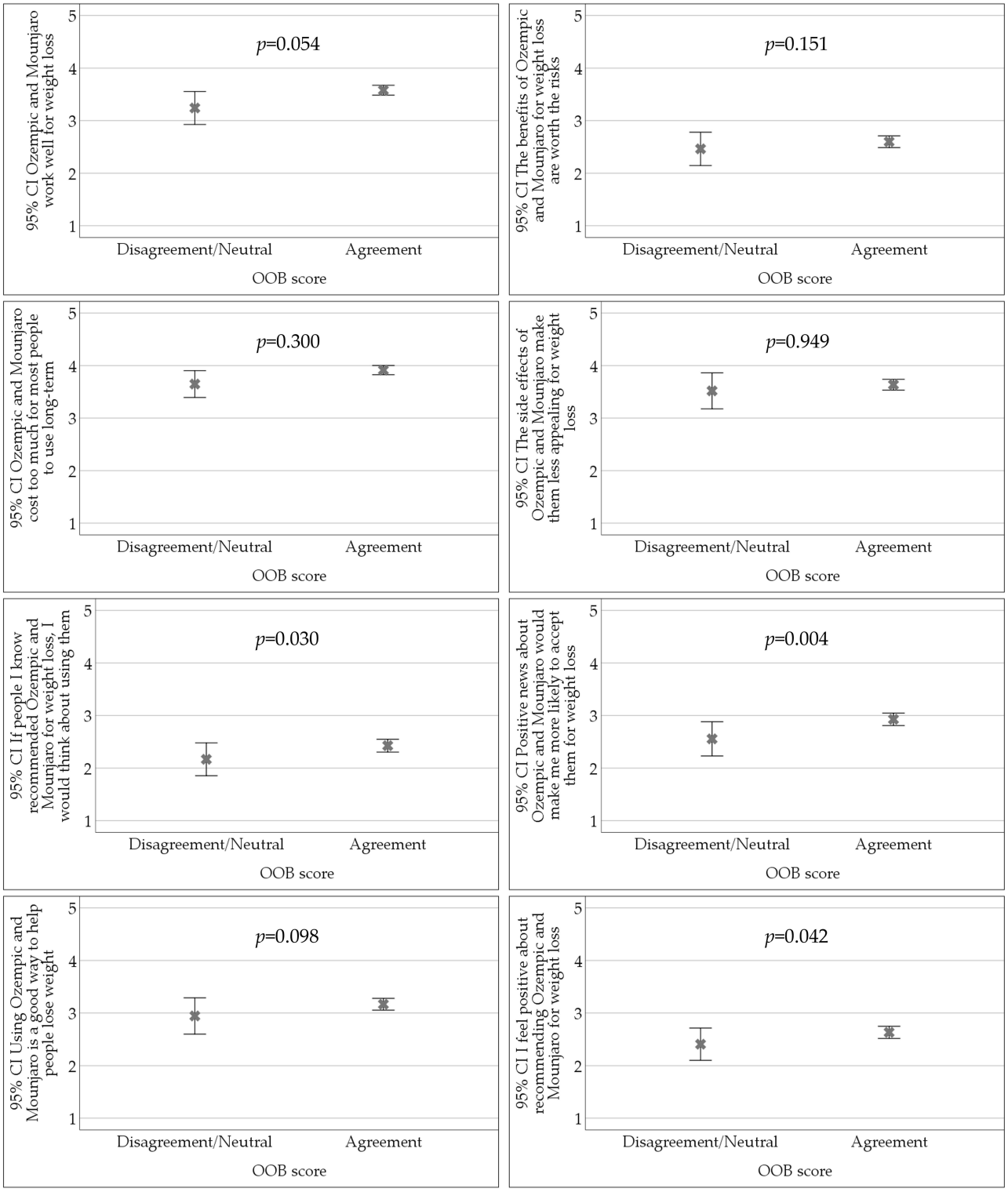

Figure 2 Error bars showing the associations between obesity/overweight bias (OOB) categories items of the health beliefs and attitudes toward glucagon-like peptide-1 (GLP-1) drugs scale. *p* values were calculated using the Mann Whitney *U*-test. CI: confidence interval of the mean.

Table 4 Association Between Mini-HBAGS Scores with Different Study Variables (n = 413)

Variable	Category	Average Mini-HBAGS Score	*p* value[b]
		Mean±SD	
Age	18–24	2.59±0.71	<0.001
	25–34	2.96±0.67	
	35–44	3.07±0.49	
	45–54	2.95±0.77	
	55–64	3.44±0.09	
Sex	Male	2.81±0.76	0.036
	Female	2.65±0.69	
What is your current role in the healthcare field?	Medical student	2.56±0.74	<0.001
	Pharmacy or PharmD student	2.61±0.68	
	Physician	2.98±0.66	
	Pharmacist or PharmD	2.98±0.64	
Nationality	Jordan	2.84±0.64	<0.001
	Kuwait	2.59±0.77	
	Egypt	2.94±0.68	
	Saudi Arabia	2.48±0.68	
	Others	2.89±0.59	
How would you describe the financial status of your family?	Low	3.01±0.58	0.153
	Middle	2.71±0.71	
	High	2.63±0.75	
What is your approximate Body Mass Index (BMI)?[a]	Under 18.5 (Underweight)	2.35±0.79	0.033
	18.5–24.9 (Normal weight)	2.72±0.69	
	25.0–29.9 (Overweight)	2.82±0.70	
	30 or above (Obesity)	2.77±0.86	
Have you ever used any medications or treatments specifically for weight loss?	Yes	2.96±0.80	0.001
	No	2.65±0.69	
Have you ever used Ozempic or Mounjaro drugs for weight loss?	Yes	3.51±0.47	<0.001
	No	2.64±0.70	
Have you ever recommended Ozempic or Mounjaro drugs for weight loss?	Yes	3.19±0.62	<0.001
	No	2.58±0.69	

Notes: [a]BMI: Participants who selected "prefer not to say" or "I do not know" for their BMI were excluded; [b]*p* value: Calculated using the Mann-Whitney *U* and the Kruskal Wallis *H*-tests.

Abbreviations: mini-HBAGS, Health Beliefs and Attitudes toward GLP-1 Drugs Scale; SD, Standard deviation.

Table 5 Multivariate Linear Regression Analysis of Factors Associated with Average Mini-HBAGS Scores (n = 364)

Dependent Variable: Average mini−HBAGS score	B	Beta	*p* value	VIF
Average OOB score	0.112	0.099	**0.038**	1.034
Age	−0.068	−0.079	0.223	1.939
Sex	−0.016	−0.010	0.836	1.093
What is your current role in the healthcare field?	0.175	0.273	**<0.001**	1.692
Nationality	0.003	0.006	0.913	1.165
What is your approximate Body Mass Index (BMI)?	0.081	0.084	0.12	1.344
Have you ever used any medications or treatments specifically for weight loss?	0.275	0.142	**0.028**	1.906
Have you ever used Ozempic or Mounjaro drugs for weight loss?	−0.867	−0.308	**<0.001**	1.773
Have you ever recommended Ozempic or Mounjaro drugs for weight loss?	−0.420	−0.238	**<0.001**	1.296

Note: Statistically significant *p* values are highlighted in bold style.
Abbriviations: mini-HBAGS, Health Beliefs and Attitudes toward GLP-1 Drugs Scale; OOB, Obesity/overweight bias scale; VIF, Variance inflation factor.

Determinants of Health Beliefs Towards Mounjaro and Ozempic in Multivariate Analysis

Multivariate analysis identified significant determinants of health beliefs and attitudes toward Mounjaro and Ozempic, as measured by the average mini-HBAGS score. The model explained 22.8% of the variance (adjusted R^2=0.208, p<0.001), with a significant overall fit (F(9, 354)=11.623, p<0.001).

Among the predictors, current role in the healthcare field (B=0.175, p<0.001), use of weight-loss medications (B=0.275, p=0.028), and average OOB score (B=0.112, p=0.038) were positively associated with higher mini-HBAGS scores, indicating favorable health beliefs and attitudes toward Mounjaro and Ozempic.

Participants who had used Mounjaro or Ozempic for weight loss (B=−0.867, p<0.001) or had recommended these drugs (B=−0.420, p<0.001) demonstrated less favorable attitudes. Other factors, including age, sex, nationality, and BMI, were not significant predictors in the model (p>0.05, Table 5).

Discussion

In this study, we sought to evaluate the attitudes of healthcare professionals and health students toward the rising use of GLP-1 receptor agonists for weight loss, specifically Mounjaro and Ozempic. The focus can be seen as both timely and relevant, given the critical role this demographic plays to shape public perceptions and guide the prescription of these medications. The exploration of health beliefs towards Mounjaro and Ozempic from the perspective of obesity/overweight bias was central to this investigation. While the term "bias" often carries negative connotations, in this study, it represented dual dimensions that warrant careful examination. On one hand, obesity bias may stem from stigmatizing societal attitudes, influencing perceptions of body weight with an element of prejudice. On the other hand, it can reflect an informed recognition of the health risks associated with obesity, emphasizing clinical concern rather than stigma. This duality—where obesity bias can either guide appropriate medical intervention or create barriers to equitable care—necessitates targeted interventions. To ensure equitable care, education must help distinguish stigma from evidence-based concern, while policies should integrate bias awareness into guidelines, promoting rational, patient-centered medication use.

The rapid rise of GLP-1 receptor agonists like Mounjaro and Ozempic in Arab countries and globally highlights their perceived efficacy and the societal drive toward idealized body standards.[30,37,71–73] This surge also reflects the appeal of pharmacotherapy over lifestyle modifications or surgical interventions for weight loss. For example, Srivastava &

Apovian reported that pharmacotherapy for weight management requires less immediate lifestyle change compared to rigorous diet and exercise regimens.[74] Additionally, pharmacotherapy for weight management is non-invasive and present a lower perceived risk compared to bariatric surgery.[75] However, the enthusiasm about the potential of Mounjaro and Ozempic for weight management must be accompanied by an awareness of associated risks. These risks include serious adverse events such as anaphylaxis, cardiovascular complications, gastrointestinal, thyroid, psychiatric effects, and fatalities, as recently reviewed by Tobaiqy.[49]

Our study revealed slightly unfavorable attitudes toward Mounjaro and Ozempic, as reflected in average mini-HBAGS scores. These attitudes were associated with professional role and previous experience with weight-management medications, including Mounjaro and Ozempic. Multivariate analysis also showed that agreement with obesity/overweight bias correlated with more positive views of these medications. Specifically, pharmacists/PharmDs and physicians displayed more favorable attitudes toward Mounjaro and Ozempic, likely due to their advanced clinical familiarity with medications. In contrast, students showed less favorable attitudes to Mounjaro and Ozempic. This result might reflect the students' limited clinical exposure to these new medications and a cautious perspective shaped by theoretical knowledge and reports of adverse events.

Additionally, the study results showed that the previous use of Ozempic or Mounjaro was significantly associated with less favorable attitudes, likely reflecting dissatisfaction with side effects or unmet expectations. Similarly, participants who recommended these medications reported less favorable attitudes, potentially influenced by professional experiences with patient dissatisfaction or adverse outcomes. This is consistent with recent literature that documented increased reports of adverse effects associated with GLP-1 receptor agonists. For example, Davide Arillotta et al showed that discussions on open platforms such as Reddit, YouTube, and TikTok highlighted mental health concerns linked to GLP-1 receptor agonists, including insomnia, anxiety, and mood fluctuations.[76] Additionally, Tobaiqy and Elkout identified rare psychiatric adverse events (1.2%) associated with GLP-1 receptor agonists, including depression (50.3%), anxiety (38.7%), and suicidal ideation (19.6%).[77] Notably, nine fatal outcomes, mostly in men, were linked to suicides and depression.[77] Moreover, Long et al noted that while GLP-1 agonists effectively improve glucose control and weight loss, they are associated with adverse events, including gastrointestinal disturbances, pancreatitis, renal complications, and diabetic retinopathy.[78]

Importantly, shortages and high costs of GLP-1 receptor agonists have driven some patients to unregulated sources, increasing the risk of severe complications, underlining the need for cautious use and monitoring.[78] This concern was highlighted by a recent World Health Organization (WHO) news release warning of falsified semaglutide products used for DM and weight loss.[79] Falsified GLP-1 receptor agonists may lack essential components, leading to ineffective weight management or uncontrolled blood glucose levels.[79] Worse, undeclared ingredients, such as insulin, pose risks like hypoglycemia.[79] High costs also limit GLP-1 receptor agonists accessibility particularly in resource-limited settings, where affordable risky alternatives exist.[80,81] Thus, our finding of slightly unfavorable attitudes toward Mounjaro and Ozempic appears plausible in this context. Notably, 17% of respondents in this study reported recommending Mounjaro and Ozempic for weight management. This direct exposure to Mounjaro and Ozempic likely provided insights into patient experiences, outcomes, and potential adverse events, reinforcing the robustness of the study's assessment of attitudes to these medications.

In this study, obesity/overweight bias correlated with favorable attitudes toward Mounjaro and Ozempic. This result suggests that individuals perceiving obesity as a critical health risk may view pharmacotherapy as a suitable option for weight management. However, the same result raises concerns as obesity stigma among healthcare providers can negatively affect clinical decision-making, interpersonal behavior, and patient care. Such biases may lead to patient mistrust, care avoidance, and poor treatment adherence, ultimately compromising the quality of care for patients with obesity.[82]

Further dissection of our study findings, using the HBM and TPB frameworks highlighted Perceived Benefits, Perceived Barriers, Subjective Norms, and Attitude toward the Behavior as important determinants of attitudes toward Mounjaro and Ozempic. Perceived Benefits, translated into the perceived effectiveness of Mounjaro and Ozempic in resulting in weight loss, act as compelling motivators. Beliefs that certain drugs work well or that their benefits outweigh the risks align with established health behavior research, where perceived advantages strongly influence medication

recommendation and use. For example, Kelly et al demonstrated that validated measures of perceived risk, efficacy, and benefit hold promise for accurately assessing direct-to-consumer prescription drug promotion.[83] Similarly, Arney et al found that physicians were more likely to fulfill prescription drug requests when they perceived patients as having a clear understanding of the drug's risks and its relevance to their condition.[84]

Conversely, Perceived Barriers, including high costs and potential side effects, emerged as significant constraints on favorable attitudes toward Mounjaro and Ozempic. Economic and safety concerns complicate decisions, particularly for treatments addressing socially significant but non-critical conditions like obesity. These findings align with the results of a systematic review by Medlinskiene et al, which highlighted that factors such as cost, reimbursement policies, and clinical guidelines that critically influence the adoption of new medications.[85]

In this study, Subjective Norms emerged as an influential aspect of the novel scale to measure attitudes of health professionals and students toward Mounjaro and Ozempic. Peer recommendations and positive media coverage appear to play a notable role to promote favorable attitudes to Mounjaro and Ozempic, highlighting the social and cultural influences on health-related decisions. These findings align with previous studies that emphasized the role of health messaging to shape perceptions of new medications.[86–88]

Finally, Attitude Toward the Behavior, a central construct of the TPB, captured participants' overall favorability toward recommending or using Mounjaro and Ozempic. This reflects a complex interplay of personal beliefs, professional responsibilities, and societal narratives surrounding weight management. Collectively, all the aforementioned findings in within the context of HBM and TPB frameworks pointed to the convergence of perceived efficacy, barriers, social norms, and attitudes as important predictors of intentions to use or recommend Mounjaro and Ozempic.

This study also highlighted demographic differences in the familiarity, use, and recommendation of Mounjaro and Ozempic, reflecting a complex interplay of professional, cultural, and health-related factors. Familiarity increased significantly with age, peaking among mid-career professionals aged 35–44, likely due to accumulated clinical experience and decision-making roles. National disparities also emerged, potentially influenced by cultural factors, including public figures discussing these medications.[89]

In this study, participants from Kuwait reported the highest use of weight-loss medications (18.5%), a finding likely linked to the relatively high obesity rates in GCC countries, including Kuwait and Saudi Arabia, where obesity prevalence exceeds 40% among women in some cases.[51,90–92] This alarming trend, closely linked to diseases such as cardiovascular disease and DM, underscores the growing interest in GLP-1 drugs like Mounjaro and Ozempic as potential solutions for this recognized epidemic in the region.[53,93]

Future efforts can build on our study findings to further explore how healthcare professionals' attitudes toward GLP-1 receptor agonists, such as Mounjaro and Ozempic, influence their use and recommendation, as well as the broader implications of obesity/overweight bias in different cultural contexts. The observed slightly unfavorable attitudes, alongside the link between obesity bias and more favorable views, underline the need for targeted educational initiatives. These programs should provide a balanced understanding of GLP-1 receptor agonists, emphasizing their benefits, risks, and limitations while addressing weight-related bias. Policy improvements are equally important in Arab countries to address barriers like high costs and limited access of GLP-1 receptor agonists, which contribute to the use of falsified weight-management medications. Finally, further research in diverse contexts is recommended to validate the constructs developed in this study and to deepen insights into the interplay between professional attitudes, societal influences that drive the use and recommendation of GLP-1 receptor agonists including Mounjaro and Ozempic.

Finally, in spite of the study strengths that included its novel approach, multi-national scope, and rigorous QC for the responses, several limitations warrant consideration. First, the reliance on self-reported data can introduce potential biases, such as social desirability and recall inaccuracies, particularly on sensitive topics like attitudes toward obesity/overweight. Specifically, the use of self-categorized BMI and financial status classifications may have led to variability in responses based on individual perceptions. Collecting direct height and weight measurements for BMI calculation would have improved accuracy which is recommended for future studies. Second, although the overall sample size met the required threshold for statistical reliability, the distribution of participants across countries varied with an overall small sample size, which may limit the generalizability of our results. Future studies with larger, more balanced country-level samples are recommended to enhance the representativeness of results. Importantly, the use of nationality as a variable may not fully capture sociocultural

and healthcare influences on attitudes toward GLP-1 medications. Variability in country-level sampling limits representativeness, warranting more balanced sampling in future studies. Third, the cross-sectional design limited causal inference, providing only a single view of attitudes rather than their progression over time. Based on the growing use of GLP-1 medications for weight management, longitudinal studies are needed to track changing attitudes to these medications over time. Fourth, the inclusion of only healthcare professionals and students narrows generalizability by excluding both dietitians, who play a key role in obesity management, and the broader population directly affected by obesity bias and frequent medication use. Fifth, the convenience sampling approach used to gather the data in this study could have skewed the sample toward individuals with internet access and health literacy, introducing an element of selection bias. Finally, while the constructs based on the HBM and the TPB are robust, the miniaturized version of the scale adopted in this study may not fully capture the cultural and psychological complexities shaping attitudes toward Mounjaro and Ozempic. Despite these limitations, this study can be seen as an initial effort that is relevant for understanding the intersection of obesity bias and attitudes toward emerging pharmacological interventions for weight management. This can be particularly relevant in Arab countries and can guide future longitudinal and broader population-based research to build on our findings.

Conclusions

This study investigated the perspectives of healthcare professionals' and students' toward GLP-1 receptor agonists, specifically Mounjaro and Ozempic in Arab countries. The study revealed a slightly negative overall attitude to Mounjaro and Ozempic. Obesity/overweight bias modestly correlated with favorable attitudes to Mounjaro and Ozempic, suggesting that viewing obesity as a critical health risk drives support for pharmacological interventions. However, this raises concerns about over-reliance on these drugs, influenced by implicit biases and societal pressures surrounding body image. Demographic differences highlighted the influence of professional roles, cultural factors, and personal health perspectives, with pharmacists and obese participants exhibiting the most favorable attitudes to Mounjaro and Ozempic. Broader skepticism emerged due to concerns over side effects and cost. These findings emphasize the importance of balanced, evidence-based education to equip healthcare providers with the knowledge needed to use or recommend Mounjaro and Ozempic responsibly, prioritizing safety, equity, and bias-free patient care.

Abbreviations

BMI, Body mass index; CI, Confidence interval; DM, Diabetes mellitus; FDA, The US Food and Drug Administration; GCC, Gulf Cooperation Council; GLP-1, Glucagon-like peptide-1; HBAGS, Health Beliefs and Attitudes toward GLP-1 Drugs Scale; HBM, Health Belief Model; KMO, Kaiser-Meyer-Olkin; K-S, Kolmogorov–Smirnov test; K-W, Kruskal–Wallis *H*-test; ME, Margin of error; M-W, Mann–Whitney *U*-test; OOB, Obesity/Overweight Bias Scale; PCA, Principal Component Analysis; QC, Quality control; SD, Standard deviation; TPB, Theory of Planned Behavior; UAE, The United Arab Emirates; VIF, Variance inflation factors; WHO, World Health Organization.

Data Sharing Statement

The data presented in this study are available on request from the corresponding author (M.S.).

Ethics Approval and Consent to Participate

Ethical approval was obtained from the Institutional Review Board (IRB) at the Deanship of Scientific Research, Al-Ahliyya Amman University, Jordan, in adherence to the Declaration of Helsinki. Participation was voluntary, with no monetary incentives, and all respondents provided electronic informed consent.

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Author Contributions

All authors made a significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis and interpretation, or in all these areas; took part in drafting, revising or critically reviewing the article; gave final approval of the version to be published; have agreed on the journal to which the article has been submitted; and agree to be accountable for all aspects of the work.

Disclosure

The authors report no conflicts of interest in this work.

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