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ARTICLE

Applicability of obesity clinical practice guidelines in low- and middle-income countries

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Abstract

Obesity is a chronic disease and its impact on individuals and society is a major global health problem, with a high prevalence across all socio-economic strata. Some specialty societies include obesity management related recommendations in clinical practice guidelines, but relatively few guidelines are specifically designed to fully address its diagnosis and management. We sought to understand clinicians' use of obesity clinical practice guidelines in their practice, the perceived deficiencies and implementation barriers, and differences between those practicing in high-income countries (HIC) and those in low-/middle-income countries (LMIC). An email survey of physicians in the Translational Medicine Academy database was offered from August 26 to December 26, 2024 to inquire about participants' demographic information, experience, and views of obesity guidelines as related to their practice. Of 1,412 participating clinicians from 129 countries, 741 partially completed, and an additional 671 fully completed the survey: 281 practiced in HIC; 1,130 in LMIC. Obesity was recognized as a disease (93.5% of respondents) as was its impact on other disorders: cardiovascular disease ranked as the most important, and hepatic disorders the least, with no differences between HIC and LMIC. Only 13.1% regarded the guidelines as equally applicable across different economic strata and geography, and just 29% thought the guidelines to be applicable in their country, with no difference between HIC and LMIC. The most frequently indicated reason given for hindering implementation of obesity guidelines was that they were primarily relevant for HIC; the most common local factor hindering implementation was cost, with no difference in views between HIC and LMIC. There was broad agreement (83.4%) for the importance/need for specific recommendations for patients of differing socio-economic status, with no difference between HIC (79.4%) and LMIC (84.3%; p=0.191), and for guideline authors to include those from LMIC (68.7%), with those from LMIC agreeing more strongly (73.1%) than did those from HIC (50.4%; p<0.00001). Most clinicians from both HIC and LMIC do not consider obesity guidelines to be applicable in their country, and appear to have minimal recognition of obesity's impact on hepatic disorders, suggesting a need for improved clinician education and awareness. It was widely recognized that guidelines should have specific recommendations directed at differing socio-economic environments, and writing committees including authors from those settings.

Key words: obesity; clinical practice guidelines; survey; implementation; obstacles; low-, middle-, and high-income countries.

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Introduction

Obesity is a chronic disease with a high, increasing global prevalence.[1,2] While a common perception may be that it is predominantly a problem of high-income countries, the data do not support that belief: none of the ten countries with the highest prevalence of obesity in adults,[1] ranging from 48%-76%, are classified as such.[3]

Obesity has an important impact on individual and societal burdens in addition to a significant impact on other chronic diseases. Clinical practice guidelines specific for obesity have been published.[4-11] In addition, the impact of obesity on various disorders, such as diabetes, cardiovascular, metabolic, renal, and hepatic disorders have led several organizations and professional societies to include obesity diagnosis or management, or both, within their clinical practice guidelines directed at their specialty.[12-22] Additionally, obesity may result in increased perioperative complications and hospital stays.[23,24]

Clinical practice guidelines encounter hurdles not only in their writing, but in their understanding and implementation by health care professionals, as well. Among the recognized issues is that they are generally written by experts from, and directed to, practitioners in high-income countries, resulting in potentially limited application to clinicians and patients in other environments.[25] This problem may be more important for guidelines for obesity, given its high prevalence in low- and middle-income countries. An additional unsettled question is that of the best criteria to use for diagnosis, and if and how it (they) should be adjusted for different genetic/cultural populations.[26]

The advent of newer pharmacologic interventions has potentially amplified the barrier(s) to implementation of guidelines.

Consequently, we sought to understand clinicians' ability to implement obesity guidelines and their perceptions of the applicability of the current obesity guidelines in low- and middle-income countries. We tested our hypothesis that clinicians believe that obesity guidelines are more applicable to high-income countries than to low- and middle-income countries, despite the substantial prevalence of obesity in those environments, and that this perception is less prevalent in the high-income countries.

Methods

We conducted an international, internet-based survey of physicians who treat patients with obesity, from August 26, 2024 to December 26, 2024. The invitation to participate was offered by email notification to the physicians in the database of the Translational Medicine Academy (TMA), a non-profit medical education organization based in Basel, Switzerland, whose main objective is to enhance patient care and improve patients' outcomes globally by developing and disseminating research and educational programs addressing unmet medical needs. TMA's educational resources, including online conferences, web site, and webinars, are available for free to healthcare professionals worldwide. The invitation was sent to 41,315 practitioners a total of three times (original invitation plus two reminders) and was posted on social media, as well. The invitation included the purpose of the survey. Both the invitation and the survey were in English. The database used consists of all those who participated in any of the TMA educational programs in the past decade. The survey inquired of participants' demographic information, experience, estimate of resources applied for obesity care, and views of obesity guidelines as related to their practice; all questions were multiple choice. QuestionPro® was used for survey dissemination and data accumulation. Responses to each question were included from all survey respondents whether the survey was partially or fully completed.

We compared responses from clinicians in high-income countries (as categorized by the International Monetary Fund[3]) with those from other countries using Fisher's exact test for categorical variables, and unpaired t-test for continuous variables. A p-value ≤0.05 was considered statistically significant. Continuous data are presented as mean (SD) or median (quartiles) if not normally distributed; categorical data as number (%).

Results

Respondents' demographics

Of the 41,315 who were invited to participate, 5,021 (12·2% of those invited) accessed the survey, of whom 671 fully completed the survey, and an additional 741 partially completed the survey; 28.1% of those who accessed the survey provided responses. Those participating in the survey were from 129 countries; 281 practiced in high-income countries, and 1,130 in other nations (Table 1). The countries in each category with the most respondents were: high-income countries: U.S., 37; UK, 35; France, 34; Germany, 31; and Italy, 21; low- and middle-income countries: Mexico, 322; China, 121; Russia, 54; India, 48; and United Arab Emirates, 40. The median (IQ) time spent responding to the survey was 5.9 (1.3, 10.9) min. Of those responding, 47.1% were female, with the fraction not differing between high-income country responders (45.6%) and those from other countries (47.4%; p=0.642; Table 1). Approximately three-quarters of respondents had been in practice for more than 5 years, with about 14% with ≤5 years of practice, and approximately 11% were in training, without statistically significant differences between high- and mid-/low-income countries for any of these categories (p-values range 0.27 - 0.65; Table 1). The majority of respondents indicated the evaluation and management of obesity was less than 40% of their practice (68.1%). This response did not differ between high- (72.6%) and middle-/low-income groups (67.2%; p=0.184; Table 1).

Because an unanticipated and substantial proportion of respondents from middle-/low-income countries were from Mexico (28.4%), we tested for differences in responses, by Fisher's exact test, between those from Mexico and those from other middle-/low-income countries. The responses from respondents from Mexico were similar to those from other middle-/low-income

countries; there were some occasional statistically significant differences that were numerically small and not clinically meaningful. Consequently, we did not provide a separate post-hoc analysis of the responses from Mexican respondents and the others.

Respondents' views of obesity

There was a nearly universal belief that obesity is a disease, with 93.5% of all respondents replying affirmatively, and although there was a statistical difference (p=0.018) between the high-income and other countries, the absolute difference was small (89.4% *vs* 94.5%). The most frequent criterion used to diagnose obesity was body mass index (BMI; 92.0%), with no difference between high- (93.1%) and middle-/low-income countries (91.7%; p=0.65; Table 2, Figure 1). Waist circumference was the second most commonly used criterion, overall 46.4%, with again, no statistical difference between the two economic groups (p=0.24). The only diagnostic parameter that had a statistical and clinically meaningful difference was that of waist-to-hip ratio (high-income 19.4% *vs* middle-/low income 28.1%, p=0.018).

Table 1. Survey respondents' demographics.

	All	High-income	Low/middle income	*p*
Respondents*	1,411	281	1,130	
Gender[#]				
Total	1,094	204	890	
Male	579 (52.9)	111 (54.4)	468 (52.6)	
Female	515 (47.1)	93 (45.6)	422 (47.4)	0.642
Career stage				
Total	1,042	194	848	
In training	113 (10.8)	17 (8.8)	96 (11.3)	0.370
In practice <5 yrs	147 (14.1)	25 (12.9)	122 (14.4)	0.648
In practice >5 yrs	782 (75.0)	152 (78.4)	630 (74.3)	0.270
Proportion of practice is obesity evaluation or management				
N	995	179	816	
0-19%	376 (37.8)	79 (44.1)	297 (36.4)	0.061
20-39%	302 (30.4)	51 (28.5)	251 (30.8)	0.591
40-59%	196 (19.7)	28 (15.6)	168 (20.6)	0.147
<40%[§]	678 (68.1)	130 (72.6)	548 (67.2)	0.184
60-79%	96 (9.6)	14 (7.8)	82 (10.0)	0.404
80-100%	25 (2.5)	7 (3.9)	18 (2.2)	0.189

*Respondents are those that answered any question; all other data are from all who answered that specific question; [#]does not include those who declined to provide their gender; data are number responding (% of responders); [§]calculated from the individual responses for that question; *p* is for the comparison between the responses from practitioners in high-income *vs* low- and middle-income countries.

Table 2. Obesity diagnosis and impact.

	All	High-income	Low/middle income	*p*
Criteria for diagnosing obesity*				
N	972	175	797	
Weight	323 (33.2)	53 (30.3)	270 (33.9)	0.3769
BMI	894 (92.0)	163 (93.1)	731 (91.7)	0.6451
Waist circumference	451 (46.4)	74 (42.3)	377 (47.3)	0.2419
Waist/hip circumference	258 (26.5)	34 (19.4)	224 (28.1)	0.0182
BMI + (waist circumference or waist/hip circumference)[#]	452 (46.5)	76 (43.4)	376 (47.2)	0.4028
Long-term impact of obesity on health (ranked as first choice of multiple choices)				
N	895	167	728	
Overall burden	77 (8.6)	19 (11.4)	58 (8.0)	0.1684
Cardiovascular	417 (46.6)	77 (46.1)	340 (46.7)	0.9315
Diabetes	170 (19.0)	27 (16.2)	143 (19.6)	0.3266
Hepatic problems	15 (1.7)	2 (1.2)	13 (1.8)	>0.9999
Mental health/self-esteem	46 (5.1)	9 (5.4)	37 (5.1)	0.8467
Mobility	42 (4.7)	11 (6.6)	31 (4.3)	0.2219
All of the above	128 (14.3)	22 (13.2)	106 (14.6)	0.7140

*More than one selection was allowed for this question; N is the number of responders; the data are number of responses (%); [#]calculated from the individual responses for that question; *p* is for the comparison between the responses from practitioners in high-income *vs* low- and middle-income countries.

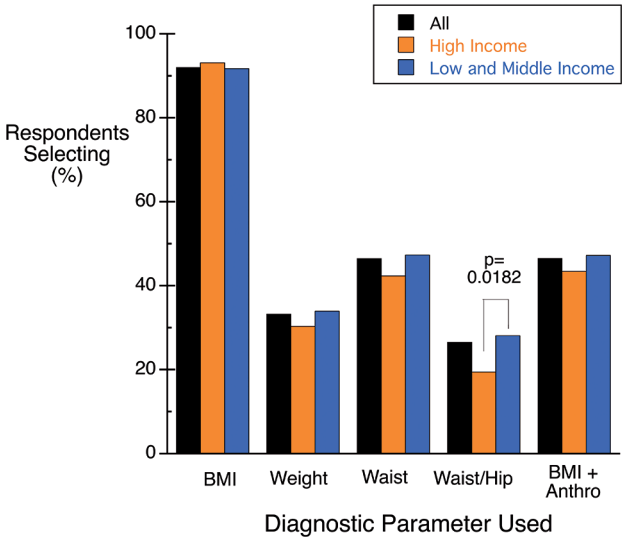

Figure 1. Percent of responders using each obesity diagnostic criterion. Probability values (*p*) are for comparisons between respondents from high-income and low-/ middle-income countries.

When asked to rank the greatest clinical impact of obesity on six conditions, there were no differences between the country groups. The most common first choice was «cardiovascular health» (46.6%) with no difference between respondents from the high-income group (46.1%), and the other countries (46.7%; *p*=0.93). The frequency of this choice was significantly higher than each of the other conditions (*vs* each other choice: *p*<0.00001). The respondents ranked diabetes as the second highest condition impacted by obesity (19.0%); 45.9% of respondents selected diabetes as their second choice (high- *vs* middle-/low-income *p*=0.79), with diabetes being higher than all the other possible second choices (*p*<0.00001 *vs* each other condition, individually). When combining respondents' first and second choices, cardiovascular health remained the overwhelming selection, with 80.4% of all respondents (*p*<0.00001 *vs* each other condition, individually), with no difference between the two economic groups (high- 79.1% *vs* middle-/low-income countries 80.7%; *p*=0.655). For all of the analysis of assessment of obesity on specific health conditions, «liver conditions» was consistently ranked the lowest (overall 1.7% of respondents selected this as most impactful). We had anticipated that the substantial fraction of respondents would be cardiologists, based on the nature of the database. Thus, we planned to analyze the responses to this question accordingly. The only difference was that cardiologists ranked cardiovascular disease as having the greatest impact more frequently (53.0%) than did non-cardiologists (40.5%; *p*=0.0002). However, the cardiologists' responses from high-income countries did not differ from that from other countries (*p*=0.91), nor were the overall results affected.

Obesity guidelines

Nearly all respondents consult at least one clinical practice guideline containing recommendations regarding obesity. The European Society of Cardiology (ESC) guidelines were most frequently consulted by all respondents (56.8%) with no difference between high-income versus middle-/low-income countries (61.9% *vs* 55.6%, *p*=0.2092; Table 3). The American College of Cardiology / American Heart Association / Heart Failure Society of America (ACC/AHA/HFSA) guidelines were consulted by 49.6%, with nearly a statistically significant lesser frequency by the high- *vs* middle-/low-income groups (41.8% *vs* 51.4%; *p*=0.0554). Overall, 6.2% of respondents did not consult any obesity clinical practice guideline, with a greater frequency in the high- than middle-/low-income group (11.2% *vs* 5.1%, *p*=0.0155).

Few respondents regarded the guidelines as equally applicable across different economic strata and geographical locations, with 13.1% holding this view that did not differ between those from high-income countries (10.5%) compared to those from other nations (13.7%; *p*=0.39; Figure 2). 28.7% of respondents thought that international obesity guidelines were «mostly» or «fully» applicable in their country, a view that did not differ between the groups of respondents (high-income, 34.3%; middle-/low-income, 27.4%; *p*=0.12; Table 3; Figure 2).

Among factors indicated as guideline implementation obstacles, the most frequently was that of the guidelines being mostly relevant for high-income countries (53.8%), a view not differing between the two groups of respondents (high-income, 48.1%; middle-/low-income, 55.1%; p=0.15; Table 3; Figure 1). When assessing patient/ local factors posing guideline implementation barriers, cost was held to be the most important (48.2%), with no difference between high- (47.3%) and middle-/low-income groups (48.5%; *p*=0.85; Table 3). Cost was ranked as the most important local obstacle more frequently than all other choices (*p*<0.00001 compared to each other option, individually).

Resources

The responses to the applicability and ability to implement recommendations aligned with the clinicians' assessment of the resources available for treating their patients. When asked to describe the resource limitation when caring for their patients, the most frequent response was that resources were «occasionally limiting» (41.8%) with no difference between the two economic groups (high 39.4% *vs* mid/low 42.4%, *p*= 0.54; Table 4). Only 19.3% responded that «Evidence-based treatment can be practiced mostly without financial constraints» with no difference between groups (high 21.8%, mid/low 18.7%, *p*=0.38). The pattern of patients paying for their care differed between high- and middle-/low-income groups. It was estimated that 40.6% of patients paid for 50% or more of their care, with a higher fraction in the middle-/low-income countries (42.1%) than in high-income countries (34.2%; *p*<0.0001) doing so (Table 4).

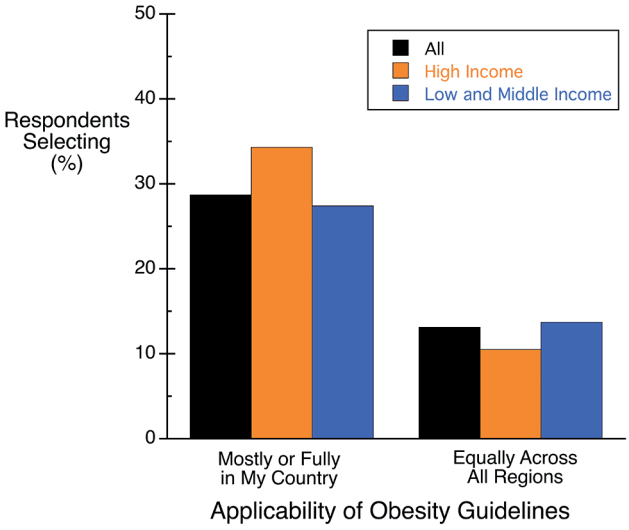

Figure 2. Percent of responders indicating applicability of obesity guidelines. There were no statistically significant differences between high-income countries compared to low-/middle-income countries for any selection.

Table 3. Guideline applicability and implementation obstacles.

	All	High-income	Low/middle income	*p*
Guidelines most frequently consulted*				
N	724	134	590	
ESC	11 (56.8)	83 (61.9)	328 (55.6)	0.2092
ACC/AHA/HFSA	359 (49.6)	56 (41.8)	303 (51.4)	0.0554
EASD	149 (20.6)	34 (25.4)	115 (19.5)	0.1549
ADA	278 (38.4)	37 (27.6)	241 (40.8)	0.0043
EASO	138 (19.1)	32 (23.9)	106 (18.0)	0.1431
Local/ national/ SOPs	177 (24.4)	34 (25.4)	143 (24.2)	0.8239
Other	1 (0.1)	1 (0.7)	0 (0.0)	0.1851
None	45 (6.2)	15 (11.2)	30 (5.1)	0.0155
Applicability of international obesity guidelines for patient care in your country				
N	728	140	588	
Not	21 (2.9)	6 (4.3)	15 (2.6)	0.2653
Slightly	175 (24.0)	27 (19.3)	148 (25.2)	0.1537
Moderately	323 (44.4)	59 (42.1)	264 (44.9)	0.5714
Mostly	160 (22.0)	39 (27.9)	121 (20.6)	0.0692
Fully	49 (6.7)	9 (6.4)	40 (6.8)	>0.9999
Mostly or fully#	209 (28.7)	48 (34.3)	161 (27.4)	0.1188
Consistency of recommendations for obesity in guidelines from different specialties				
N	676	131	540	
Very consistent	158 (23.4)	17 (13.0)	141 (25.9)	0.0013
Somewhat consistent	277 (41.0)	55 (42.0)	222 (40.7)	0.8433
Somewhat or very consistent#	435 (64.3)	72 (55.0)	363 (66.6)	0.0147
Neutral	159 (23.5)	33 (25.2)	126 (23.1)	0.6466
Somewhat inconsistent	69 (10.2)	23 (17.6)	46 (8.4)	0.0035
Very inconsistent	13 (1.9)	3 (2.3)	10 (1.8)	0.7241
Somewhat or very inconsistent#	82 (12.1)	26 (19.8)	56 (10.3)	0.0043
Obstacles/barriers to guideline implementation: guideline factors (select most important)				
N	712	135	577	
Text too heavy	142 (20.0)	33 (24.4)	109 (18.9)	0.1520
Not for digital	69 (9.7)	17 (12.6)	52 (9.0)	0.1996
Mostly relevant for hi-income countries	383 (53.8)	65 (48.1)	318 (55.1)	0.1512
Not applicable in respondents practice	67 (9.4)	6 (4.4)	61 (10.6)	0.0320
Outdated	26 (3.7)	8 (5.9)	18 (3.1)	0.1271
Other	25 (3.5)	6 (4.4)	19 (3.3)	0.6017
Obstacles/barriers to guideline implementation: patient/environment factors (rank by importance)				
N	682	131	551	
Costs	329 (48.2)	62 (47.3)	267 (48.5)	0.8461
Availability of pharmaceuticals/procedures	73 (10.7)	19 (14.5)	54 (9.8)	0.1184
Cultural factors	132 (19.4)	23 (17.6)	109 (19.8)	0.6237
Physician education and attitudes	72 (10.6)	13 (9.9)	59 (10.7)	0.8753
Patient health literacy	76 (11.1)	14 (10.7)	62 (11.3)	>0.9999

*More than one selection was allowed for this question; N is the number of responders; the data are number of responses (%); #calculated from the individual responses for that question; *p* is for the comparison between the responses from practitioners in high-income *vs* low- and middle-income countries.

Table 4. Patient resources.

	All	High-income	Low/middle income	*p*
Resource limitation when caring for your patients				
N	875	165	710	
Mostly without constraint	169 (19.3)	36 (21.8)	133 (18.7)	0.3815
Occasionally limiting	366 (41.8)	65 (39.4)	301 (42.4)	0.5398
Somewhat limiting in most cases	173 (19.8)	32 (19.4)	141 (19.9)	>0.9999
Severely limiting in most cases	167 (19.1)	32 (19.4)	135 (19.0)	0.9126
Estimated per cent of patients contributing to the costs of their care*#				
N	764	145	619	
Mostly do not contribute	38.2 (28.9)	40.6 (32.1)	37.6 (28.0)	0.2596
Pay >0 to 10% of costs	21.9 (18.1)	25.3 (22.0)	18.2 (16.8)	0.0097
Pay 0-10%	30.0 (25.4)	32.9 (28.6)	29.3 (24.6)	0.0300
Pay approximately 50%	18.2 (16.8)	14.9 (15.4)	19.0 (17.0)	0.0080
Pay mostly themselves	22.4 (26.9)	19.3 (25.7)	23.1 (27.1)	0.1253
Pay 50-100%	20.3 (22.5)	17.1 (21.2)	21.0 (22.7)	0.0078
If patients pay for care, they pay for:°				
N	754	145	609	
All drugs	244 (39.4)	41 (39.8)	203 (39.3)	>0.9999
All devices	30 (4.8)	9 (8.7)	21 (4.1)	0.0728
Hospitalization	66 (10.7)	13 (12.6)	53 (10.3)	0.4851
All or almost all expenses	279 (45.1)	40 (38.8)	239 (46.3)	0.1930
Not applicable	135	42	93	

N is the number of responders; the data are number of responses (%) ;*data are estimates by respondents and not source verified; #presented as mean (SD); §calculated from the individual responses for that question; °per cents and probabilities calculated disregarding the «N/A» group; *p* is for the comparison between the responses from practitioners in high-income *vs* low- and middle-income countries.

Of those who do contribute to their care, it was estimated that 39.4% pay for all drugs, 4.8% pay for all devices, 10.7% pay for hospitalization, and 45.1% pay for almost all or all expenses. None of these had a difference between high- and middle-/low-income countries (range of *p*-values: 0.19 to >0.999).

Respondents' wishes for future guidelines

In response to asking what should be integrated into implementation-focused guidelines, the most common selection was «lifestyle intervention» with 94% of all respondents selecting this choice (Table 5). Each of the other options (bariatric surgery, pharmacologic therapy, telemonitoring and patient support, and patient economic status) were supported by at least 50% of respondents, with no statistical differences between high- and middle-/low-income countries for any choice (Table 5). Lifestyle intervention was selected more frequently than each of the other choices ($p<0.00001$ compared to each other choice, individually). There was broad agreement for the importance of specific recommendations for patients of differing socio-economic status: 83.4% thought it important, very important, or extremely important, with no difference between the two groups (high-income 79.4%, middle-/low-income 84.3%; $p=0.19$; Figure 3).

There was also substantial agreement for the importance of having co-authors of the guidelines from the respondents' country or region, with 68.7% agreeing, with a greater fraction of those from middle-/low-income countries (73.1%) agreeing than did those from high-income countries (50.4%; $p<0.00001$; Figure 4). The responses were similar regarding whether guidelines should have more inclusive writing committees, with 80.6% agreeing. Those from middle-/low-income countries (82.3%) responded more strongly than those from high-income countries (73.3%; $p=0.026$; Table 5). There was also wide agreement in having guidelines available in a digital format, with decision support: 67.4% of all respondents would like to have this, with no difference between the two groups (high-income 61.1%; mid-low-income, 68.9%; $p=0.0966$).

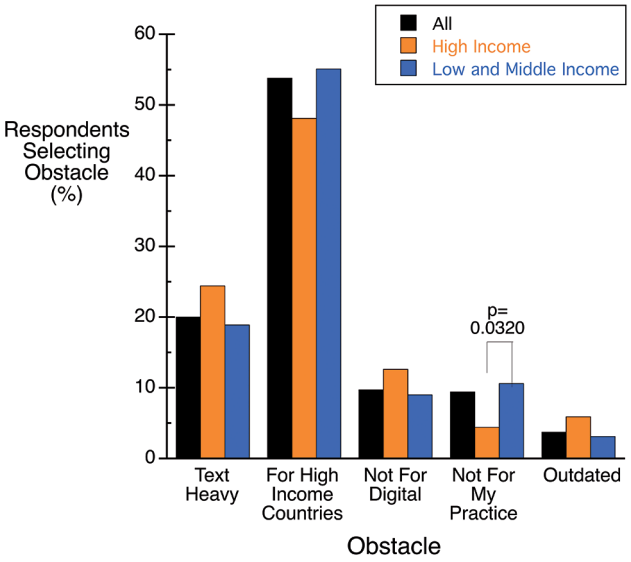

Figure 3. Responders selection of obstacles that hinder their ability to implement obesity guidelines. Probability values (*p*) are for comparisons between respondents from high-income and low-/ middle-income countries.

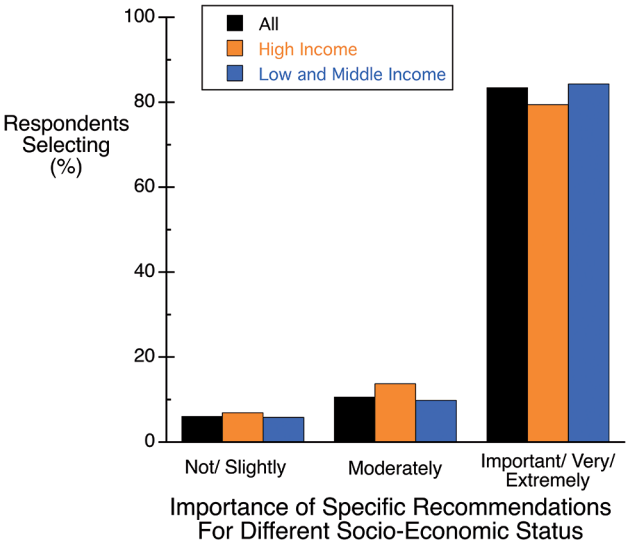

Figure 4. Percent of responders indicating the importance for obesity guidelines to have specific recommendations for patients of different socio-economic conditions. There were no statistically significant differences between high-income countries compared to low-/middle-income countries for any selection.

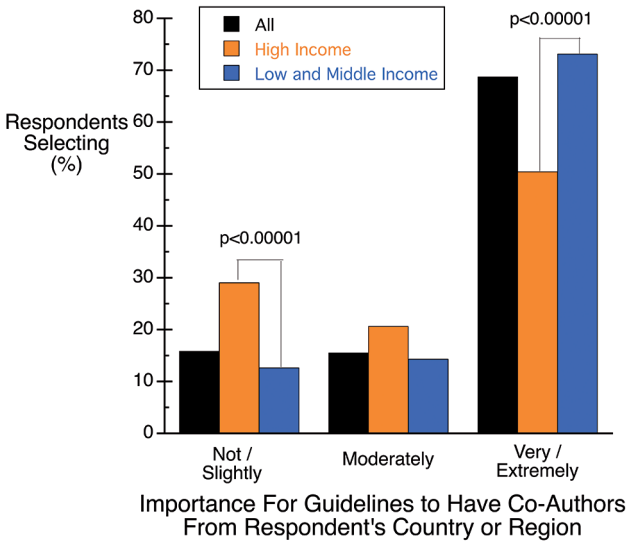

Figure 5. Percent of responders agreeing that guideline should have more inclusive and diverse (gender, age, geographical) writing committees. Probability values (*p*) are for comparisons between respondents from high-income and low-/ middle-income countries.

Table 5. Views/wishes for future guidelines.

	All	High-income	Low/middle income	*p*
What should be integrated into implementation focused-guidelines (select all that apply)*				
N	612	120	492	
Lifestyle intervention	574 (93.8)	111 (92.5)	463 (94.1)	0.5273
Bariatric surgery	304 (50.0)	65 (54.2)	239 (48.6)	0.3087
Pharmacologic therapy	419 (68.5)	87 (72.5)	332 (67.5)	0.3247
Telemonitoring and patient support programs	342 (55.9)	65 (54.2)	277 (56.3)	0.6829
Patient economic status	454 (74.2)	84 (70.0)	370 (75.2)	0.2464
Importance for specific recommendations for patients with different socio-economic status				
N	680	131	549	
Not at all	6 (0.9)	3 (2.3)	3 (0.5)	0.0892
Slightly	35 (5.1)	6 (4.6)	29 (5.3)	>0.9999
Not/Slightly interested#	41 (6.0)	9 (6.9)	32 (5.8)	0.6827
Moderately	72 (10.6)	18 (13.7)	54 (9.8)	0.2062
Important	184 (27.1)	33 (25.2)	151 (27.5)	0.5820
Quite important	148 (21.8)	25 (19.1)	123 (22.4)	0.4797
Extremely important	235 (34.6)	46 (35.1)	189 (34.4)	0.9187
Important/ quite/ very interested#	567 (83.4)	104 (79.4)	463 (84.3)	0.1912
Interest in having optimized digital format guidelines with decision support				
N	671	131	540	
Very uninterested	95 (14.2)	16 (12.2)	79 (14.6)	0.5764
Somewhat uninterested	62 (9.2)	15 (11.5)	47 (8.7)	0.3169
Neutral	62 (9.2)	20 (15.3)	42 (7.8)	0.0113
Somewhat interested	116 (17.3)	26 (19.8)	90 (16.7)	0.4394
Very interested	336 (50.1)	54 (41.2)	282 (52.2)	0.0253
Somewhat or very interested#	452 (67.4)	80 (61.1)	372 (68.9)	0.0966
Importance for guidelines to have co-authors from your country or region				
N	671	131	540	
Not at all important	37 (5.5)	17 (13.0)	20 (3.7)	0.0002
Slightly important	69 (10.3)	21 (16.0)	48 (8.9)	0.0236
Moderately important	104 (15.5)	27 (20.6)	77 (14.3)	0.0802
Very important	262 (39.0)	39 (29.8)	223 (41.3)	0.0165
Extremely important	199 (29.7)	27 (20.6)	172 (31.9)	0.0139
Very or extremely important#	461 (68.7)	66 (50.4)	395 (73.1)	<0.00001
Obesity guidelines should have more inclusive and diverse writing committees				
N	679	131	548	
Strongly agree	392 (57.7)	65 (49.6)	327 (59.7)	0.0391
Somewhat agree	155 (22.8)	31 (23.7)	124 (22.6)	0.8171
Strongly or somewhat agree#	547 (80.6)	96 (73.3)	451 (82.3)	0.0264
Neutral	95 (14.0)	26 (19.8)	69 (12.6)	0.0358
Somewhat disagree	14 (2.1)	4 (3.1)	10 (1.8)	0.3246
Strongly disagree	23 (3.4)	5 (3.8)	18 (3.3)	0.7879
Somewhat or strongly disagree#	37 (5.4)	9 (6.9)	28 (5.1)	0.3973

*More than one selection was allowed for this question; N is the number of responders; the data are number of responses (%); #calculated from the individual responses for that question; *p* is for the comparison between the responses from practitioners in high-income *vs* low- and middle-income countries.

Discussion

The main findings of this survey are that i) few clinicians from both high-income and low/middle-income countries regard obesity guidelines to be equally applicable across different economic conditions and geographic areas, and few thought that international obesity guidelines were mostly or fully applicable in their country; ii) there is a strong desire to have obesity guidelines carry specific recommendations for patients of varying socio-economic status and for guideline co-authors to represent these diverse populations; iii) of the several obstacles to guideline implementation, the most frequently stated was that the guidelines were mostly relevant for high-income countries, and cost; and iv) clinicians regard the impact of obesity on other diseases to be the greatest for cardiovascular health and the least for hepatic disease.

The overall findings of the perceived lack of universal applicability of obesity clinical practice guidelines are in accord with that found for heart failure guidelines.[25] In this survey only 13% of respondents judged that obesity guidelines were applicable equally across regions. 54% thought the guidelines were mostly relevant for high-income countries, while the heart failure survey found that to be true for 75% of respondents. These views in both surveys were widespread and did not significantly differ between high-income and low-/middle-income countries.

A possible rationale for this response may be found in the noted obstacles to implementation. Costs of care and cultural factors were cited as the two most important barriers to guideline implementation. These lend support to the desire to have specific recommendations for patients of differing socio-economic strata, and co-authors from locations other than high-income and from a variety of geographical regions. This is not surprising, as many obesity guidelines recognize cost, patient preferences, socio-economic conditions, or ethnic/ cultural issues as factors to consider in treating patients with obesity. For example, the Canadian guideline recommends «Interventions ...should consider the diversity of psychological and social practices with regard to excess weight, food and physical activity, as well as socioeconomic circumstances, as they may differ across and within different ethnic groups».[8] However, specific recommendations for differing socio-economic conditions, ethnicities, or cultures and treatment algorithms addressing these issues are lacking in obesity guidelines. Presumably experts from low-/middle-income countries should have insightful understanding of the limitations imposed by these obstacles, and potentially, the approaches that can increase the probability of success. A guideline currently in development by the iCardio Alliance may address some of these issues.

Provision of the digital versions of guidelines with decision support, as desired by two-thirds of the health care providers surveyed, would not only provide increased ease of immediate access, but conceivably could be designed to include a decision algorithm tailored to the specific socio-economic and cultural imperatives of the patient being treated. In doing so, one may acknowledge the discussion regarding different definitions of «obese» (e.g., ethnic difference in the BMI cut-off)[27,28] in different populations, and the various criteria utilized for diagnosis.[26] This latter group of experts examining diagnostic criteria, recently concluded that BMI was an insufficient surrogate for a diagnostic criterion of obesity of an individual, and that measurement of body adiposity or at least one validated age-, gender-, or ethnicity-appropriate anthropomorphic criterion (waist circumference, waist-to-hip ratio, or waist-to-height ratio) in addition to BMI is preferred.[26] In our survey BMI was used nearly universally (92% of clinicians) for diagnosis, but not necessarily exclusively. A substantial number of practitioners also used waist circumference, and/or weight, with the latter used significantly more frequently by those from low-/middle-income than high-income countries. As this survey was created and completed before the recent publication of Rubino *et al.*'s recommendations, we did not design our survey to examine clinician's thoughts about them. However, overall approximately half of respondents used BMI and either waist circumference or waist/hip ratio, with no difference between high- and low-/middle-income countries. We did not inquire as to the specific BMI or values of other criteria that these practitioners used for diagnostic cut-offs.

We further note that the discovery, development, and proof of efficacy of newer pharmaceuticals such as GLP-1 agonists has added a degree of rapid advancement and change in obesity treatment, that makes it difficult for guidelines to keep current, as guidelines are ordinarily updated every several to ten years, and generally require a substantial period of time from reviewing and synthesizing the evidence and writing to publication. Digital versions of guidelines (with rapid review of updated evidence) could potentially help ameliorate this problem, thus providing greater assistance to the practitioner, and support a greater ease and degree of implementation.

There have been other surveys inquiring into aspects of obesity. Several have resulted from the Awareness, Care, and Treatment in Obesity maNagement (ACTION) study aimed to identify perceptions, attitudes, behaviors, and potential barriers to effective obesity care as judged by people with obesity and by health care providers.[29,30-36] These reports found «misalignments» between groups regarding attitudes about underlying causes and appropriate treatment. For example, both groups classified obesity to be a disease, but health care providers did so more frequently than did patients with obesity. Although there are separate reports from individual countries and regions, these surveys did not examine clinicians view of obesity guidelines or differences between countries of differing socio-economic status.

A separate effort[37] surveyed «relevant professionals and interest groups» in 68 countries, finding «lack of adequate services, especially in lower-income countries and rural areas of most countries», with out-of-pocket cost as ranking third, and cultural norms ranking ninth as perceived barriers to treatment of obesity. There were differences in views of the health system, services and their availability between high- and low-/middle-income countries, but the survey did not assess barriers in relation to guideline implementation. Another survey of a single province in Saudi Arabia[38] reported that the Saudi Arabian guidelines[39] were not fully implemented.

Most guidelines that include obesity have those comments embedded in a guideline directed at another disorder; few guidelines are written specifically for obesity. Perhaps this is owing to the relatively recent definition of obesity as a chronic disease. This appreciation is likely to result in additional, new guidelines that will have an opportunity to evaluate the several surveys and perceived deficits, and suggestions for improvement.

This survey's data and their interpretation have important limitations. The database, while of substantial size, may not be representative of the clinicians in all countries. Additionally, the survey was sent to practitioners who had registered for educational programs. These participants may not reflect the views of a more general practitioner population. As with any survey, the response rate was only a fraction of those invited, potentially adding further bias. Here, 12.1% of those to whom an invitation was sent viewed the survey, and 28.1% of those participated. The possible responses to all questions were of a multiple-choice nature. As answers other than the specified choices were not possible, it could be that important responses were not elicited. The invitation and the survey were in English only. This too could have created bias, as those who felt that their use/comprehension of the language was not adequate might have chosen not to respond, thus under-representing their population. Furthermore, for those whose who did respond, but whose primary language is not English, it is possible that there could have been some misinterpretation of either the questions or the possible answers, or both. Importantly, some questions required the respondent to make estimates, and these could be incorrect. The responses to those questions must be regarded as suggestive for future hypotheses and research. We did not assess the impact of the implementation limitations noted by the practitioners. This was not our intent, and in any case would be a substantial task in 129 countries, requiring resources not available to us.

In conclusion, this survey of 1,412 clinicians indicates that current clinical practice guidelines for obesity do not appear to address the needs of patients and clinicians in environments that are other than high-income. Respondents suggestions to resolve this include i) obesity guidelines inclusion of co-authors from low-/middle-income countries and regions; ii) guidelines should have specific recommendations directed at patients and environments of varying socio-economic strata; and ii) guidelines should have a digital version with decision support. Additionally, the underappreciation of the impact of obesity on hepatic disease, despite multiple publications and inclusion of obesity in guidelines for hepatic disorders, suggests a need for improved clinician education and awareness. The opinions expressed by clinicians in this survey may apply to other practice guidelines, as well.

Contributions

All authors conformed to ICMJE recommendations. In addition: YC, RBW, direct access and validation of data; RBW, statistical analysis, manuscript original drafting. No medical writer was involved in the writing of this manuscript. All authors had access to the data, and approved the manuscript.

Conflict of interest

See Appendix.

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Data availability

Data will be made available, on a case-by-case basis, by the corresponding author to qualified individuals with the assurance that they are to be used solely for academic and/or clinical purposes.

Further information

Some of the data containing in this manuscript was presented, as a poster, at the European Congress on Obesity, May 2025. The manuscript has not been published and has not been submitted elsewhere for consideration for publication. All authors have approved submitting this manuscript to Global Cardiology for consideration of publication. Artificial intelligence was not used for any aspect, including production, of this work.

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