

## REVIEW

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# Clinical practice guidelines for the management of overweight and obesity published internationally: A scoping review

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## Summary

With the increasing prevalence of obesity placing additional demands on healthcare systems, many jurisdictions and professional bodies have developed clinical practice guidelines to support practitioners in the management of people with overweight and obesity. This scoping review aimed to identify key features of contemporary guidelines for the clinical management of overweight and obesity. Searches of MEDLINE, Guidelines International Network's international guidelines library, and other grey literature sources identified 38 guidelines of 18 countries and one region published since 2010. Guidelines were developed by committees ( $n = 36$ , 95%) that comprised knowledgeable experts ( $n = 36$ , 95%) and were multidisciplinary ( $n = 33$ , 87%), with limited consumer representation ( $n = 11$ , 29%). Guideline documentation incorporated review questions ( $n = 23$ , 61%), systematic reviews ( $n = 25$ , 66%), evidence grading systems ( $n = 33$ , 87%), processes for reaching consensus ( $n = 19$ , 50%), and guideline review details ( $n = 28$ , 74%). Treatment approaches included in most guidelines were nutrition and physical activity ( $n = 38$ , 100%), psychology ( $n = 37$ , 97%), pharmacotherapy ( $n = 32$ , 84%), and bariatric surgery ( $n = 31$ , 82%). Most guidelines targeted populations based on age ( $n = 30$ , 79%). Guidelines contained recommendations for pregnancy ( $n = 12$ , 32%), older adults ( $n = 9$ , 24%), and people with eating disorders ( $n = 8$ , 21%). Future guidelines would benefit from involvement of consumers including groups known to be at increased risk of overweight and obesity, targeted guidance for at risk groups, and consideration of weight bias and stigma.

## KEYWORDS

clinical practice guidelines, obesity, weight management

## 1 | INTRODUCTION

Globally, overweight and obesity is an increasing public health problem,<sup>1,2</sup> with over 100 million children and over 600 million adults estimated to be living with obesity.<sup>2</sup> Obesity is associated with

cardiovascular disease, hypertension, type 2 diabetes mellitus, certain cancers, hyperlipidemia, sleep apnea, osteoarthritis, liver and gall bladder disease, and gynecological problems.<sup>1</sup> As such, increasing demands are being placed on public health systems, which remain at the forefront of efforts to reduce the prevalence of obesity.<sup>3</sup> Clinical

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practice guidelines have been developed in many jurisdictions to support the management of obesity.

Clinical practice guidelines are “statements that include recommendations intended to optimize patient care that are informed by a systematic review of evidence and an assessment of the benefits and harms of alternative care options.”<sup>4</sup> Several reviews of guidelines for the clinical management of overweight and obesity in children and adolescents<sup>5,6</sup> and adults<sup>7</sup> have been conducted. Two common areas of focus within these reviews are (a) diagnostic criteria for overweight and obesity, and (b) treatment options for these conditions.

For children and adolescents, all guidelines included in one review recommended using body mass index (BMI) percentiles or standardized BMI scores based on various reference groups for determining whether children and adolescents have overweight or obesity.<sup>5,6</sup> A multidisciplinary response for the clinical management of people with overweight and obesity was typically recommended. For children and adolescents, multicomponent lifestyle interventions comprising diet, physical activity, and behavioral modification have been recommended as first-line treatments.<sup>5,6</sup> Reviewers identified that, due to limited evidence, pharmaceutical and surgical options are generally not recommended for these populations.<sup>6</sup>

For adults, guidelines recommended that multidisciplinary teams manage overweight and obesity as a chronic disease.<sup>7</sup> Within these guidelines, multicomponent lifestyle interventions—comprising diet, physical activity, and strategies to support behavior change for at least 6 to 12 months—have been recommended. For adults with BMI of  $\geq 35$  kg/m<sup>2</sup> and for whom all non-surgical interventions have been unsuccessful, guidelines suggested that bariatric surgery could be offered.<sup>7</sup>

To inform the review and update of the now-rescinded *Clinical Practice Guidelines for the Management of Overweight and Obesity for Adults, Adolescents and Children in Australia*,<sup>8</sup> we undertook a scoping review focusing on the development and contents of clinical practice guidelines for the management of overweight and obesity. Whereas previous reviews provide insights into the recommendations and quality of guidelines,<sup>5-7,9-11</sup> the aim of this review was to determine how these guidelines were developed and the main areas of focus (e.g., target populations, treatment modalities). We sought to understand: (a) who has developed contemporary clinical guidelines for the management of overweight and obesity internationally, (b) how these guidelines have been developed, (c) the scope of guidelines with respect to levels of care (primary, secondary, and tertiary) and treatment modalities (e.g., nutrition and physical activity), (d) target populations, (e) criteria for diagnosing overweight and obesity, (f) treatment frameworks, (g) whether weight bias was addressed, and (h) currency of guidelines.

## 2 | METHODS

The PRISMA (Preferred Reporting Items for Systematic reviews and Meta-Analyses) Extension for Scoping Reviews<sup>12</sup> guided the reporting of this review.

Guidelines were included if they were (a) interprofessional clinical practice guidelines for the clinical management of overweight and obesity, (b) developed or commissioned by government or clinical professional groups, and (c) published from 2010 onwards (i.e., since the now rescinded Australian clinical guidelines<sup>8</sup> were developed). For this review, a clinical guideline was considered a statement that included recommendations for clinical care of people with overweight and obesity supported by evidence synthesized through a systematic process. Guidelines developed for any age and any subpopulations (e.g., pregnant women) were eligible for inclusion. Guidelines were excluded if they (a) were developed primarily for use by people with overweight or obesity, (b) were public health guidelines (e.g., guidelines focused on preventive measures, such as physical activity and nutrition), or (c) were for the management or treatment of an obesity-related condition (e.g., diabetes mellitus, cardiovascular disease, or non-alcoholic fatty liver disease).

To identify potentially relevant clinical practice guidelines on the management of obesity, the following information sources were searched: MEDLINE (Ovid platform), Guidelines International Network's (GIN) international guidelines library,<sup>13</sup> Google, Google Scholar, the websites of members of World Obesity,<sup>14</sup> and World Obesity's *Clinical care for obesity: International survey with reports on 50 countries*.<sup>15</sup> No language restrictions were applied. These searches were completed on August 25, 2022. MEDLINE was searched using the terms in Table S1. This search strategy was adapted for Google and Google Scholar using the terms in Table S2. These searches were undertaken on September 1, 2022, and were conducted using the Google advanced search's “all of these words” and “any of these words” feature. Results were limited to the first 20 pages (expected to be the most relevant) to manage the number of hits to be processed. Hits were considered if they met the inclusion criteria, did not meet exclusion criteria, and had not been identified in the Medline search. GIN's international guidelines library was searched using keywords in Table S3. Member websites of World Obesity were manually searched for guidelines using the website menus and search functions (using the term *guidelines*). The World Obesity survey report<sup>15</sup> provided information on which countries had obesity-specific recommendations or guidelines published for adults or children, which formed the starting point for additional searches.

Two reviewers independently screened 10% of records based on title and abstract using Covidence software.<sup>16</sup> Disagreements between reviewers were resolved, before one reviewer screened the remaining records based on titles and abstracts, and then screened the full texts of potentially relevant papers. Where guidelines were published in non-English languages,<sup>17-28</sup> they were translated to English using Google Translate.

Three reviewers performed the data extraction using Microsoft Excel.<sup>29</sup> For each guideline, one reviewer extracted the data and another reviewer checked the extraction. The characteristics of guidelines extracted were as follows: author, year of publication, guideline

name, organization name, organization type (government, professional bodies, or advocacy groups), country or region, and WHO region. Informed by the IOM criteria for evaluating the trustworthiness of clinical practice guidelines,<sup>4</sup> indications of whether each guideline had the following methodological features in its development were extracted: systematic review; evidence review (if there was no systematic review); evidence grading system (as well as the system used); guideline committee formation; guideline committee members included knowledgeable experts; guideline committee was multidisciplinary; guideline committee included representatives from key affected groups; description of the process for reaching consensus; review of guidelines (including whether the review involved subject matter experts, consumer representatives, a public consultation process, and a validated guideline assessment tool); and validation, approval, or endorsement of guidelines. Data were extracted on whether clinical questions were developed (prior to any systematic review), whether evidence-to-decision frameworks were used, and whether an adoption process (i.e., basing guidelines on other guidelines) had been used. Guideline scope data were extracted, including levels of healthcare systems (primary, secondary, and tertiary care) and treatment modalities (e.g., nutrition, physical activity, sedentary behavior, sleep, psychological, family-centered, pharmaceutical, and surgical interventions). Details regarding target populations (e.g., children, adults, and pregnant women), criteria for diagnosing overweight and obesity, guideline treatment frameworks, whether weight bias was addressed, and guideline currency were also extracted.

Descriptive statistics ( $n$ , %) were used to present the findings of the data analysis.

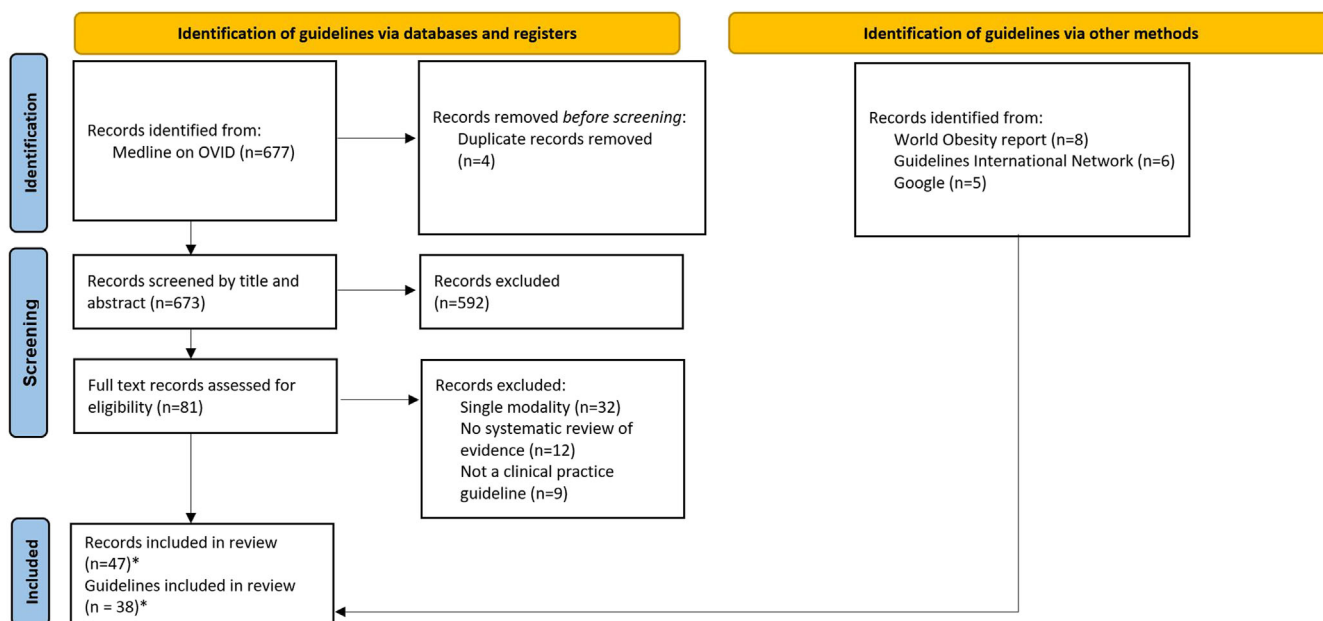
### 3 | RESULTS

A total of 696 documents were identified through the searching MEDLINE ( $n = 677$ ) and from other sources (grey literature,  $n = 19$ ) (Figure 1). Following screening and eligibility assessment, 47 papers (relating to 38 guidelines) met the selection criteria.

The guidelines were developed in countries in the following WHO regions: European region ( $n = 13$ , 34%), region of the Americas ( $n = 12$ , 32%), Western Pacific region ( $n = 7$ , 18%), Eastern Mediterranean region ( $n = 4$ , 11%), and South-East Asian region ( $n = 2$ , 5%) (Table S4). Professional bodies ( $n = 21$ , 55%) and governments ( $n = 17$ , 45%) led guideline development.

Questions formulated to guide reviews of evidence were reported for the majority of guidelines ( $n = 23$ , 61%) (Table S4). Systematic reviews were conducted to inform two-thirds of guidelines ( $n = 25$ , 66%), with evidence reviews (e.g., literature reviews) completed for the remaining guidelines ( $n = 13$ , 34%). Systems of grading evidence were used in the development of most guidelines ( $n = 33$ , 87%). The most common systems used for grading evidence were the Grading of Recommendations, Assessment, Development and Evaluations (GRADE) ( $n = 11$ , 29%) or a modified form of GRADE ( $n = 1$ , 3%), Scottish Intercollegiate Guidelines Network (SIGN) grading ( $n = 7$ , 18%), or a simplified version of SIGN ( $n = 1$ , 3%). For several guidelines, grading systems were unnamed ( $n = 5$ , 13%) or not used ( $n = 5$ , 13%). Evidence-to-decision frameworks ( $n = 3$ , 8%) and adoption ( $n = 2$ , 5%) were rarely used.

The formation of a guideline development committee was evident for almost all guidelines ( $n = 36$ , 95%) (Table S4). The committees appeared to comprise knowledgeable experts ( $n = 36$ , 95%), and most



\* In some instances, multiple non-duplicated records were identified that reported on one guideline

FIGURE 1 PRISMA flow diagram.

TABLE 1 Summary of treatment approaches reported in guidelines for the clinical management of overweight and obesity published internationally.

Author	Nutrition	Physical activity	Sedentary behavior	Sleep	Family-centered	Psychological	Pharmacotherapy	Bariatric surgery	Other
2022									
Kumari et al. <sup>30</sup>	●	●	●	●		●	●		
National Institute for Health and Care Excellence (NICE) <sup>31</sup>	●	●	●		●	●	●	●	
Ranjan et al. <sup>32,33</sup>	●	●	●	●	●	●			
2021									
Suomalaisen Lääkäriseuran Duodecim (Finnish Medical Society Duodecim) et al. <sup>17</sup>	●	●	●	●	●	●	●	●	
Kim et al. <sup>34</sup>	●	●	●			●	●	●	
Mayer et al. <sup>35</sup>	●	●	●			●	●	●	
Oniscu et al. <sup>36</sup>	●	●	●			●	●	●	
Queensland Health and Clinical Excellence Queensland <sup>37</sup>	●	●	●			●		●	
2020									
Ministry of Health (Brazil) <sup>18</sup>	●	●	●			●	●		
Ministry of Public Health (Qatar) <sup>19</sup>	●	●	●	●		●	●	●	
Ministry of Public Health (Qatar) <sup>20</sup>	●	●	●	●	●	●	●	●	
Wharton et al. <sup>38</sup>	●	●	●	●		●	●	●	
2019									
Arbeitsgemeinschaft Adipositas im Kindes- und Jugendalter (AGA; Working Group on Obesity in Children and Adolescents) and Deutsche Adipositasgesellschaft (DAG; German Society of Obesity) <sup>21</sup>	●	●	●	●	●	●	●	●	
Denison et al. <sup>39</sup>	●	●	●			●	●	●	
Deutschen Gesellschaft für Gynäkologie und Geburtshilfe (DGGG; German Society for Gynecology and Obstetrics) <sup>22</sup>	●	●	●	●		●	●	●	
Durrer Schutz et al. <sup>40</sup>	●	●	●			●	●	●	
Maxwell et al. <sup>41,42</sup>	●	●	●			●	●	●	
Yi et al. <sup>43,44</sup>	●	●	●		●	●	●	●	

**TABLE 1** (Continued)

Author	Nutrition	Physical activity	Sedentary behavior	Sleep	Family-centered	Psychological	Pharmacotherapy	Bariatric surgery	Other
2018									
Abusnana et al. <sup>45</sup>	●	●				●	●	●	
Centro Nacional de Excelencia Tecnológica en Salud (CENETEC; National Center for Health Technology Excellence) <sup>23</sup>	●	●				●	●	●	● <sup>a</sup>
Davies et al. <sup>46,47</sup>	●	●						●	
2017									
Ministry of Health (New Zealand) <sup>48</sup>	●	●	●	●		●	●	●	
Società Italiana dell'Obesità (SIO; Italian Obesity Society) and Associazione Italiana di dietetica e Nutrizione Clinica (ADI; Italian Association of Dietetics and Clinical Nutrition) <sup>24</sup>	●	●	●	●	●	●	●	●	
Styne et al. <sup>49</sup>	●	●	●	●	●	●	●	●	
2016									
Alfaada et al. <sup>50</sup>	●	●				●	●	●	
Garvey et al. <sup>51,52</sup>	●	●	●		●	●	●	●	
Lee et al. <sup>53,54</sup>	●	●	●			●	●	●	
Ministry of Health (New Zealand) <sup>55</sup>	●	●	●	●	●	●	●	●	
2015									
Canadian Task Force on Preventive Health Care <sup>56</sup>	●	●			●	●	●	●	
Yumuk et al. <sup>57</sup>	●	●	●			●	●	●	
2014									
American College of Cardiology, American Heart Association Task Force on Practice Guidelines and The Obesity Society <sup>58-61</sup>	●	●				●		●	
Deutsche Adipositasgesellschaft (DAG; German Society of Obesity), Deutsche Diabetes Gesellschaft (DDG; German Diabetes Society), Deutsche Gesellschaft für Ernährung (DGE; German Society for Nutrition), and Deutsche Gesellschaft für Ernährungsmedizin (DGEM; German Society for Nutritional Medicine) <sup>25</sup>	●	●			●	●	●	●	

(Continues)

TABLE 1 (Continued)

Author	Nutrition	Physical activity	Sedentary behavior	Sleep	Family-centered	Psychological	Pharmacotherapy	Bariatric surgery	Other
2013									
National Health and Medical Research Council (Australia) <sup>8</sup>	●	●	●		●	●	●	●	
Barrera-Cruz et al. <sup>26</sup>	●	●	●		●	●	●		
2012									
Moyer <sup>62</sup>	●	●				●	●		
2011									
Haute Autorité de Santé (HAS; French National Authority for Health) <sup>27</sup>	●	●	●	●	●	●		●	
Haute Autorité de Santé (HAS; French National Authority for Health) <sup>28</sup>	●	●	●		●	●	●		
2010									
Scottish Intercollegiate Guidelines Network (SIGN) <sup>63</sup>	●	●	●		●	●	●	●	

Note: ● Modality reported in guideline.

<sup>a</sup>Liposuction.

were multidisciplinary ( $n = 33$ , 87%). Less than a third had representatives from key affected groups ( $n = 11$ , 29%).

The process of reaching consensus was described for half the guidelines ( $n = 19$ , 50%) (Table S4). Over three quarters of guidelines underwent review (e.g., expert review, public consultation) ( $n = 28$ , 74%) (Table S4). Many review processes involved subject matter experts, such as academics and healthcare professionals ( $n = 22$ , 58%). Few review processes involved consumer representation ( $n = 6$ , 16%) or public consultation ( $n = 5$ , 13%). Validated tools for methodological review (e.g., Appraisal of Guidelines for Research and Evaluation II [AGREE II]) were rarely used ( $n = 1$ , 3%). For half of the guidelines, some type of validation, approval, or endorsement was reported ( $n = 20$ , 53%) (Table S4). Weight bias ( $n = 5$ ; 13%) and/or stigma ( $n = 15$ ; 39%) were considered in less than half of all included guidelines.

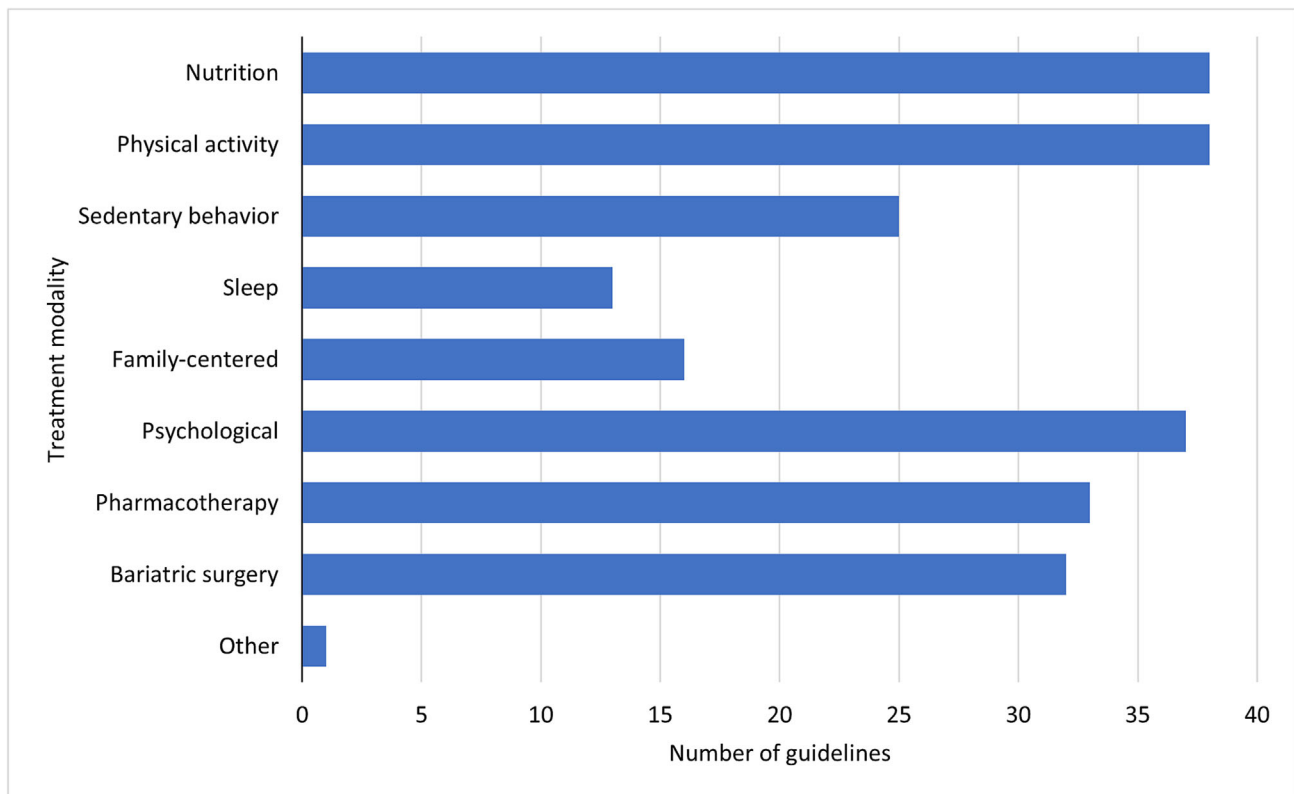
With respect to levels of healthcare systems, the scope of the guidelines extended to primary care ( $n = 37$ , 97%), secondary care ( $n = 26$ , 68%), and tertiary care ( $n = 24$ , 63%). Over half the guidelines covered three levels ( $n = 23$ , 61%), some extended to two levels ( $n = 2$ , 8%), and almost one-third focused on one level only ( $n = 12$ , 32%).

Treatment modalities described in guidelines included nutrition and physical activity, covered in all guidelines ( $n = 38$ , 100%) (Table 1, Figure 2). Psychological interventions ( $n = 37$ , 97%), pharmacotherapy ( $n = 32$ , 84%), and bariatric surgery ( $n = 31$ , 82%) were covered in most guidelines. Some treatment approaches were included in fewer guidelines, such as sedentary behavior ( $n = 24$ , 63%), family-centered interventions ( $n = 16$ , 42%), and sleep ( $n = 13$ , 34%). Liposuction was considered by one guideline (3%).

Most of the guidelines were classified by life stage ( $n = 30$ , 79%) (Table 2, Figure 3). They covered one or more of infants ( $n = 9$ , 30%), children ( $n = 17$ , 57%), adolescents ( $n = 18$ , 60%), and adults ( $n = 23$ , 77%). The remaining guidelines focused on specific populations, including pregnancy ( $n = 6$ , 16%), midlife women ( $n = 1$ , 3%), and adults with end-stage kidney disease ( $n = 1$ , 3%).

Over a third of the guidelines (all of them age-based) contained recommendations for specific populations ( $n = 14$ , 37%) (Table 2, Figure 3). The specific populations covered were pregnant females ( $n = 12$ ), older adults ( $n = 9$ ), people with eating disorders ( $n = 8$ ), Indigenous people ( $n = 2$ ), people with mental health conditions ( $n = 2$ ), people from culturally and linguistically diverse backgrounds ( $n = 1$ ), people with disabilities ( $n = 1$ ), and people living in rural or remote areas ( $n = 1$ ).

All 31 guidelines for adults included criteria for diagnosing overweight and obesity (Table S5). The guidelines had criteria for BMI, including WHO criteria for adults ( $n = 28$ , 90%), WHO criteria for Asian and Pacific people ( $n = 11$ , 35%), criteria for older adults ( $n = 6$ , 19%), and criteria for other populations (e.g., BMI for South Asian, Chinese, other Asian, Middle Eastern, Black African or African-Caribbean;  $n = 7$ , 23%). Almost half of the guidelines employed criteria for waist circumference ( $n = 13$ , 42%). These criteria were drawn from the International Diabetes Federation ( $n = 7$ , 23%), Adult Treatment Panel III ( $n = 4$ , 13%), WHO ( $n = 1$ , 3%), and other sources ( $n = 4$ ,



**FIGURE 2** Treatment approaches reported in guidelines for the clinical management of overweight and obesity published internationally. *Other* includes liposuction.

13%). Some guidelines had criteria for waist-to-hip ratios from the WHO ( $n = 2$ , 6%); one guideline recommended the use of waist-to-hip ratios but did not include any criteria.

Most of the 19 guidelines that covered children, adolescents, or both life stages included criteria for diagnosing overweight and obesity ( $n = 17$ , 89%) (Table S5). All these 17 guidelines with diagnostic criteria had age- and sex-specific growth charts, with over half from the WHO or based on the WHO charts ( $n = 11$ , 58%) and half using country-specific national charts ( $n = 9$ , 47%). One guideline included WHO waist circumference criteria (5%).

Few guidelines incorporated identifiable frameworks to guide practitioners in treatment ( $n = 6$ , 16%; Table S6). These frameworks were 5As ( $n = 2$ , 5%); monitor, assess, manage, and maintain ( $n = 2$ , 5%); and other frameworks ( $n = 2$ , 5%).

At the time of the review, most of the guidelines were current ( $n = 32$ , 84%). The remaining guidelines were superseded ( $n = 3$ , 8%), retired ( $n = 1$ , 3%), or known by the reviewers to be under review ( $n = 2$ , 5%).

## 4 | DISCUSSION

Undertaken to inform an extensive review and update of the previous Clinical Practice Guidelines for the Management of Overweight and Obesity for Adults, Adolescents and Children in Australia,<sup>8</sup> this review

depicts the current status of guidelines across this topic and highlights emerging trends to inform future guideline development internationally. The main findings from this scoping review show that guidelines for the management of overweight and obesity have limitations when compared with the IOM criteria for trustworthiness,<sup>4</sup> diagnose overweight and obesity using anthropometric measures, and predominantly focus on nutrition, physical activity and psychological interventions, pharmacotherapy, and bariatric surgery as treatment options. There were few clinical practice guidelines for populations known to have greater need for clinical management as they experience higher rates of overweight and obesity (e.g., people with disability, Indigenous people).

Limitations to the trustworthiness of many of the included guidelines include the lack of systematic reviews of evidence, recognized quality of evidence grading systems, representation of people with overweight and obesity on guideline development committees, and processes for achieving consensus. Although all guidelines were based on reviews of evidence, only two-thirds were based on systematically reviewed evidence. The absence of systematic reviews, coupled with either the use of unnamed grading systems or non-use of such systems (a quarter of guidelines), raises concerns about the robustness of the evidence on which some guidelines were developed. The guideline development processes were not always transparent, with only half detailing how consensus was reached on recommendations and a quarter not having undergone external review.

**TABLE 2** Target group(s) and specific sub-population(s) addressed in guidelines for the management of overweight and obesity published internationally.

Author	Target group(s) <sup>a</sup>										Specific sub-population(s)				
	Infants	Children	Adolescents	Adults	Older adults	Pregnancy <sup>b</sup>	Indigenous peoples	CALD <sup>c</sup>	People experiencing mental disorders	People experiencing eating disorders	People with disabilities	Other			
2022															
Kumari et al., 2022 <sup>30</sup>						● <sup>d</sup>			●						
National Institute for Health and Care Excellence (NICE), 2022 <sup>31</sup>	●		●	●											
Ranjan et al., 2022 <sup>32,33</sup>				● <sup>e</sup>								● <sup>f</sup>			
2021															
Suomalaisen Lääkäriseuran Duodecim (Finnish Medical Society Duodecim), 2021 <sup>17</sup>	●	●	●	●	●	●			●						
Kim et al., 2021 <sup>34</sup>	●	●	●	●	●										
Mayer et al., 2021 <sup>35</sup>				●											
Oniscu et al., 2021 <sup>36</sup>				● <sup>g</sup>								● <sup>h</sup>			
Queensland Health and Clinical Excellence Queensland, 2021 <sup>37</sup>						● <sup>d</sup>									
2020															
Ministry of Health (Brazil), 2020 <sup>18</sup>				●					●						
Ministry of Public Health (Qatar), 2019 <sup>19</sup>				●					●						
Ministry of Public Health (Qatar), 2019 <sup>20</sup>	●	●	●	●											
Wharton et al., 2020 <sup>38</sup>				●					●						
2019															
Arbeitsgemeinschaft Adipositas im Kindes- und Jugendalter (AGA; Working Group on Obesity in Children and Adolescents) and Deutsche Adipositasgesellschaft (DAG; German Society of Obesity), 2019 <sup>21</sup>	●	●	●	●											
Denison et al., 2019 <sup>39</sup>						● <sup>d</sup>									
Deutschen Gesellschaft für Gynäkologie und Geburtshilfe (DGGG; German Society for Gynecology and Obstetrics), 2019 <sup>22</sup>						● <sup>d</sup>									
Durrer Schutz et al., 2019 <sup>40</sup>	●	●	●	●	●							●			
Maxwell et al., 2019 <sup>41,42</sup>						● <sup>d</sup>									



TABLE 2 (Continued)

Author	Target group(s) <sup>a</sup>										Specific sub-population(s)				
	Infants	Children	Adolescents	Adults	Older adults	Pregnancy <sup>b</sup>	Indigenous peoples	CALD <sup>c</sup>	People experiencing mental disorders	People experiencing eating disorders	People with disabilities	Other			
Yi et al., 2019 <sup>43,44</sup>	●	●													
2018															
Abusnana et al., 2018 <sup>45</sup>			●	●		●				●					
Centro Nacional de Excelencia Tecnológica en Salud (CENETEC; National Center for Health Technology Excellence), 2018 <sup>23</sup>			●	●											
Davies et al., 2018 <sup>46,47</sup>						● <sup>d</sup>									
2017															
Ministry of Health (New Zealand), 2017 <sup>48</sup>				●											
Società Italiana dell'Obesità (SIO; Italian Obesity Society) and Associazione Italiana di dietetica e Nutrizione Clinica (ADI; Italian Association of Dietetics and Clinical Nutrition), 2017 <sup>24</sup>	●	●	●	●	●	●				●					
Styne et al., 2017 <sup>49</sup>	●	●	●												
2016															
Alfaada et al., 2016 <sup>50</sup>				●											
Garvey et al., 2016 <sup>51,52</sup>		●	●	●	●	●			●		●				
Lee et al., 2016 <sup>53,54</sup>		●	●	●	●	●									
Ministry of Health (New Zealand), 2016 <sup>55</sup>	●	●	●												
2015															
Canadian Task Force on Preventive Health Care, 2015 <sup>36</sup>	●		●												
Yumuk et al., 2015 <sup>57</sup>				●	●	●									
2014															
American College of Cardiology, American Heart Association Task Force on Practice Guidelines and The Obesity Society, 2014 <sup>58-61</sup>				●											
Deutsche Adipositasgesellschaft (DAG; German Society of Obesity), Deutsche Diabetes Gesellschaft (DDG; German Diabetes Society), Deutsche Gesellschaft				●											

(Continues)

TABLE 2 (Continued)

Author	Target group(s) <sup>a</sup>					Specific sub-population(s)						
	Infants	Children	Adolescents	Adults	Older adults	Pregnancy <sup>b</sup>	Indigenous peoples	CALD <sup>c</sup>	People experiencing mental disorders	People experiencing eating disorders	People with disabilities	Other
für Ernährung (DGE; German Society for Nutrition), and Deutsche Gesellschaft für Ernährungsmedizin (DGEM; German Society for Nutritional Medicine), 2014 <sup>25</sup>												
2013												
National Health and Medical Research Council (Australia), 2013 <sup>8</sup>	●	●	●	●	●	●	●	●	●	●		● <sup>h</sup>
Barrera-Cruz et al., 2013 <sup>26</sup>	●	●	●	●	●							
2012												
Moyer, 2012 <sup>62</sup>												
2011												
Haute Autorité de Santé (HAS; French National Authority for Health), 2011 <sup>27</sup>	●	●	●	●	●							
Haute Autorité de Santé (HAS; French National Authority for Health), 2011 <sup>28</sup>				●	●	●						
2010												
Scottish Intercollegiate Guidelines Network (SIGN), 2010 <sup>63</sup>	●	●	●	●	●					●		

Note: ● Included in guideline.

<sup>a</sup>The majority of international guidelines defined age groups as follows: Infants = Birth to <2 years of age; children = ≥2–11 years; adolescents = ≥12–<18 years; adults = ≥18 years; older adults = ≥65 years.

<sup>b</sup>Pregnancy include pre-pregnancy, pregnancy, post-partum, lactation.

<sup>c</sup>CALD: People from Culturally and Linguistically Diverse backgrounds.

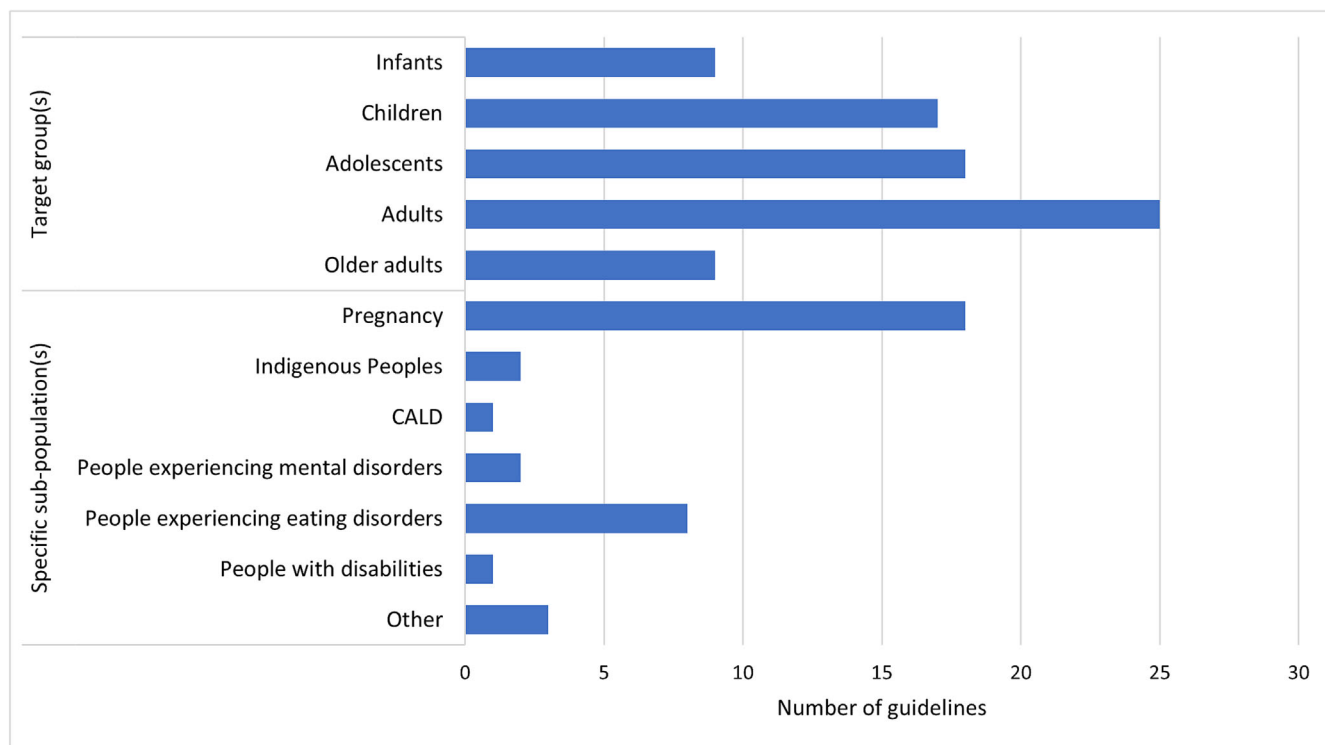
<sup>d</sup>Primary target population of guidelines.

<sup>e</sup>Women.

<sup>f</sup>Women aged 40–55 years.

<sup>g</sup>Adults with end-stage kidney disease (ESKD) living with obesity.

<sup>h</sup>Adults residing in rural/remote areas.



**FIGURE 3** Target group(s) and specific sub-population(s) addressed in guidelines for the management of overweight and obesity published internationally. Most international guidelines defined age groups as follows: infants = birth to <2 years of age; children =  $\geq 2$ –11 years; adolescents =  $\geq 12$ –<18 years; adults =  $\geq 18$  years; older adults =  $\geq 65$  years. *Pregnancy* includes pre-pregnancy, pregnancy, post-partum, and lactation. *CALD* includes people from culturally and linguistically diverse backgrounds. *Other* includes women aged 40–55 years, adults with end-stage kidney disease (ESKD) living with obesity, or adults residing in rural/remote areas.

Despite clinical practice guidelines being developed for clinicians, the contribution of people with lived experience of the condition remains important to the guideline development process. Representation from people with overweight and obesity on less than a third of guideline development panels indicates that the voices of people who may receive treatment as a result of these guidelines were not integrated to the extent recognized as best practice. The stigma and bias known to be experienced by people living with overweight and obesity has also not been fully considered. Despite this, the reframing that continues to occur acknowledges “that the solutions lie across our society, moving away from a narrative of blame and individual responsibility, which promotes stigma, and focusing on treatment and prevention with an equity and systems lens.”<sup>64</sup>

Advances in science on the diagnosis of obesity are yet to be reflected in clinical practice guidelines. The identification and diagnosis of obesity has become more controversial with the traditional methods used for diagnosis, including body mass index and waist circumference, known to be imperfect. All guidelines covering adults, and 17 of 19 guidelines covering children or adolescents, incorporated diagnostic criteria based on BMI. The literature consistently characterizes people living with obesity as having abnormal or excessive fat accumulation, but identifying the most appropriate measures for use in different clinical settings is difficult given changes in growth patterns and mortality risk across the lifespan. These have been

particularly noted for BMI in children (where faster growth and an accelerated increase in lean mass, described as the early rebound in BMI, occurs at different ages and between males and females)<sup>65</sup> and in older adults (where evidence suggests that increased fat mass is less harmful, and may be protective with increasing age, known as the obesity paradox in older adults).<sup>65</sup>

The gold standard measures for the quantitative evaluation of intra-abdominal adipose tissue are CT and MRI<sup>66</sup>; however, these measures are time consuming, invasive, and expensive for population-wide use. Other techniques demonstrating more information on fat distribution such as body impedance analysis and DXA face the same challenges making them unsuitable for clinical practice use.<sup>67</sup>

Waist-to-height ratio, a measure of body fat distribution, has been shown to be a good predictor of metabolic risk, while ratios between torso height, area, and volume (primary shape and shape tendency) are examples of alternative measures. However, in almost all of the alternate measurement techniques, validation of cutoff values has not been undertaken, nor has consideration been given to the variation across age and different cultural groups.<sup>65–69</sup> Innovative techniques are being developed and validated, including 3D scanning systems using novel measurement data<sup>68</sup> and modelling of shapes.<sup>69</sup> These may have a role in the diagnosis of obesity into the future; however, currently, there is no clear alternative to the pre-existing anthropometry-based measures.

The guidelines provided minimal coverage for specific at-risk populations. Despite obesity being much more prevalent among people with disability,<sup>70,71</sup> those with mental health conditions,<sup>72,73</sup> and Indigenous people,<sup>74,75</sup> few guidelines contained recommendations for these populations. The increased risk of obesity among Indigenous populations can be understood with reference to inequities in the social determinants of health.<sup>74,75</sup> The disproportional impact of obesity on these populations and the potential need for contextually relevant management strategies warrants explicit attention to these populations in future guidelines.

Although there is established evidence for behavioral approaches and bariatric surgery, evidence regarding new pharmacotherapies, in addition to benefit and harm outcomes arising from existing pharmacotherapeutic treatments, continues to emerge. The most recent evidence regarding the drug effects on weight outcomes, including whether each is definitely, or possibly, better or worse than behavioral modifications,<sup>76</sup> is likely yet to be embedded within pre-existing guidelines. These remain a consideration in future guideline development.

Strengths of this scoping review include the breadth of populations covered and the comprehensive search strategy. Several limitations are acknowledged. First, there is a possibility that we did not locate all guidelines that would have been eligible for inclusion. Navigating non-English websites, even using Google Translate, was particularly challenging. The World Obesity report<sup>15</sup> identifies many countries as having obesity-specific recommendations or guidelines published for adults or children. It may be that some countries have recommendations but not guidelines and, if they have guidelines, they may not be available on the internet. Reference lists of previous reviews were not scanned for additional data sources. Second, some of the data gathered required subjective judgements on the part of reviewers, such as the categorization of behavioral treatment modalities, and assessment of guideline committee composition (whether guideline committees were formed to include knowledgeable, multi-disciplinary panels of experts were made through reviewing the professions and affiliations of panel members). Third, given the general approach to conducting scoping reviews,<sup>77</sup> a quality appraisal of the guidelines was not undertaken. Previous systematic reviews have identified that the quality of guidelines for children and adolescents,<sup>6</sup> pregnant women,<sup>10,11</sup> and adults<sup>7</sup> were highly variable. A detailed assessment of guideline development methods using the AGREE II tool would be valuable to direct future guideline development.

This review has highlighted areas in which the development of clinical practice guidelines for the management of overweight and obesity could improve. In particular, guideline developers need to give more consideration to the inclusion of people with overweight and obesity on guideline development committees, and the incorporation of recommendations for populations known to be at greater risk of obesity or requiring context-specific management strategies. Emerging evidence regarding pharmacotherapies also needs to be embedded in future guidelines, with consideration given to rapid updates for emerging therapies.

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## CONFLICT OF INTEREST STATEMENT

No conflict of interest statement.

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## SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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