

Review

Obesity in Cardiac Rehabilitation: Considerations in Offering Weight Management As Part of Cardiac Rehabilitation Programs

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Despite its relevance to cardiovascular health, obesity is rarely targeted during cardiac rehabilitation (CR). The objective of this paper was to review evidence regarding whether measures to address excess body fat should be offered as a standard component of CR for patients with obesity. We organize the paper around three themes: 1) outcomes of obesity management, 2) the complexity of obesity management, and 3) patient attitudes, experiences, and preferences. Our discussion of each theme was informed by a narrative literature review and a survey of Canadian CR healthcare providers ($n=80$). We consider literature regarding available approaches to obesity management including behavioural weight loss, pharmacological, and surgical treatments. We go on to assess concerns relating to the complexity of obesity intervention, and the importance of CR patients' lived experiences and goals. Finally, we summarize obesity management considerations in the context of the goals and interventions of CR. Although most (71%) CR providers support integrating obesity management into CR, there are concerns about training, weight bias, and unrealistic expectations for weight loss within time-limited programs. Efforts to incorporate obesity management into CR must address these barriers while considering evidence-based strategies to optimize treatment outcomes (e.g., adjunctive pharmacotherapy; long-term follow-up). Whether CR should offer obesity management depends on provider competency and program resources.

RÉSUMÉ

Malgré sa pertinence sur le plan de la santé cardiovasculaire, l'obésité est rarement ciblée dans le cadre de la réadaptation cardiaque (RC). Cet article vise à passer en revue les données probantes permettant de déterminer si des mesures visant à réduire l'excès de graisse corporelle devraient être intégrées à titre d'élément standard dans les programmes de RC pour les patients atteints d'obésité. Cet article aborde trois thèmes : 1) les résultats de la prise en charge de l'obésité, 2) la complexité de la prise en charge de l'obésité, et 3) les comportements, expériences et préférences des patients. Notre discussion sur chaque thème a été alimentée par un examen de la littérature et les résultats d'un sondage mené auprès des professionnels de la santé canadiens qui offrent des soins de RC ($n = 80$). Nous avons retenu les articles portant sur les approches actuelles en matière de prise en charge de l'obésité, dont les thérapies comportementales, les traitements pharmacologiques et les interventions chirurgicales visant la perte de poids. Nous avons ensuite évalué les préoccupations liées à la complexité des interventions ciblant l'obésité et l'importance de l'expérience et des objectifs des patients en RC. Finalement, nous avons résumé les considérations liées à la prise en charge de l'obésité en fonction des objectifs et des interventions de RC. Même si la plupart (71 %) des professionnels de la santé offrant des soins de RC appuient l'intégration de la prise en charge de l'obésité dans la RC, ceux-ci soulèvent des préoccupations à l'égard de la formation, des biais liés au poids et des attentes

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Clinical obesity is a chronic disease characterized by excessive body fat that adversely affects health.¹ Although a body mass index (BMI) of $\geq 30 \text{ kg/m}^2$ is widely used to define obesity in Western countries,¹⁻³ BMI should be interpreted alongside other indicators of body composition, functional health status, and comorbidities.² In Canada, obesity affects 30% of adults⁴ and is a contributor to cardiovascular disease (CVD) complications, rehospitalizations, mortality, and associated risk factors such as hypertension, dyslipidemia, type 2 diabetes, and inflammation.^{2,5-8} Among individuals with obesity, modest (5%-10%)⁹ weight loss is associated

More research is needed to clarify patient preferences and to establish the feasibility, long-term efficacy, and cost-effectiveness of obesity management approaches in CR.

with cardiovascular benefits, including a reduction in systemic arterial pressure, abnormal lipid profiles, platelet reactivity, inflammatory markers, poor glycemic control, and diabetes risk.¹⁰⁻¹²

Despite the association between excess adiposity with risk of CVD, it remains debated whether obesity should be prioritized over other risk factors in cardiovascular care settings.^{13,14} Cardiac rehabilitation (CR), a guideline-based intervention for the secondary and tertiary prevention of CVD,¹⁵ has been proposed as an appropriate venue to address obesity.¹⁶⁻²⁰ CR includes comprehensive CVD risk-factor modification through supervised aerobic exercise training, exercise prescription, nutritional counselling, psychosocial support, smoking cessation, management of medication, and self-management education and is typically delivered over 3 to 6 months, either in person or virtually,²¹ with support from multidisciplinary health care providers.²² CR is cost effective and improves quality of life, rates of cardiovascular mortality and rehospitalizations, as well as reduced reinfarction and repeat coronary revascularization.^{23,24}

An estimated 50% of CR patients live with obesity.²⁵ These patients often present with worse CVD risk-factor profiles^{26,27} and achieve smaller gains in cardiorespiratory fitness (CRF) compared with those without obesity.^{28,29} Nevertheless, patients of all BMIs benefit from CR,^{27,30-32} including improved CRF, obesity-related comorbidities, and metabolic profiles, regardless of weight loss.^{26,33} However, CR alone typically has small effects on weight, BMI, and percent body fat,^{12,15,34} with variability depending on demographics, comorbidities, and severity of obesity.^{27,30,35} The limited effect on weight may reflect the short duration and underemphasis on caloric balance in CR.^{25,26} More intensive strategies such as high-intensity interval training³⁶ or 3000 to 3500-kcal/week exercise-related energy expenditure³⁷ may be better to promote weight and waist loss. Importantly, exercise may still improve visceral fat and lean mass even in the absence of weight loss.⁶

Expert recommendations conclude that management of obesity should be integrated into CR,^{15,23,38-41} but specific guidance remains inconsistent. The American Heart Association (AHA) and European Association of Preventive Cardiology (EAPC) propose obesity-related CR treatment goals such as decreasing body fat, increasing lean body mass, and reducing 5% to 10% of body weight.^{15,37} In contrast, Obesity Canada³ and the Commission on the Definition and Diagnostic Criteria for Clinical Obesity¹ suggest that obesity

irréalistes en matière de perte de poids à l'égard de programmes limités dans le temps. Les efforts visant à intégrer la prise en charge de l'obésité dans les programmes de RC doivent lever ces obstacles en tenant compte des stratégies fondées sur les données probantes afin d'optimiser les résultats thérapeutiques (p. ex., pharmacothérapie adjuvante; suivi à long terme). L'intégration de la prise en charge de l'obésité dans la RC devrait dépendre des compétences du fournisseur de soin et des ressources du programme. De plus amples recherches seront nécessaires pour préciser les préférences des patients afin de déterminer la faisabilité, l'efficacité à long terme et le rapport coût-efficacité des approches visant à prendre en charge l'obésité dans le contexte de la RC.

treatment should focus on health behaviours, quality of life, and clinical manifestations. The Canadian Association of Cardiovascular Rehabilitation and Prevention (CACPR) recommends combining caloric restriction, increased physical activity, and cognitive-behavioural therapy to promote weight loss during CR.⁴¹ Yet, only 8% of CR programs offer targeted weight loss interventions.³⁹ This gap between expert opinion and real-world practice points to barriers in addressing obesity within CR settings.

Objectives and Methods

This paper is framed around the guiding question: Should obesity management be offered within CR? We organized our article around 3 themes derived from both a narrative literature review and original survey data: 1) outcomes of obesity management; 2) the complexity of obesity management; and 3) patient attitudes, experiences, and preferences.

We define *obesity management* as a heterogeneous collection of assessment and intervention strategies aimed at reducing the health risks associated with excess adiposity and improving physical and mental health among individuals with obesity, regardless of whether weight loss is a primary goal. *Weight management* is often used interchangeably with obesity management but can be seen as a broader term applicable to all individuals regardless of weight status. As there is ongoing disagreement about the appropriateness and feasibility of offering obesity management within CR,^{14,39} this paper aims to explore challenges and opportunities related to integrating obesity care into secondary prevention of CVD. Original survey data referenced in this viewpoint article were drawn from a questionnaire administered to a convenience sample of 80 CR clinicians from across Canada. The questionnaire assessed current obesity and weight-management practices, provider attitudes, and perceived barriers and enablers to management of obesity in CR and was informed by the Theoretical Domains Framework.⁴² Details about our survey sample are included in [Supplemental Tables S1 and S2](#).

Most respondents worked in large, urban CR programs (76%) serving > 1000 patients per year (49%) and identified as exercise professionals/physiotherapists (45%) or registered nurses (28%). Approximately one-half (53%) reported that they offer advice or treatment to assist with weight loss within their role in CR. Substantive open-ended responses about

Table 1. Clinicians' level of agreement with statements related to reasons for and against offering obesity management in CR (N = 80)

Statements	Mean	SD
Reasons for		
Weight reduction can lead to improved metabolic health outcomes (eg, reduced risk of type 2 diabetes, improved insulin sensitivity).	4.56	0.84
Obesity is an established risk factor for CVD and should be managed in cardiac rehabilitation similarly to other cardiovascular risk factors.	4.30	0.91
Weight loss can lead to enhanced overall quality of life for cardiac rehabilitation patients.	4.28	0.89
The multidisciplinary support for chronic disease management available in cardiac rehabilitation is well suited for delivering weight management interventions.	4.06	0.99
Patients frequently identify weight loss as a goal during cardiac rehabilitation.	4.00	0.98
Weight loss advice can be easily integrated into existing discussions about medications, exercise, and dietary changes in cardiac rehabilitation.	3.86	1.04
There are effective weight management interventions available for cardiac rehabilitation patients.	3.31	1.13
Reasons against		
I do not have adequate training to deliver weight management in a competent fashion.	3.21	1.11
I do not have enough time to deliver weight management in cardiac rehabilitation.	3.15	1.18
There is a risk of perpetuating weight stigma by offering weight-management services.	3.13	1.23
Weight management would overwhelm patients who are already making multiple health behaviour changes.	3.01	1.09
There are more important issues to address during cardiac rehabilitation than weight loss.	2.88	1.11
Treatment options for obesity are not effective in the long term.	2.60	1.02
I do not know how to talk about weight problems with my patients in a sensitive way.	2.59	1.14
My patients in cardiac rehabilitation are generally not motivated to lose weight.	2.29	0.87
Weight-management services could potentially harm patients.	2.23	1.07
Weight management falls outside of the scope of cardiac rehabilitation programs.	2.16	0.99
My patients in cardiac rehabilitation already have sufficient knowledge about weight loss strategies	2.15	0.92

Items are presented from highest to lowest mean value, in which 5 = strongly agree, 4 = somewhat agree, 3 = neither agree nor disagree, 2 = somewhat disagree, 1 = strongly disagree.

CR, cardiac rehabilitation; CVD, cardiovascular disease.

barriers and facilitators to obesity care in CR were provided by 63 participants.

Outcomes From Obesity Management Interventions

According to our survey, most Canadian CR providers ($n = 57/80$, 71%) reported being “in favour” or “strongly in favour” of integrating obesity management services into CR (see Table 1 and Supplemental Table S3 for additional attitudes endorsed). However, an often-cited barrier was the perception that obesity treatments are not effective in the long term (endorsed by 19% of providers; Table 1). Nearly 1 in 4 respondents disagreed with the statement “there are effective weight management interventions available for CR patients.” We thus went on to examine the evidence for or against this statement. Evidence-based treatment options for obesity in adults include behavioural (ie, medical nutrition therapy, physical activity counselling, or psychological intervention), pharmacologic, and surgical approaches; further details follow.

Behavioural Weight Loss Approaches

Behavioural approaches represent a cornerstone of obesity care.³ In our survey, 53% of CR providers indicated they offer behavioural support to patients with overweight or obesity to assist with weight loss (Supplemental Table S4). Of those providers, 95% reported that they discuss behavioural interventions for weight loss (such as exercise and dietary advice) at least “sometimes.” The exact frequency and content of consultations about behavioural weight loss strategies are not known. Although the real-world effectiveness of

behavioural weight loss advice delivered during CR is unclear, ample data exist on the long-term efficacy of formal behavioural weight loss treatments (BWLTs). BWLTs focus on assisting patients to achieve caloric restriction (typically ≥ 500 kcal/day deficit depending on individual patient factors) and regular physical activity patterns (≥ 150 minutes per week of moderate to vigorous aerobic exercise).^{3,43} To optimize outcomes, it is recommended that BWLT be delivered by trained interventionists (eg, psychologists, dieticians, nurses) adhering to formal treatment protocols via ≥ 14 sessions over 6 months, followed by less frequent, long-term maintenance sessions using behavioural therapy techniques such as self-monitoring, stimulus control, goal setting, and regular feedback.⁴³

BWLT tends to produce 5% to 10% weight loss over 3 to 6 months of treatment, followed by steady weight regain post-treatment.⁴⁴ For example, the **Action for Health in Diabetes (Look AHEAD)** study provided state-of-the-art BWLT to patients with type 2 diabetes and mean BMIs of 36.3 and 35.3 kg/m² for women and men, respectively.⁴⁵ The program included ≥ 14 behavioural therapy sessions during a 6-month period to support participants in maintaining a low-calorie diet and 150 minutes per week of aerobic exercise, followed by maintenance sessions for up to 8 years. Average weight loss in the BWLT group was $8.5\% \pm 0.2\%$ at 1 year. At 8-year follow up, the BWLT group averaged 4.7% weight loss, indicating that patients regained one-half of the weight they initially lost.⁴⁵ The **Promoting Successful Weight Loss in Primary Care in Louisiana (PROPEL)** trial was a multisite cluster randomized controlled trial (RCT) that tested an intensive BWLT among patients from underserved populations with BMIs of 30 to 50 kg/m². Participants experienced a mean 7.3% weight loss at 6-month follow-up (95%

confidence interval [CI], 6.5%-8.2%) and steadily regained some weight following the intervention, with 24-month loss of 5% (95% CI, 4%-6%). PROPEL participants also showed better high-density lipoprotein (HDL) cholesterol and metabolic syndrome severity than controls at 24 months.⁴⁶ Results from high-resourced BWLTs such as those tested in Look AHEAD and PROPEL suggest that, even with intensive behavioural intervention, at least some degree of weight regain is almost certain. Considering that cardiovascular benefits can be achieved by maintaining a modest amount of weight loss,^{12,43,46} the results of these studies suggest that implementing BWLT within CR may be a worthy endeavour if adequate long-term follow-up can be provided.

Prospective studies have explored the feasibility and efficacy of implementing BWLT within a CR setting. A systematic review described 10 studies (including 3 RCTs) examining BWLT delivered either during or following CR to overweight and obese patients, with interventions ranging from 4 to 12 weeks.²⁵ Average short-term percent body weight loss ranged from -2.4% to -6.4%,^{25,26} when reported ($n = 5$ studies). These studies had short follow-up periods, with only 1 showing sustained weight loss at 6 months. Given our knowledge of BWLTs in other settings, it is plausible that short-term weight loss in BWLT + CR is transient unless maintenance intervention is offered.¹⁹ **Optimal Cardiac Rehabilitation XL (OPTICARE-XL)** illustrates some of the challenges with targeting long-term weight loss in CR. This was a multicentre RCT comparing a CR stream for patients with CVD and obesity (CR + BWLT, $n = 102$) with traditional CR ($n = 99$). In addition to standard CR components (eg, aerobic exercise, risk-factor control), patients randomized to CR + BWLT received 16 healthy weight modules facilitated by dietitians, social workers, and psychologists. Intervention patients also received ongoing peer support and a 9-month after-care program including 6 booster sessions. Although patients in the CR + BWLT group lost more weight (-3.6 kg vs -1.8 kg) and increased physical activity (+ 880 vs + 481 steps/day) relative to the traditional CR group at 3-month follow up, group differences were not significant at 6 months.^{47,48} Additional consultation with patients and health care providers, more frequent patient contact during the follow-up period, and telerehabilitation options might be considered in future CR + BWLT research.⁴⁸

Weight rebound following BWLT is a potential problem. Repeatedly losing and regaining a significant amount of weight can lead to demoralization, poorer metabolic health, and risk for atrial fibrillation, with some research suggesting body-weight variability is more harmful than maintaining an elevated body weight.⁴⁶⁻⁴⁹ Weight regain is influenced by an interplay of the modern obesogenic environment, physiological adaptations to weight loss, the psychological experience of deprivation associated with caloric restriction, and competing personal demands that hinder long-term health behaviour change.⁵⁰ The ASPIRE program offers a promising BWLT model to mitigate these challenges.⁵¹ ASPIRE was designed to prevent weight regain by encouraging very-small-scale but sustainable behavioural changes along with strategies to manage psychological and environmental drivers of obesity.⁵² Patients set weekly, cumulative goals regarding their nutrition and physical activity following a SMALL

(Specific, Measurable, Action-Oriented, Linked to your Life, and time-Limited) framework. They receive weekly support from a trained clinician in a group-based setting to troubleshoot barriers to goal attainment. An example of a popular tool used in ASPIRE is the QQF, which guides patients in making small changes to the Quality (eg, swapping a high-sodium snack for a lower-sodium variety), Quantity (eg, eating 2 cookies instead of 4), and Frequency (eg, having cookies for a snack 3 days a week instead of 7) of their nutrition choices (Table 2). ASPIRE has been tested in at least 12 studies across medically complex and socially disadvantaged populations, with low attrition and high acceptability.⁵³ Nine of 12 studies to date demonstrate sustained weight loss with follow up periods up to 24 months.⁵⁴ Consistent with the importance of small-scale behavioural change for CVD, maintaining a modest ≥ 7500 steps per day for 1 year following an acute coronary syndrome event was shown to improve waist circumference and lipid profiles in an observational study of 41 patients.⁵⁵ An RCT comparing traditional CR with CR + ASPIRE is currently underway to determine whether augmenting CR with BWLT is efficacious among patients with atrial fibrillation and obesity.¹⁸

The strong possibility of long-term weight cycling following BWLT could be a factor behind some respondents in our survey, indicating that “weight management services could potentially harm patients” (15% endorsed). Further, survey participants who expressed concern about ineffective treatment options for obesity may have been considering the modest long-term efficacy of behavioural weight loss approaches (such as those described here) when providing this response.

Pharmacologic and Surgical Approaches

Obesity treatment guidelines recommend adjunctive pharmacotherapy among patients with BMI ≥ 30 kg/m² or 27 kg/m² and obesity-related comorbidities.^{3,43} The Semaglutide Treatment Effect in People With Obesity (STEP) trials demonstrated that the glucagon-like peptide-1 receptor agonist (GLP-1RA) semaglutide produces 14.9% to 17.4 % weight loss at 68-week follow-up among patients with obesity and no diabetes.⁵⁶ In the STEP5 trial, 61.8% of participants maintained a loss $\geq 10\%$ of their initial weight at 2 years vs 13.3% with placebo.⁵⁷ Further, semaglutide reduces major adverse cardiovascular events and may be cost effective among adults with CVD and elevated BMI.⁵⁸⁻⁶¹ Accordingly, Health Canada recently approved semaglutide to reduce the risk of nonfatal myocardial infarction in patients with elevated BMI and established CVD.⁶² A meta-analysis of 31 RCTs and more than 35,000 patients reported that tirzepatide had the greatest efficacy for weight loss among the incretin mimetic medications.⁶³ Tirzepatide is currently approved for treating obesity in the United States, the United Kingdom, and the European Union but not yet in Canada.

CR programs could help identify patients with atherosclerotic CVD and excess adiposity who stand to benefit from guideline-indicated obesity pharmacotherapies. Yet, in our survey, 64% of CR providers “rarely” or “never” discuss medications for weight loss. Up to 96% of patients receiving semaglutide report at least mild side effects, and 3% to 7% report adverse effects, leading to discontinuation.⁵⁶ Studies are exploring dosing and tapering strategies to minimize

Table 2. Suggested strategies to optimize conversations about obesity management in CR

Strategy	Examples and resources
Seek training in patient-centred approaches to combat weight bias and examine own attitudes and beliefs about obesity.	• Obesity Canada education for health care professionals (https://obesitycanada.ca/healthcare-professionals/education/) • Supportive Obesity Care web-based resources through the Rudd Centre at UConn (supportiveobesitycare.rudd.center.uconn.edu/)
Ensure that patients with obesity do not experience bias, stigma, or discrimination during their treatment in CR.	• Confirm the clinic space and equipment are accessible to patients of all body sizes (eg, blood pressure cuffs, waiting room chairs). • Be aware of one's own biased attitudes and behaviours toward patients with obesity (eg, avoid using judgemental terms to describe patients with obesity such as "fat" or "heavy"). • Avoid oversimplifying weight loss with advice that simply refers to eating less and exercising more. • Do not assume that patients' health status in CR was caused by their body weight or obesity. • Suggest that patients make changes relative to their current baseline health habits rather than being expected to meet universal calorie (eg, 1200-1800 kcal/day) or physical activity (eg, 150 minutes/week) recommendations.
Encourage small-scale but sustainable behavioural changes.	• Aim for patients to set weekly (Specific, Measurable, Action-Oriented, Linked to your Life, and (Time) Limited) goals to support gradual changes to nutrition and physical activity habits. • Suggest the QQF Tool to help patients make changes to the <u>Q</u>uality, <u>Q</u>uantity and <u>F</u>requency of higher-calorie nutrition choices.
Explore strategies to manage complex drivers of obesity	• Prioritize health behaviour change, health outcomes, and quality of life over changes in BMI or body weight. • Assess and treat psychiatric comorbidities including anxiety and depression. • Consider potential role of cardioprotective and other medications that inadvertently promote weight gain. • Ask patients about their family and social support.
Do not assume that all CR patients with larger bodies want to (or need to) discuss their weight	• Ask permission: "Would it be all right if we discussed your weight?" • Personalize advice to match patients' goals, preferences, and values. • Use a motivational interviewing approach to explore readiness to change and enhance self-efficacy.
Provide accurate advice on the range of management options for obesity	• Keep up to date on available evidence-based treatment options for obesity (including psychological, pharmacologic, and surgical therapies). • Compile a list of local resources (eg, obesity specialty clinics, bariatric programs, private psychologists, commercial programs). • Refer to obesity specialists when appropriate or outside your scope of practice.

BMI, body mass index; CR, cardiac rehabilitation.

weight regain, but it is still unclear whether patients can maintain weight loss after stopping pharmacotherapy for obesity. In addition, structured moderate-to-vigorous intensity exercise is recommended alongside use of GLP1-RAs to prevent lean mass loss and prevent increases in resting heart rate associated with use of these agents.⁶⁴

Bariatric surgery is the most effective treatment for achieving significant ($\geq 30\%$) and lasting weight loss among patients with BMI ≥ 40 or with BMI ≥ 35 kg/m², in addition to obesity-related comorbidities.^{6,65} Bariatric surgery is well established to improve CVD outcomes and is acknowledged as a treatment option in the 2024 AHA Scientific Statement on core components of CR.¹⁵ Despite its established efficacy and cost effectiveness, bariatric surgery is accessed by few eligible patients, in part because of knowledge gaps among patients and health care providers.⁵⁶⁻⁵⁹ According to our survey results, bariatric surgery is rarely discussed by Canadian CR health care providers (88% of participants reported they "never" or "rarely" discuss surgical treatment options), which might relate to our sample consisting of mostly nonphysicians. CR providers could play a role in increasing awareness regarding patient eligibility and referral pathways to weight loss surgery when indicated (eg, discussing surgery with one's family physician). CR could also promote perioperative health behaviour change and CRF among patients with CVD undergoing bariatric surgery,⁶⁶ although guidelines are needed on specific exercise training protocols for this population. The need for intensive and expensive pharmacologic and surgical obesity treatments could also be mitigated by increasing the availability of effective dietary and exercise-training interventions.¹²

The Complexity of Obesity Management

A widely reported barrier to addressing obesity within CR is the complexity of delivering effective obesity care in resource-constrained settings. In our survey, one-third to one-half of CR providers "strongly" or "somewhat" disagreed with these statements: "I have sufficient knowledge about effective weight-management approaches for CR patients" (38%); "I possess the appropriate skillset to competently deliver weight management as part of my CR practice" (40%); "My current workload would allow me to incorporate weight management into my CR practice" (50%); and "My CR centre has the necessary resources to support weight-management services" (39%); see [Supplemental Table S3](#). Open-ended responses (n = 16) similarly cited inadequate time, staffing, training, psychosocial support, and resources as reasons against offering obesity care in CR. These findings are consistent with literature suggesting that effective obesity treatment typically requires sustained support from qualified interdisciplinary providers.⁶⁷

A related challenge lies in the multifactorial etiology of obesity, which can complicate CVD treatment. Historically framed as a condition driven by poor willpower, excessive caloric intake, and low physical activity,⁶⁸ obesity is now recognized as a complex, chronic disease with biological, psychological, and social determinants that can include genetic predisposition, hormonal changes, mental illness, comorbid medical conditions, medication side effects, body-image dissatisfaction, low self-efficacy, weight bias and stigma, socioeconomic barriers, and negative health care experiences.^{8,69} Functional limitations, common among CVD patients with obesity, can also impede adherence to exercise

prescriptions.⁶⁴ Moreover, intentional weight loss may be contraindicated in specific CVD populations, such as heart failure with reduced ejection fraction,⁴⁰ and may be complicated by concurrent medication use that promotes weight gain (eg, insulin, sulfonylureas) or by smoking-cessation efforts.⁷⁰ These factors add layers of complexity to treating obesity that may be difficult to address in CR.

In response to these challenges, lower intensity, technology-supported, and self-directed obesity interventions have been tested to address accessibility and capacity issues.^{8,23,71} For example, Barnason and colleagues⁷² randomized 43 patients with BMI > 25 kg/m² following percutaneous coronary intervention or bypass surgery to standard CR or CR plus a nurse-delivered 12-week telehealth BWLT. This intervention combined written educational materials, virtual modules, and telephone coaching sessions to target caloric intake, portion control, self-monitoring/evaluation, and weight-reduction behaviours. Compared with standard CR, participants in the intervention achieved greater weight loss (5.9% vs 3.6%), improved patient activation, dietary self-efficacy, and higher adherence and satisfaction. Among patients with CVD with BMIs $\geq$ 27 kg/m² who were participating in 12-week CR, those randomized to an external Weight Watchers program lost more weight than patients in usual care at 12 months (-2.4 ± 7.1 kg vs -0.2 ± 4.6 kg).³⁵ Stepped-care approaches have also been used to enhance the cost effectiveness of obesity management with variable levels of success.⁷³ The Step-Up study randomized 363 participants with overweight/obesity to a traditional BWLT or to a program in which complexity of treatment was titrated based on weight loss progress at 3-month intervals. At 18 months, the stepped-care intervention was associated with clinically meaningful weight loss (-6.9% weight change) and lower costs per participant than usual care.⁷³ Although promising, such innovations require further study and careful consideration of long-term follow-up needs.

Patient Attitudes, Experiences, and Preferences

Obesity management in CR must be considered in the context of patients' perspectives and priorities. In our survey, most (76%) CR providers indicated that patients frequently identify weight loss as a goal during CR (Table 1). Bates et al.⁷⁴ synthesized qualitative studies on barriers and facilitators to weight loss among individuals with CVD, including CR participants. A central theme was patients' desire to change, often catalyzed by the "wake-up call" of illness, identity shifts, social expectations, and early signs of progress; patients generally sought to improve their health and re-engage in meaningful activities rather than achieve weight loss as a stand-alone goal. Weight loss was sometimes viewed as a visible marker of commitment to recovery or as a means to reduce the stigma associated with chronic illness.

Further, patient-reported interest in losing weight may not translate into objective demand for obesity management services. A systematic review of CR patient preferences reported that exercise and nutrition counselling were rated as high-priority components of care, whereas obesity management was not mentioned in any of the included studies.⁷⁵ Similarly, a chart review study identified improvements in

physical activity and a "return to normal life" as the most common patient-identified goals in CR. Fewer than 1% of patients identified weight loss as a goal, despite nearly half having obesity.⁷⁶ These findings suggest that weight loss may not always be a priority of patients participating in CR. Provider perceptions reflect this nuance. In our survey, 61% of the CR providers "strongly disagreed" or "disagreed" that "my patients in CR are generally not motivated to lose weight," indicating a belief that patient motivation to address obesity during CR exists. Yet, 41% of survey respondents perceived that adding obesity management to CR could overwhelm patients who are already making multiple health behaviour changes. In our survey, several CR providers (n = 10) emphasized in open-ended responses that discussions about obesity management should be patient-led (ie, raised by the patient or clearly aligned with their goals) with some providers noting that although obesity management services should be available in CR, participation should remain optional. Many CR providers in our survey also expressed a preference for focusing on health behaviours and improvements in clinical markers, regardless of whether weight loss occurs. In open-ended responses (n = 10), CR providers noted that they prefer to emphasize risk-factor modification beyond weight and that weight is only one of many indicators of overall health.

Also, patients often hold unrealistic expectations about weight loss. Many are dissatisfied with the 5% weight loss typically achieved through BWLT, preferring 15% to 20% reductions more commonly associated with pharmacologic and surgical intervention.⁷⁷ Patients with higher internalized weight stigma tend to prefer greater weight loss.⁷⁷ If CR is positioned as a weight loss intervention but fails to meet patient expectations, patients may perceive the program as ineffective, potentially leading to feelings of discouragement and abandonment of cardioprotective behaviours.¹⁹ In our survey, open-ended responses (n = 10) echo this concern, with providers noting that a focus on weight could overwhelm patients and detract from other CR priorities. Efforts to manage obesity within CR must be balanced against co-occurring CVD risk reduction goals (eg, meeting basic physical activity and sedentary behaviour targets)⁷⁸ and patients' priorities.

Many CR providers also expressed concern about how to discuss weight-related topics sensitively. In our survey, 30% reported lacking the professional knowledge to do so. One-half of those surveyed (50%) agreed there is a risk that offering obesity management in CR could perpetuate weight bias. Open-ended responses (n = 5) raised concern about reinforcing diet culture or disordered eating and personally observing "untactful" consultations with CR patients regarding body size and weight. Weight bias is pervasive, including among the professional disciplines involved in CR (eg, medical doctors, nurses, dietitians, psychologists, physiotherapists, exercise physiologists)⁷⁹ and has well-documented psychological, physical, and social consequences.⁸⁰ Well-intentioned weight-centric interventions can reinforce bias, particularly when body weight is framed as fully within individual control.⁸¹ Given that most patients with obesity have previously made at least one serious weight loss attempt,³³ oversimplifying weight loss can undermine therapeutic relationships, disempower patients, and reduce health care quality.⁸² Ultimately, decisions about

offering obesity management in CR must consider potential benefits against the risk of reinforcing weight bias⁸³ and must be guided by both clinical priorities and the experiences of individual patients.

Obesity Management in the Overall Context of CR Goals

Health care providers and scientists generally support addressing obesity during CR. There is considerable overlap in the behavioural targets to manage CVD and those to manage obesity including promotion of exercise, dietary modification, stress management, and adherence to medication.¹⁶ In the current era of medicalized obesity treatments, behavioural strategies remain relevant to patients' health literacy, managing hunger and cravings, engaging in regular exercise, and addressing the psychosocial correlates of CVD and obesity. CR patients are often motivated to adopt new health behaviours and are supported by skilled interdisciplinary health care teams.⁸⁴ Further, CR providers are already "in the business of" managing other complex conditions relevant to CVD risk such as hypertension, depression, and diabetes; arguably, obesity warrants the same level of urgency and attention.^{16,39} However, there is concern about whether CR programs are equipped to provide effective, sensitive, long-term management of obesity. Ignoring the "elephant in the room" of obesity in CR³⁹ may result in missed opportunities for meaningful change. Person-centred discussions about weight could position CR as part of a broader strategy to improve health and quality of life (rather than singularly focusing on weight loss). Enthusiasm for integrating obesity care into CR must be balanced against patient perspectives and potential unintended consequences. At present, there is limited research capturing how CR patients with obesity experience weight-related discussions and how they define significant progress. As such, programs interested in integrating obesity care into CR should proceed cautiously, with attention to patient priorities and a flexible, weight-inclusive approach that emphasizes health gain vs weight loss alone.

There are several priority areas for research to address CR barriers in obesity care. More RCTs are needed to ascertain whether adding well-described obesity interventions to traditional CR is feasible, cost effective, and leads to long-term weight maintenance and favourable CVD outcomes. Management of obesity may be more widely adopted and funded within CR if there is a strong evidence base to support its benefits. The effectiveness of stepped-care obesity algorithms should also be evaluated. In addition, helping CR providers to build competency in obesity management and to reduce weight stigma may address problems with low perceived knowledge and skill.^{3,19,39,85} In addition, given their cardioprotective and durable weight loss effects, long-term studies are needed to assess whether combining GLP-1RAs with CR yields sustained body composition improvements, cardiovascular benefits, and is feasible to manage in a CR setting. Research is also needed to clarify quality indicators for CR-based management of obesity.¹⁶ Weight loss and BMI are problematic as stand-alone outcomes.^{15,86} Body fat distribution; lean body mass; waist circumference; health behaviours; psychological health; weight maintenance; and objective improvement in cardiovascular, metabolic, and

musculoskeletal function may be consequential outcomes of interest.^{1,13,17} For example, fat loss (ie, losing adipose tissue while maintaining lean muscle mass) and fat distribution (ie, the extent of accumulated ectopic and visceral fat) is more closely related to cardiovascular health than weight loss.^{87,88} The most "important" outcome depends on the clinical presentation, risk profile, and preferences of each patient. It is plausible that obesity management efforts can target weight loss in addition to patient-centred and clinical endpoints (these outcomes are not mutually exclusive). Finally, it is important to acknowledge that the obesity management strategies discussed here focus on individual patient factors and neglect the significant societal, environmental, and global drivers of obesity.

The clinical skills needed to deliver effective obesity care are learnable by a range of health care providers.⁸⁹ Supporting CR providers to build competency in obesity management may address problems with low perceived knowledge and skill.¹⁹ The 5A Model is a motivational communication tool adapted from the smoking cessation literature—consisting of the steps ask, assess, advise, agree, and assist—that is a feasible guide to brief, sensitive, and effective conversations about management of obesity.³ A subset of providers within a CR team could be selected to develop obesity-specific competence to deliver evidence-based BWLT,³⁹ such as through the accredited Calibre Program.⁹⁰ Further, at least 25 studies (7 RCTs) have tested interventions to reduce weight stigma in health care settings.⁸⁵ Effective strategies include education regarding the limited controllability of weight, empathy-evoking vignettes and clinical videos, training in weight-inclusive paradigms, and interventions combining these approaches. [Table 2](#) provides a summary of patient-centred strategies to adopt during conversations about weight and obesity. Further research is needed to examine the impact of obesity training for CR providers on provider confidence, quality of health care interactions, and patient outcomes.

Conclusions

Obesity plays a critical role in CVD, and there is interest in whether CR should incorporate evidence-based obesity interventions. Integrating obesity treatments into CR could improve access to care for populations who are underserved by existing obesity services, particularly if delivered in a way that is sensitive, flexible, and grounded in patient goals. However, whether CR centres and providers should take on this role depends on each program's access to the resources and expertise to implement long-term evidence-based treatments that minimize weight regain and cycling, address the complex biopsychosocial and environmental drivers of obesity, and avoid reinforcing weight stigma and bias. Although certain patients with obesity who attend CR may benefit from weight loss intervention, questions remain about whether obesity can be practicably and ethically incorporated as a universal component of CR without enhanced funding and resources devoted to CR centres across Canada. Before wide-scale implementation, more research is needed to clarify patient preferences and establish the feasibility, long-term efficacy, and cost effectiveness of obesity management approaches in CR.

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Data Statement

The data from this study are unsuitable to post. Participants did not consent to data sharing beyond the study team.

Ethics Statement

The research reported has adhered to relevant ethical guidelines.

Patient Consent

The authors confirm that patient consent is not applicable to this article. Individual patient data were not used nor collected for this study; patient consent was not needed.

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Disclosures

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Supplementary Material

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