


## REVIEW OPEN ACCESS

# Integrative Strategies in Primary Care: Addressing Recurrent Weight Gain Post-Metabolic and Bariatric Surgery

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## ABSTRACT

**Background:** Metabolic and bariatric surgery (MBS) is the most effective and durable approach to treating obesity, yet recurrent weight gain occurs in a subset of patients. Primary care often serves as a routine point of contact for patients following MBS and is a potential gateway for addressing and/or preventing recurrent weight gain.

**Methods:** Although guidelines for the management of recurrent weight gain after MBS exist, this narrative review was undertaken to clarify the role of the primary care providers in enhancing long-term outcomes and preventing weight gain after MBS.

**Findings:** Regular follow-up in primary care provides an opportunity to identify challenges related to weight management and overall health outcomes, which may include concerns related to nutrition, mental or physical well-being, body image, motivation, and behavior change, for example. The availability of multidisciplinary providers within primary care settings, including behavioral health specialists, dietitians, and physical therapists, is an important strength of this setting in addressing potential post-MBS concerns such as recurrent weight gain.

**Conclusion:** This review outlines clinical considerations for managing recurrent weight gain post-MBS in primary care and includes recommendations for both primary care providers and specialty clinicians working in primary care to deliver care effectively and mitigate weight stigma post-MBS.

**Abbreviations:** AOM, Anti-Obesity Medication; IBH, Integrated Behavioral Health; IFSO, International Federation for the Surgery of Obesity and Metabolic Disorders; MBS, Metabolic and Bariatric Surgery; PCP, Primary Care Provider; RD, Registered Dietitian.

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## 1 | Introduction

Metabolic and bariatric surgery (MBS) is currently the most effective and durable approach for treating obesity [1, 2]. While MBS has demonstrated efficacy in promoting weight loss and improving obesity-related comorbidities [3], individuals who undergo MBS may face obstacles in the long term, including challenges like recurrent weight gain, nutritional deficiencies, gastrointestinal symptoms, and increased risk of alcohol and substance use [4]. These concerns can arise from a variety of modifiable (e.g., dietary adherence problems, psychological concerns, physical inactivity, limited social support) [5] and non-modifiable factors (e.g., hormonal and genetic factors) [6] and generally require a multidisciplinary approach to care.

Primary care is an accessible point of contact for a wide range of patients and offers comprehensive and coordinated care [7]. Primary care is especially important in providing continuity of care for people with chronic diseases such as obesity [8]. Furthermore, guidelines increasingly emphasize the management of obesity within a primary care setting [9, 10]. Behavioral interventions, including medical nutrition therapy (MNT), physical activity and counseling, continue to be essential components [11, 12]. Additionally, primary care plays a significant role in providing pharmacological treatments [9, 13] and making referrals to MBS [2, 14]. Continuous structured chronic disease management is important, as long-term follow-up is recommended for patients who have undergone MBS. A shared-care model, characterized by a collaborative approach between surgical clinics and primary care, is proposed to facilitate long-term follow-up after MBS [15]. However, current guidelines are not clear about how primary care follow-up should be approached, even though annual healthcare visits following MBS are typically the minimum recommendation [14–16]. Nevertheless, there is an absence of structured recommendations for primary care providers (PCPs) providing follow-up care for patients after MBS [17–19].

As indicated above, patients may experience several challenges after MBS, including recurrent weight gain. After an optimal clinical response to MBS, it is expected that most patients regain some weight [20]. However, patients may be affected by late clinical deterioration, meaning that they experience recurrent weight gain of > 30% of the initially lost weight or worsening of an obesity-related complication [21]. Despite the limited knowledge of its long-term effects, recurrent weight gain after MBS has been associated with an increased risk of vascular disease but not with reduced life expectancy [22].

Recently, the International Federation for the Surgery of Obesity and Metabolic Disorders (IFSO) published a position statement of therapeutic guidelines for recurrent weight gain and obesity-related complications following MBS [20]. These guidelines provide unified definitions of MBS terminology that have historically not been clearly outlined and include strategies for multidisciplinary assessment and intervention after MBS in the areas of diet/nutrition, behavioral health, surgical, and pharmacological treatments [20, 23, 24]. While important, these guidelines were limited to specialty practice and did not provide recommendations for the management of MBS in primary care. This is a significant oversight as primary care is where the

majority of post-operative MBS healthcare beyond the first 1–2 years often occurs and could have a possibility to provide patients multidisciplinary care [13, 16, 25].

It is thus not surprising that a recent study explored the dissemination efforts of the IFSO guidelines to primary care and found significant gaps in PCPs' knowledge about the updated guidelines, further suggesting a need for more targeted recommendations to this group of clinicians [26]. Unfortunately, despite the frequency with which PCPs care for patients of higher weight and who have had MBS, many PCPs do not receive adequate training in this area [27, 28]. Some research has identified barriers to effective obesity care in primary care including PCPs feeling uncomfortable initiating weight-focused discussions, having inadequate knowledge or understanding about weight trajectories and causal factors following MBS, and having low confidence to address post-MBS complications [29].

It has been suggested that weight loss outcomes are better for patients seen within an MBS practice compared with other providers (including primary care) [30] and this may be due to a lack of specific guidance and training for PCPs to care for patients adequately and appropriately after MBS. Additionally, weight stigma plays a role in provider-patient interactions, with PCPs having less respect for patients of higher weight, believing weight-related stereotypes related to non-adherence about their patients, and spending less time educating patients about obesity and health [31]. This stigma may contribute to recurrent weight gain and create a barrier to seeking and receiving care after MBS.

The aim of the current paper was to adapt and extend the recently published IFSO guidelines to primary care. We will outline clinical considerations for disciplines who may work in primary care, including for PCPs and clinicians in the areas of behavioral health, medical nutrition therapy, and physical activity/exercise. Additionally, we will describe strategies to mitigate weight stigma for post-MBS patients seeking care with their PCP.

## 2 | Weight Stigma in Primary Care

Weight stigma, or anti-fat bias and discrimination, is prevalent not only in society at large but also in healthcare settings [32]. Weight stigma within a primary care environment may negatively influence both the referral process for and the utilization of MBS [32–35]. Furthermore, it reduces patients' likelihood of receiving high-quality primary care after undergoing MBS. Thus, it is critical to understand and mitigate weight stigma in the context of post-MBS care. Even after undergoing MBS and losing weight, patients report experiencing weight stigma from family, friends, strangers, and healthcare professionals, including those in primary care. In addition to continued weight stigma, patients may experience stigma related to MBS itself, such as the belief that losing weight via MBS is “taking the easy way out,” or that people who choose to undergo MBS are “weak-willed” [36, 37]. Generally, these experiences of weight stigma after MBS are associated with reduced physical activity [38] and poorer dietary adherence [39], which may, in turn, precipitate

recurrent weight gain, shame, and avoidance of follow-up care [40].

Healthcare professionals, including those who specialize in obesity and those who work in MBS services, report high levels of weight bias [41, 42], and many endorse damaging stereotypes about higher-weight patients being lazy, undisciplined, and non-compliant [31, 43]. These harmful biases contribute to inequitable treatment of patients with higher weight. For instance, evidence suggests that they receive less patient-centered communication, less respect, and shorter visit times than their thinner counterparts [44, 45]. Consequently, patients with higher weight consistently report feeling judged and mistreated by their healthcare providers [46, 47]. More generally, the literature indicates that experiencing weight stigma in primary care is associated with reduced trust in one's provider, attempting to transfer to a new PCP, and delaying needed care [46, 48], which underscores the importance of providing stigma-free care.

Interventions to address weight stigma in post-MBS care are needed, and the following are recommendations based on the broader literature on reducing weight bias in healthcare [49]. PCPs should receive training about the negative impacts of stigma on care quality and patient well-being. Educating providers about the consequences of stigma and the unique barriers faced by post-MBS patients (e.g., stigma related to MBS itself; difficulty of adhering to dietary recommendations over time) may help to foster empathy and motivation to address weight stigma within primary care. PCPs should consider the impact of stigma on patients' mental health and ask about the patients' experiences and emotions related to the perceptions of others or their self-perception or offer to refer to a behavioral health specialist.

PCPs should strive to avoid stigmatizing language. Person-first language (e.g., "person with obesity") is preferable to identity-first descriptions (e.g., "obese patient") [50], but any use of medical language (e.g., "obesity," reference to BMI categories) can be unfavorable. One alternative is to use relative terms (e.g., "having a higher weight" or "people with larger bodies"), or else to ask patients what terms they prefer to describe their bodies [51]. Finally, it may be helpful for PCPs to take a weight-neutral approach during visits, in which they shift focus away from body weight and onto health markers (e.g., blood pressure, lipid profiles) and health behaviors (e.g., dietary habits, physical activity). This is in line with recently adapted obesity guidelines by the Commission on Clinical Obesity, which suggest that BMI-based measures of obesity provide inadequate information about health at the individual level [52].

Weight-neutral approaches are desirable because they allow providers to spend time counseling patients about directly modifiable behaviors without subjecting patients to commentary about their weight or body size, which can be stigmatizing [41, 53]. By incorporating these approaches and continually working to reduce weight stigma in primary care, healthcare professionals can help improve the health outcomes and overall well-being of patients who have undergone MBS. Table 1 offers practical guidance for healthcare providers when interacting with patients with obesity.

### 3 | Primary Care Providers

PCPs such as general practitioners, primary care physicians, physician assistants, nurse practitioners and primary care nurses play a central role in the aftercare of MBS. Long-term follow-up visits in primary care are important to identify and treat possible complications of MBS and any obesity-related comorbidities. In general, PCPs meet with patients two or more years after MBS, because the period immediately after surgery is often managed by MBS specialty teams and/or clinics. Suboptimal clinical response, recurrent weight gain, and late clinical deterioration after MBS are concerns for primary care and should be adequately addressed with empirically supported recommendations [58]. The assessment should also include evaluation of health outcomes and possible worsening of obesity-related complications [58].

PCPs also play a crucial role in assisting patients to develop a realistic understanding of weight loss outcomes and weight plateaus. Emphasizing health improvements instead of changes in BMI may effectively support broader health and quality of life outcomes (e.g., disease remission, increased self-efficacy) rather than focusing solely on weight loss or gain. The PCP can be instrumental in helping patients develop realistic expectations, reducing guilt, or shame, and discouraging unhealthy compensatory efforts, such as unhealthy dieting, which all have been linked to both weight gain and/or development of serious eating disorders in patients with a history of overweight or obesity [59].

Since the PCP is responsible for a life-long follow-up after MBS, they are the optimal healthcare provider to identify unexpected weight changes. If recurrent weight gain is observed, the PCP can start to collaboratively work with patients on determining the cause and steps to intervene if needed. Firstly, a surgical complication must be excluded; if this is suspected, the patient should be referred back to the MBS clinic [20]. The advancement of pharmacotherapy approaches for example, glucagon-like peptide-1 receptor agonist (GLP-1 RA) and glucose-dependent insulinotropic polypeptide receptor agonist (GIP RA), have been proposed as additional treatment options for patients experiencing recurrent weight gain [60]. Anti-Obesity Medications (AOMs) can be effectively administered within primary care settings. For a comprehensive review of AOM decision-making processes and a list of FDA-approved AOMs, please refer to a recent publication by Koball et al. [61].

The utilization of AOM may enhance patients' sensation of satiety, diminish perceptions of hunger, improve glucose control and provide additional cardiovascular and renal benefits [62]. However, little is known regarding the synergistic effects of MBS and AOM and future research is required. These medications may require special consideration because they may induce side effects such as constipation, nausea, or diarrhea, similar to those experienced by some patients post-MBS. Nevertheless, according to recent IFSO Delphi Consensus findings, the adverse effects associated with AOM appear to be similar both prior to and following MBS [60]. PCPs may also discuss weight loss procedures (e.g., endoscopic procedures) or revisional MBS if and when appropriate to address recurrent weight gain.

**TABLE 1** | Considerations for healthcare providers when engaging with patients with obesity [54–57].

Considerations	Detailed recommendations
Creating a size-inclusive environment	Ensure that waiting and consultation rooms are welcoming and have size-inclusive furniture and equipment, for instance: Stable scale that stands in privacy Sofas or armless chairs Sturdy examinations table Blood pressure cuffs, patient gowns available in various sizes
Addressing patient priorities	Address the issues that are most important for patient first. For instance, “is there anything specific you want to talk about today?”
Opening the conversation	Address the topic of weight with sensitivity, ask permission to discuss. For instance, “Would it be ok to talk about your weight today?” If patients do not want to discuss weight at that time, their decision should be respected.
Stigma-free communication	Validate and show empathy for weight stigma experiences Discuss the multi-etiological factors that contribute to weight and weight gain including biology, genetics, and environment (in addition to behaviors) Employ person-centered, non-stigmatizing communication style (e.g., Motivational Interviewing (MI)) Avoid assumptions about habits (e.g., assuming a patient of higher weight doesn’t exercise)
Language choices	Utilize person-first language and non-stigmatizing terminology, and use patient-preferred terminology when possible For instance, “person with obesity”, “having a higher weight,” “your weight,” “high BMI”
Weight-neutral approach	Shift focus of conversation from weight or weight loss to health markers and health behaviors
Consider patient perspectives	Seek to understand patients’ perspectives on weight and health. For instance: What are your thoughts about the management of weight and health? In what ways is your weight impacting your everyday activities? What are your ideas for the next step?
Be collaborative, supportive, and respectful	Engage in shared decision-making, offer support and propose further treatment options. Support patient with expectations and realistic goals. Respect the patient’s decision to decline additional interventions if they choose so. For instance: Could you describe your past attempts and strategies for weight reduction? Would you like to receive any support for weight management? May I provide you with further information regarding the treatment options? What are your thoughts on these options? Do you have any additional questions?
Following-up	Acknowledge the progress, validate challenges, and revise the treatment plan if needed

After MBS, patients are at increased risk of developing nutritional deficiencies, and this may impact weight trajectories following MBS. Thus, all patients need nutritional supplementation and annual life-long nutritional monitoring during primary care follow-up after MBS [16]. Several international and national guidelines have presented recommendations for required post-MBS micronutrient supplementation and lab-monitoring, which the PCP may promote and/or refer patients for [14, 16, 25, 63, 64]. Some data suggest that adherence to supplement prescriptions is acceptable within the first 6 months, but in the long term, it decreases in adults [65–67]; again, PCPs may be instrumental in providing education about the importance of adherence in long-term health and in weight maintenance.

## 4 | Behavioral Health

Integrated behavioral health (IBH) refers to mental and behavioral health providers who are embedded in the primary care setting, providing point of care consultation and brief intervention in collaboration with multidisciplinary primary care teams. In the United States, practices with IBH clinicians increased from 25% in 2017 to 57% in 2020 [68] with similar trends globally. The benefits of IBH include increased access to mental and behavioral health care in primary care and greater acceptability by patients who may be hesitant to take the many complex steps needed to initiate an outpatient appointment in a behavioral health setting [69], or avoid such settings due to associated mental health stigma. Additionally, IBH has resulted



in improvements in access and continuity of care and economic benefits [70]. IBH clinicians need to be well versed in a variety of mental health and behavioral conditions to provide evidence-based, time-limited treatment. In the case of caring for patients after MBS, IBH clinicians are well suited to managing the myriad symptoms that may arise and can triage and refer patients with greater complexity back to an MBS behavioral health specialist and/or the MBS team when needed.

Psychological and behavioral implications of MBS have long been documented (e.g., mental health changes, substance use concerns, eating disorders, post-MBS adherence) as key factors in quality of life and weight loss trajectories following surgery [58]. Additionally, people may experience changes in their interpersonal relationships and personal support networks post-surgery [71]. It is important for IBH clinicians to recognize that support following MBS is an important indicator of post-operative optimal outcomes [72–74]; patients who experience recurrent weight gain may be in particular need of support as patients have described this time period as a “lonely struggle” [75]. Approaching these patients with empathy for their post-operative experiences, which, as described above, likely includes experiencing weight stigma, and validating the experience of internal (psychological factors, motivation) and external (life changes, environmental stress) factors is critical to engaging patients and improving and maintaining health and well-being after MBS.

During follow up visits, IBH clinicians can consider focusing their assessment and intervention with patients after MBS on the following areas [76]: (1) Weight history prior to and following MBS (including experience of recurrent weight gain). (2) Experienced/perceived/internalized weight stigma following surgery and its impact on mental health and health behaviors. (3) Disordered or problematic eating behaviors (e.g., binge eating, graze eating, restrictive/restrained eating, night eating, emotional eating) or body dysmorphic disorder. (4) Physical activity level and current barriers. (5) Historical and current psychiatric symptoms, diagnoses, and medications. For detailed recommendations for behavioral health assessment after MBS, see IFSO’s Position Statement [20].

When engaging with patients post-MBS who are experiencing recurrent weight gain, IBH clinicians can employ evidence-based interventions such as Cognitive Behavioral Therapy (CBT), Motivational Interviewing (MI), Acceptance and Commitment Therapy (ACT), and/or weight inclusive approaches (e.g., de-emphasizing the importance of weight loss relative to health improvement) [54, 77, 78]. Interventions can occur in person or via telehealth or mobile health applications, individually or in groups or shared visits with the PCP or other providers. One recent study highlighted the post-operative benefits of behavioral health intervention. Compared to patients having no behavioral health follow-up, those who did have greater weight loss and less recurrent weight gain up to 5 years after MBS [79]. Despite the promise of behavioral interventions for recurrent weight gain, the current literature on the efficacy of various behavioral health care modalities remains quite limited. Clinicians should provide informed consent regarding realistic expectations about their weight

trajectory after behavioral weight management interventions based on the existing literature, which suggests that patients may not experience the magnitude of weight loss desired (with many losing no weight) and have a high risk of weight recurrence over time.

IBH clinicians should carefully consider when post-MBS concerns arise and should be prepared to refer to a higher level of care (back to the MBS team) when needed. One salient concern to consider includes alcohol/substance use problems that can occur in approximately 10%–20% of patients following MBS [80]. Additionally, psychological challenges including the return of depression or anxiety symptoms that abated in the early post-operative period, as well as self-harm and suicide, which may be more commonly seen after MBS [81, 82]. Also, although less commonly seen post-MBS eating disorder symptoms (especially subclinical binge or loss of control eating) may arise. All of these psychosocial issues after MBS can impact the potential for weight recurrence and poor quality of life. Risk factors for recurrent weight gain as well as psychological and/or behavioral concerns can be readily assessed and intervened upon by IBH clinicians.

IBH clinicians should also have resources for support following MBS readily available to patients, which could include local or virtual MBS support group options, educational information including common/average post-MBS weight loss trajectories to level-set expectations, physical activity resources, and educational resources on: key factors associated with weight recurrence following MBS, self-monitoring, physical activity recommendations, mindfulness, problem solving, eating disorders, substance use, psychiatric implications of MBS, and navigating relationships after MBS [74]. Additionally, contact information for the MBS team when a referral is needed or if the patient has questions may be useful.

## 5 | Medical Nutrition Therapy

The causes of recurrent weight gain following MBS are multifaceted [83], with dietary factors playing a crucial role in the long-term outcomes. Studies have shown that patients may experience difficulties following recommendations for post-surgical meal plans, which may challenge their post-operative weight management [84, 85]. During the initial years after surgery, regular access to specialized bariatric dietitians is an essential part of postoperative MBS care [86]. Subsequently, patients’ access to medical nutrition therapy provided by RDs in primary care settings may be hindered by obstacles such as inadequate health insurance coverage or limited allocation of resources for obesity treatment [87].

The effectiveness of post-MBS medical nutrition therapy delivered in primary care settings has been less researched. It is conceivable that RDs in primary care may require further training in specialized medical nutrition therapy to effectively support these patients. However, in primary care, RDs possess unique qualifications for providing medical nutrition therapy throughout patients’ lifespans. RDs are crucial in assessing and

supporting healthier eating habits and weight management, while also ensuring adequate nutritional intake from food and supplements. A critical component of their role involves the prevention and management of nutritional deficiencies. Long-term nutritional guidance focuses on promoting a well-balanced and nutritious dietary pattern [14] (See Table 2). Annual follow-ups with a dietitian have been associated with positive effects on eating behavior, weight outcomes, and nutritional health [88, 89]. Patients may benefit from participating in RD-led support groups, video calls, or in-person clinic visits in primary care. RDs in primary care are also important in supporting patients in reaching other health goals with medical nutrition therapy than just weight outcomes [90].

There is a lack of evidence that medical nutrition therapy and behavioral changes alone can reverse recurrent weight gain in the long-term, given the complex multifactorial underpinnings of obesity [58]. Indeed, pilot studies utilizing remotely administered nutrition-focused behavioral interventions have yielded small but significant short-term improvements in weight management [58, 91]. Therefore, focusing on health benefits including an improved relationship with food and eating, enhanced food quality, and better cardiovascular and metabolic health are central focus areas in medical nutrition therapy in obesity treatment [74, 92].

Patients' eating patterns may be negatively influenced by several factors such as post-bariatric hypoglycemia [93], gastroesophageal reflux disease, food intolerances, malabsorption, or other gastrointestinal symptoms [94, 95]. Various factors, including work schedules, family responsibilities, social eating, mental or physical well-being, and maladaptive eating patterns or alcohol use, have been reported by individuals who have experienced recurrent weight gain as a challenge in maintaining a healthier weight [96]. Financial constraints may lead some individuals to choose more affordable processed food options and experiences of food insecurity. Consequently, it is crucial for dietitians in primary care settings to work in conjunction with other health care professionals, particularly psychologists, to provide comprehensive stigma-free support.

As discussed above, when considering the initiation and continuation of GLP-1 medications, RDs in primary care should be

utilized to support patients with strategies to optimize the treatment, minimize side effects, and achieve patients' nutritional needs [97]. Considering the appetite-suppressing effects, it is crucial to provide nutritional guidance that emphasizes preserving muscle mass and ensuring sufficient nutrient intake [97].

6 | Physical Activity/Exercise

Physical activity, especially exercise and resistance training, is essential for maintaining good health and has been demonstrated to facilitate weight loss maintenance after MBS [98, 99]. Several health benefits including improved cardiovascular profile (lipids, glucose metabolism, insulin sensitivity, blood pressure), preservation of muscle mass, enhanced muscle strength, increased bone mineral density, improved mental health and enhanced quality of life have been associated with physical activity [98]. However, many patients may experience difficulties in achieving the recommended levels for physical activity after MBS [100].

For individuals with obesity, maintaining an adequate level of physical activity can be challenging due to the restrictions imposed by greater body size. They can be affected by pain in weight-bearing joints and feet, and may have arthritis or musculoskeletal conditions that may need special considerations by a physical therapist [101]. Individuals of higher weight may encounter numerous obstacles to physical activity, extending beyond musculoskeletal discomfort and balance issues. These challenges include factors such as the fear of falling, excess skin, fatigue, and psychological factors such as anxiety [102]. Additionally, weight-related stigma and limited access to exercise facilities can further impede their ability to engage in regular exercise [102].

Physical therapists in primary care can employ an empathetic approach to suggest a gradual progression in an exercise program and develop a tailored program that accommodates the specific needs of each patient. Physical therapists may also support patients in improving their body image [103] and give guidance toward joyful movement, rather than activity for the sake of weight loss only, for patients with functional limitations in mobility.

TABLE 2 | Ten key factors to consider in recurrent medical nutrition therapy in primary care.

Have a respectful, empathetic, and individualized approach toward patients
Support self-monitoring of food intake and weight
Emphasize the importance of vitamin and mineral supplementation and regular check-ups of nutrition status
Recommend ensuring an adequate protein intake and a sufficient intake of fiber and whole grain
Advice on maintaining regular meal patterns and avoiding grazing
Encourage balanced meals
Recommend water for hydration
Encourage limiting the intake of energy-dense foods and beverages (e.g. alcohol and sugar-sweetened beverages)
Advise on the concept of mindful eating and emphasize the importance of chewing slowly and well
Detect possible disordered eating behaviors

## 7 | Conclusion

The high prevalence of recurrent weight gain following MBS necessitates comprehensive strategies within healthcare systems and improved collaboration between surgical clinics and primary care centers as well as improved coordination among different primary care providers. Certain complications following MBS necessitate evaluation by the MBS team and some patients may require revisional surgery [20].

Future studies need to clarify which patients with recurrent weight gain may be optimally managed by a primary care-based multiprofessional teams, where patients have access to various competencies tailored to the needs of each specific individual. Primary care providers typically engage in periodic, consistent interactions with their patient population [7]. Ideally, these medical professionals possess comprehensive insights into their patients' lives, including familial dynamics, family's medical history, and daily challenges. Furthermore, they are well-informed about the diverse health challenges that may influence their patients' weight management and health.

The structure and delivery of primary care may vary across countries, potentially affecting the capacity to provide patients with multidisciplinary care. Thus, the access to medical assessment and management of physical and mental well-being by PCP is crucial. AOMs have potential in supporting patients with weight management and health outcomes after MBS [60]. Multidisciplinary collaboration may not always be possible in some primary care settings, particularly in rural areas with limited resources. In these settings, primary care- and district nurses may play an important role in supporting patients with multiple health-related challenges. However, the complementary treatments such as by integrated psychological and behavioral care, medical nutrition therapy, and physical therapy may play a crucial role in optimizing the patient outcome post-surgically.

Education for healthcare professionals in the multidisciplinary collaboration is essential to increase their capacity and understanding regarding obesity, challenges related to MBS, and especially available treatment strategies post-surgery [104]. Reducing the impact of weight stigma and bias in offered treatment strategies is an important step to improve chronic care of obesity [49]. Education and training are effective ways in improving providers understanding of how they can act toward their patients with a people-centered communication style including shared decision making in primary care to reduce weight stigmatizing experiences for patients [13].

Long-term postoperative care after MBS requires a dynamic and individualized approach adapted to the specific needs of each patient. Regular follow-up in primary care offers the possibility to detect not only possible nutritional difficulties but also challenges with weight and health outcomes and quality of life. Collaboration between surgical clinics and PCPs is a crucial factor in supporting long-term obesity management after metabolic and bariatric surgery. The establishment of multidisciplinary obesity management teams and collaborations in primary care could improve patient access to different professionals to support obesity management and treat possible complications after surgery. Nevertheless, future research is

required to clarify the role and impact of team-based care in primary care settings following MBS.

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### Author Contributions

L.T. and A.M.K. conceptualized the idea for the manuscript and equally contributed to it. All authors wrote, edited, and approved the last version of the manuscript.

### Conflicts of Interest

The authors declare no conflicts of interest.

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