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Lifestyle-related advice in the management of obesity: A step-wise approach

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Abstract:

Obesity is a commonly encountered health-care problem that is an independent risk factor for chronic metabolic complications. Primary care physicians are the first point of contact in the management of obesity. Weight management is a step-wise intensification of interventions that initiates with lifestyle modification. Dietary and physical activity advices are integral components of all weight loss consultations and should ideally be imparted by a dietician or a nutritionist. In case of their nonavailability, the onus for lifestyle counseling rests with the physician. The prescription for a low-calorie diet coupled with increased physical activity might seem simple, but the success lies in compliance and sustainability of this advice. Compliance can be enhanced through patient-specific diet and activity plans along with corrections in eating and activity behavior. Barriers in patient's environment must also be addressed to achieve sustainable weight loss. This review covers practical insights in standard lifestyle management techniques, which can help the physicians to set better weight loss goals, adapt to patient specific lifestyle counseling, and apply strategies to enhance compliance for sustained weight loss.

Keywords:

Caloric restriction, exercise, obesity management, primary care physician, weight loss

Introduction

Obesity is a widespread health issue and its prevalence is increasing at an alarming rate. More than half of the patients attending primary care clinics are obese.^[1] Obesity is an independent risk factor for chronic metabolic complications such as diabetes, hypertension, cardiovascular diseases, and some forms of cancer. These patients have compromised functional ability and quality of life due to progressive and relapsing nature of obesity and related comorbidities.^[2] The incorporation of obesity-related advice in general practice is mandatory to effectively manage the rising health-care burden of lifestyle-related diseases.

General practitioners have a crucial role in medical assessment, management, and

counseling of obese patients.^[3] Ideally, physician refers obese patient to a comprehensive weight management program utilizing the expertise of dietitian, exercise physiologist, and psychologist for weight reduction. These facilities might not be readily available at various levels of health-care units, witnessing a high burden of obese patients. It is important for the physician to seek guidance regarding lifestyle advice and pharmacological approaches to effectively manage obese patients.

Lifestyle modification is the cornerstone for weight management. It includes behavioral techniques for correction of eating and activity behaviors leading to weight gain.^[4] Weight reduction is generally initiated with corrections in eating habits. Progressive calorie restriction and type of diet determine the pace of weight regulation, alter appetite signals, and inculcate correct food

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preferences.^[5] Consistent physical activity is strongly associated with sustained weight loss and improvement in cardiometabolic health.

The guidelines on lifestyle-related advice are incorporated inadequately into clinical practice. These guidelines are usually generic and rarely practice centric. This is one of the major reasons that obesity is still undertreated in primary care setting. The aim of this review is to facilitate the practitioner by providing practical insights into lifestyle management techniques for obesity and lifestyle-related disorders.

Basic principles in the management of obesity

Obesity is a complex disorder with a combination of multiple etiological factors. These factors are categorized as primary factors such as obesogenic environment and unhealthy eating behavior, which are also considered as driver of obesity.^[6] Primary causes such as increased calorie intake coupled with a sedentary lifestyle result in obesity in the majority of patients. Secondary factors such as genetic and neuroendocrine factors, and diseases such as hypothyroidism and polycystic ovary syndrome are also related to excessive weight.^[7] Weight gain from obesogenic drugs is not uncommon. It is essential to identify the interplay of these determinants to provide patient centric prevention and treatment advice.

The management of obesity is based on step-wise intensification of care approaches.^[8] The treatment is divided into nonpharmacological approaches including behavioral lifestyle modification and pharmacological approaches including drug therapy and surgical management. At initial stages of management, lifestyle-related advice on diet and physical activity are recommended. Lifestyle intervention programs such as Diabetes Prevention Program (DPP) and Action for Health in Diabetes (Look AHEAD) target weight reduction of 5%–10% and correction in metabolic parameters such as glycosylated hemoglobin, blood pressure, and lipid profile.^[9] Pharmacotherapy is introduced at body mass index (BMI) >30 kg/m² or BMI >27 kg/m² with comorbidities, with an expected response of 5% weight reduction in 3 months. The last stage is surgical intervention indicated in morbidly obese individuals with BMI >40 kg/m² or BMI >35 kg/m² with multiple obesity-related complications and compromised quality of life.^[10]

Lifestyle modification is the anchor of weight reduction treatment. Lifestyle-related advice is also counseled to patients opting for pharmacological treatment.^[11] Dietary intervention plays a primary role in weight reduction, whereas sustained physical activity prevents regain.^[4]

Basis of dietary prescription

The principles of dietary recommendations involves calorie restriction, macronutrient manipulation, and correction in eating behavior. Calorie restriction is based on creating a negative energy balance. An individualized hypocaloric diet with reduction of 500 kcal from current intake brings a desired weight loss of half kg per week. The daily calorie deficit is calculated by the assessment of patient's age, gender, BMI, current calorie intake, and activity pattern.^[12] Any nutrient deficiency or metabolic complications should also be addressed.

A moderately calorie deficit diet of 1000–1200 kcal for women and 1500–1800 kcal for men is generally recommended for dietary management. Patients on very low-calorie diets (<800 kcal) experience weight cycling, i.e., recurrent losing and gaining weight. The calculated calorie intake should be accurately balanced between different food groups.^[13] A balanced diet with adequate macronutrient (carbohydrate, protein, and fat) and micronutrient (vitamins and minerals) intake should be planned as per the recommended dietary allowance (RDA).

A number of diets based on macronutrient composition are recommended in general practice. Some of the most commonly prescribed weight loss diets based on macronutrient composition are low carbohydrate, low fat, high protein, and low glycemic index (high fiber) diets. While prescribing low-carbohydrate diets, the intake of complex carbohydrate from whole grains, legumes, nuts, oilseeds, and fruit and vegetables should be encouraged. Low-fat diet should include advice to reduce fat intake especially from saturated fat, trans fat (partially hydrogenated fat), and fried products. The intake of good-quality fat should be encouraged with a balance of fatty acids, i.e., monounsaturated fatty acids (MUFA) and polyunsaturated fatty acids.^[14] In comparison to low-fat diet, low-carbohydrate diet is more effective in reducing weight, insulin resistance, and serum triglyceride. High-protein diets have sustainable weight loss outcomes across all age groups due to better satiety value.^[15] Recommendation on reducing sugar and salt intake should also be advised. In conclusion, "ideal diet" has high protein (30%) and low glycemic index (40%) with greater proportion of MUFA, ω -3 fatty acid, adequate fiber and nutrients such as iron, calcium, vitamins, and antioxidants.^[11]

The correction in eating behavior helps patients to integrate dietary advice into day-to-day practice. The discussion of behavioral strategies such as portion control, small and frequent meal pattern, inclusion of salads before meals, and optimum water intake

are integral while weight counseling. Behavioral techniques to manage diet deviations due to eating out, snacking, food cravings, and emotional eating should be progressively addressed.^[16] These deviations are closely associated with household environment and social setting. Physicians should encourage family based dietary counseling sessions preferably through trained dietitians for effective and sustainable lifestyle modification.

Patients with special nutrition needs such as physiological state or systemic complications should be referred to nutrition expert. The management of patients presenting in outpatient settings with lifestyle-related causes of obesity is the prime focus of the review.

Management of obesity

Management of obesity should be patient-centric step-wise approach. An initial discussion regarding weight loss benefits, patient's expectations and readiness to initiate weight reduction measures helps in setting patient specific weight loss goals. A complete clinical, dietary and physical activity assessment makes the basis for lifestyle and pharmacological prescription. Continuous follow up aimed at enhancing patient's self-efficacy to adhere to prescription is crucial for sustainable weight loss efforts.

Initiating the discussion

The initial phase of discussion is crucial in engaging patients in pursuing active weight reduction measures. The discussion has three components: introduction about obesity as a health issue, eliciting patient's perceptions and concerns about the problem and explaining patient-centric benefits of weight reduction.^[17] Sometimes, patients may feel emotional, distressed or stigmatized while discussing weight, making these encounters difficult. Certain tips that can be used to manage these encounters in general practice and help the patients participate in an open discussion are listed below:

1. Respect patient's privacy. Weight is a sensitive issue and should not be discussed in front of other people.
2. Firstly, address the primary concern of patient's visit.
3. Seek permission to discuss weight. Questions like "Are you concerned about your weight?" and "Can we discuss your weight?" can be used to initiate discussion.
4. Use patient preferred terms like "weight" and "BMI", rather than using "heavy", "large size" and "excess weight" which might dishearten the patient.^[18]
5. Don't blame and shame the patients for having excessive weight.
6. Ask open ended questions, for example "Do you think that your knee problem led to weight gain?" or "How was your experience with past weight loss attempt?".

7. Conclude the discussion by highlighting the main reasons for increased weight and its impact on their health and probable solutions.
8. Assess patient's motivation and readiness using a readiness scale (0–10). If the patient scores near 10, initiate weight reduction measures. If the patient is indecisive or reluctant, be supportive and invite them to re-discuss weight management techniques, if weight becomes a concern in the near future.^[19]

Anthropometric, clinical and dietary assessment

When the patient exhibits his readiness to initiate weight loss, the next step is to identify patient specific indicators of treatment. The physician should aim to evaluate the degree of obesity, associated risk factors and lifestyle-related eating and activity behavior. It involves four steps: anthropometric measurements, clinical evaluation and dietary and physical activity assessment.

Anthropometric measurements

Measure weight and height: Calculate and classify BMI

Height

Height (in meters) is measured using stadiometer. While measuring height, the patient should be asked to inhale deeply and stand straight without shoes on a leveled ground with heels, buttocks and head touching the stadiometer. In some cases, extremely obese patients might find it difficult to stand in this alignment, make sure they are comfortably positioned as closely as possible.^[20]

Weight

Weight (in kilograms) is measured using weighing scale. Weigh the patient in minimal clothing without shoes, with patient standing still with his feet equally placed on either side of a calibrated scale, facing forward and arms on the side.

Body Mass Index (BMI)

BMI is a feasible approach to assess stage of obesity and body fat in a clinical set up. Calculate BMI using these two measures: weight (kg)/height (m²). Classify the degree of obesity as: overweight (25–29.9 kg/m²), obese (30–39.9 kg/m²) or extremely obese (>40 kg/m²).

Waist circumference

This measure is useful in predicting cardiometabolic risk factor in patients. Waist circumference is measured by making the patient stand straight and locating right iliac crest on the upper hip bone, followed by placing a measuring tape around the abdomen at iliac crest. Ensure that the tape is not twisted, snug or pressing tightly on the skin and take a reading at the end of normal expiration. Assess the waist circumference of the patient with respect to recommended cut offs: men (greater

than 120 cm) and women (greater than 88 cm). Waist circumference is sensitive to age, gender, ethnicity and stature of the patient and these factors should be taken into account upon clinical interpretation.^[4]

In advanced settings, bioelectric impedance analysis can also be used to analyse the components of weight: total body fat, fat free mass and fluid volumes.

Clinical assessment

Assess cardiovascular risk factors and obesity related comorbidities

Physician should classify patients with established coronary heart disease, diabetes and sleep apnea as high risk group. A history of multiple risk factors like hypertension, deranged lipid profile (high low-density lipoprotein and low high-density lipoproteins), impaired glucose fasting and family history of heart disease should be elicited.

Obesity-related diseases such as hypertension, dyslipidemia, diabetes, polycystic ovary syndrome, fatty liver, gallstones and osteoarthritis should be assessed by the clinicians.

The stage of obesity is assessed by measuring BMI, waist circumference and assessing current disease burden. A higher BMI and waist circumference is associated with greater disease risk as depicted in Table 1.^[21]

Medical history

Clinician should elicit information on weight gain history, patient centric etiological factors, symptoms, family history, previous weight reduction attempt and impact of obesity on everyday activities. Laboratory test can be done to confirm any specific indications in the history.^[22]

Dietary assessment

A detailed dietary history evaluates caloric imbalances, eating habits, nutritional deficiencies and reasons for excessive intake amongst patients. In multidisciplinary setup, patients should be referred to a nutritionist for

appropriate assessment and dietary management. There might be limited resource availability in some settings. Doctors should have minimum skills to evaluate dietary pattern and correlate with weight status.

Initiate the assessment with calculation of current calorie intake. General caloric intake of the patient is assessed using 24-hour dietary recall, a retrospective method. Patient is asked to recall and provide a detailed history of all the food and beverages consumed in a day. Information on type of meal (home cooked/processed/restaurant meals), portion size, cooking techniques, ingredients and timings of the meal consumption is also noted. An approximate estimate of the calories consumed on the basis of number of food group exchanges and portion size can be done. The quality of caloric intake and eating pattern can also be assessed by identifying key habits associated with weight gain.^[23] Table 2 depicts the points of assessment while taking a diet recall.

Physical activity assessment

Dietary assessment cannot be used in isolation to correctly calculate the calorie deficit. Physical activity assessment aims to determine daily calorie expenditure. A number of physical activity assessment tools are available such as accelerometers, heart rate monitors, physical activity questionnaires and mobile applications.^[24] The choice of the tool depends on efficacy and ease of use. Global Physical Activity Questionnaire (GPAQ) is a valid and reliable tool for assessment of daily physical activity as well as sedentary behavior in patients. A detailed evaluation of daily calorie expenditure under different domains i.e. work, transportation and leisure time is measured.^[25] Some areas to focus while assessing the physical activity are given below:

1. Assess patient's overall lifestyle. Patients exercising regularly, but having a sedentary lifestyle also find it difficult to lose weight.
2. Ask the patient about participation in a specific exercise group or sports activity. The questions on the type of activity (walking/cycling/dancing/swimming/yoga/basketball/golf), intensity (light/moderate/intense), duration (30 minutes/an hour) and frequency (daily/thrice a week/once a week) are essential to understand the contribution of these sessions in total calorie expenditure.^[26]
3. Assess patient's involvement in sedentary behaviors such as television viewing, computer and mobile application use, reading, studying and chatting etc.
4. Identify activities that interest the patient. This is the easiest way to increase patient's compliance towards daily activity.
5. Help the patient to identify the barriers in maintaining a physically active status.

Table 1: Classification of obesity by body mass index, waist circumference and associated health risk

BMI classification	BMI (kg/m ²)	Health risk [†] (relative to weight status and waist circumference)	
		Normal waist circumference [§]	High waist circumference [‡]
Normal	18.5-24.9		
Overweight	25-29.9	Increased	High
Obese Class I	30-34.9	High	Very high
Obese Class II	35-39.9	Very high	Very high
Obese Class III	≥ 40	Extremely high	Extremely high

[†]Health risk is of diabetes, hypertension, hyperlipidemia, sleep apnea.

[§]Normal waist circumference - men ≤102 cm, women ≤88 cm,^[4] [‡]High waist circumference - men >102 cm, women >88 cm. BMI=Body mass index

Table 2: Assessment points while taking a dietary recall**Areas of focus while taking a dietary history**

1. Type of Diet: The practitioner should assess the diet according to the amount and quality of calories. The recall should be assessed to categorise the diet as high calorie, high carbohydrate, high fat and low fiber diets.
2. Meal Pattern: Analyse type and frequency of meals consumed. Patients should ideally consume 5-6 small and frequent meals. Skipping meals, longer meal gap and heavy meals consumption should be highlighted as faulty eating pattern.
3. Portion Size: Assess the portion size of each meal. Large portion size, energy dense portion and any second helpings are associated with excessive calorie intake.
4. Carbohydrate Consumption: Patient's consumption of the given sources of carbohydrates should be noted. The consumption of high glycemic index foods (such as refined flour, noodle, white rice and pasta), confectionery and bakery items (cookies, biscuits, breads and breakfast cereals) and processed foods should be checked. Sugar intake in tea, coffee and sugar sweetened beverages should be noted.
5. Fat Consumption: Consumption of fried products, red meat, processed meat, bakery products, fat-based salad dressings, margarine are major contributors of high fat intake. The frequency of consumption should also be evaluated. Amount and quality of oil used in daily cooking should also be determined from the dietary recall.
6. Fiber Consumption: A minimum of five fruits and vegetables should be consumed throughout the day. Estimate the total fiber intake of the diet by assessing the amount and variety of salads, whole cereal, pulses, nuts and seeds etc. are consumed daily.
7. Daily Sodium Intake: The intake of table salt, salt based seasonings, processed foods, snacks, sauces, ketchup and pickles should also be considered while estimating the amount of salt consumed throughout the day.
8. Beverage Consumption: Excessive consumption of sugar sweetened beverages and alcohol intake (>1 drink for women and > 2 drinks for men in a day) is associated with weight gain.
9. Meal Preparation: Use of cultural or home style high calorie recipes. The frequency of intake of ready to eat, convenience products and restaurant canteen meals should also be analysed.

Writing a dietary prescription

The aim of dietary prescription is to initiate and maintain a negative calorie balance. The current caloric intake is considered as the baseline for calculating deficit. When the baseline calorie intake is not available, the reference values from RDAs for sedentary women and men can be used. A deduction of 500–750 kcal from this intake should be initiated. In clinical practice, a standard diet of 1200–1500 kcal for females and 1500–1800 kcal for male is recommended.^[22] Progressive reduction of calories is suggested. This deficit will help in achieving about half kg per week of weight loss.

The distribution of calculated calories in different macronutrients determines the type of diet (low carbohydrate, low fat, low glycemic, or high protein) suggested. The principles of macronutrient distribution in a standard low-calorie diet are explained in

Table 3.^[27] Special dietary considerations for patients with comorbidities should also be incorporated.

Patients need support for successfully incorporating dietary recommendations in their lifestyle. Corrections in eating habits provide a framework through which these recommendations can be incorporated into daily practice.^[28] Some healthy eating advice that can be shared with the patients to enhance compliance are given below:

1. Advise the patient not to skip meals. For example: If the patient has long meeting hours, asks the patient to munch on some nuts/peanuts or fruit in breaks between meetings.
2. Inform about measures to reduce portion size by switching to smaller bowls and plates. The patient should never eat directly from the packet.^[29]
3. Ask the patient to fill half of the plate with salad, one-fourth with protein and another one-fourth with carbohydrate. The patient should initiate the meals with the salad to fill themselves up.^[30]
4. Suggest patients to opt healthier cooking methods: steaming, boiling, broiling, grilling, baking, sautéing and microwave.
5. Guide the patient to switch unhealthy ingredients with healthier ingredients. For example: Replace using mayonnaise-based dressing in a salad with vinegar, fresh orange juice and olive oil dressing. Replace the high fat sandwich spread with hung curd with mint while making a vegetable sandwich.
6. Recommend the patient to avoid distractions while eating like watching television, chatting and reading. Use mindful eating practices such as chewing the food properly and eating food in a peaceful environment.
7. Give tips on how to switch to healthier snacking options. For example: having a sandwich instead of a burger, fresh fruit juice instead of milkshake, fruit yoghurt instead of ice cream, steamed chicken salad instead of fried chicken, roasted peanuts instead of chips.
8. Educate the patient on how to read food labels particularly the nutritional labeling. Ask the patient to identify products with high energy, sugar, cholesterol, trans fat and low fiber.
9. Help the patient to identify food cravings and ask them to stop buying those food products.

Socializing and eating out

Socializing and eating out has become an unavoidable part of patients' lifestyle and should be addressed. The patients should not be denied to eat out, but rather they should be equipped with the skills of food selection and managing meals while eating out.

1. Instruct the patient to read the menu to avoid dishes with description such as "cream," "fried," "mayonnaise," "pesto," "mozzarella," "basted,"

Table 3: Low calorie diet and recommended intake

Nutrients	Recommended intake
Calorie	Deficit of 500-750 kcal than usual intake
Carbohydrate	55-65% of total calorie intake
Protein	15% of total calorie intake
Total fat	≤30% of total calorie intake
Fiber	30 g/day
Sodium	2.4 mg or 1 teaspoon of iodized salt
Calcium	1000-1500 mg/day

Advise the patient to increase intake of complex carbohydrates by adding whole grains, legumes, fruits and vegetables in different food recipes.

A high fibre diet promotes satiety which further lowers the intake of calorie dense foods. If the patient feels hungry while dieting, advice to increase the uptake of fresh, steamed, sautéed or grilled vegetables.

Lean sources of animal proteins like chicken, fish and seafood etc. is suggested. Advise the patient to consume low-fat milk or double toned milk and its products. Avoid buying packaged dairy products as they are relatively high in fat.

Recommend patients to use different oils in different recipes or switch oils on a monthly basis to have a balanced essential fatty acid intake. Oils from healthier sources like nuts (almonds, walnuts, cashews, peanuts) and oilseeds (chia seeds, flaxseed and sesame seeds) in limited amounts should be included.

“casserole,” “refined flour” and “honey-mustard sauce” etc.

- Suggest them to always ask the waiter to customize the dish. For example: ask for tomato sauce instead of white cream sauce. Ask for brown rice instead of white rice.
- Advise reduction in portion size while eating out. Order appetizer as a main dish. Order salads, soups, grilled chicken, poached fish and side dishes.
- Ask the patient to choose from protein-based dishes: chicken, pulses, eggs, dairy and fish.
- Recommend to avoid alcohol and sugar sweetened beverages.
- Suggest the patient to share desserts. Ask them to opt for fruit-based dessert: fruit yoghurt, yoghurt parfait, fruit custard and fruit tart etc.

Writing a physical activity prescription

Physical activity as a component of weight loss program aims to increase calorie deficit and improve cardio respiratory health of the patient. It is also an effective strategy to prevent weight gain. A weekly activity of ≥150 minutes is advised for adults. A combination of 30 minutes of aerobics, 15 minutes of workplace activity and 15 minutes of muscle strengthening exercises is generally recommended.^[31] Muscle strengthening should be incorporated 2–3 times a week, which includes push-ups, dumbbells, weight-lifting and knee flexion.^[32] Patient’s age, gender, musculoskeletal health and metabolic health should be evaluated before recommending physical activity and activities should be

gradually progressed. The amount of calories expended depends on the frequency, intensity and time allotted to physical activity.

- For beginners, initiate with light intensity activities like increasing the household related activities such as cooking, dusting, washing utensils, cleaning the house, and iron clothes. Ask the patient to initiate with walk for 15–20 minutes, thrice a week.
- For patients who have been mildly active, initiating moderate intensity activities would include dancing, cycling, walking, stretching, tennis, golf, gardening and carrying load.
- High intensity activities can be initiated for currently active patients or sports participants. It would include running, swimming, basketball, football, weight lifting and brisk walking.
- Behavioral aspect for maintaining an overall active lifestyle like taking the stairs, commuting through public transport, taking small walk to grocery shop, joining fitness classes and taking walk breaks from work should be counseled.

Follow up and self-monitoring

Lifestyle modification is a long term process which requires constant counseling and support from provider. Patients should be counseled about self-monitoring techniques such as logging daily intake and activity in diaries or mobile applications.^[33] These methods help the patients to identify facilitators and barriers in their weight management efforts.^[34] Consistent follow-ups are essential to reinforce recommendations, measure weight related outcomes and manage challenges in the process of weight loss.

Barriers in lifestyle management of obesity

Long term efficacy and sustenance of weight loss treatment is challenging for both patient and provider. Patients ready to initiate lifestyle modification also present with a number of issues. These barriers might impact the pace of weight loss and undermine the results of weight reduction measures.^[35] Barriers can be classified on the basis of presentation at different stages of weight loss: initiation stage, during weight loss intervention and weight maintenance. Some of the factors that present as a challenge to initiate weight loss interventions are practical factors (cost and schedule compatibility), anticipated effectiveness of treatment (intervention components, social support, past failure in treatment) and evaluation of pleasantness of the treatment (tracking diet and exercise regime, fear of failure).^[36] A number of studies have reported social pressures, mood disturbances, food craving and obesogenic environment (easy accessibility to calorie dense food and low walkability) as prime reasons for limited compliance to dietary and physical activity advice.^[37,38] It is important to identify these barriers at the initial stage and devise patient specific management

Table 4: Commonly reported barriers to dietary and activity advice compliance

S. No.	Barriers with the probable interventions
Barrier 1	If I am stressed, I crave junk food. Ask emotional eaters to identify triggers. Replace eating with any other activity, like talking to a friend, buying some new product in response to trigger. Introduce mindful eating practices.
Barrier 2	I am dependent on canteen/office food for my daily meals Advise the patient from the guidelines of EatWell Plate. Ask them to opt for more salads, pulse or chicken preparation, cereal and curd preparation. Avoid fried food and desserts. Also, advise the patient to initiate carrying their own mid meals/snacks.
Barrier 3	It is difficult to follow so many dietary restrictions. Counsel the patient about dietary goals. Dietary prescription should be patient specific and progressive in nature. Advise patients to focus more on correcting eating habits.
Barrier 4	My family/spouse doesn't support me. Counsel the whole family. Assess their weight status and involve them in healthy dietary habits as well. Highlight the importance of their support.
Barrier 5	Healthier products are costlier. Guide the patient to opt for fresh and minimally processed food products. Give some education material on ingredient substitution and healthy recipes.
Barrier 6	I don't have time to work out for 30 minutes. Advise them to do short bout aerobic activities for 10-15 minutes, three times a day.
Barrier 7	I don't like exercising. Incorporate engaging activities like playing with kids, walking the dog, exercise sessions with friends, participation in sports events, dance classes as a form of exercise.
Barrier 8	I don't have any place to exercise or walk. Ask the patient to find out a location in their house to perform general exercise like stretching, walking, standing, jogging and yoga. If possible, advise the patient have some exercise equipment like stationary bicycle, treadmill in the house etc.
Barrier 9	I am too lazy to exercise. Advise them to participate in group activities at community centres, gyms or have personal trainers. Exercising in dyads with spouse, sibling or children can also help.
Barrier 10	I exercise every day, I am still not losing weight. Assess the exercise pattern of the patient. Generally, patients at gym focus more on muscle strengthening exercises, thus not able to lose weight. Initiate correction in the pattern.

techniques for them. Some of the commonly reported barriers to dietary and physical activity adherence from clinical experience and methods to manage them are given in Table 4.

Conclusion

Obesity and allied comorbidities pose an enormous health-care burden. Practice based recommendations for better prevention and management of obesity is required. Physicians' regular encounter with obese patients and involvement in all aspects of medical management such as assessment, counseling and management of multidisciplinary teams makes them important stakeholders. The review is a consolidation of practical dietary approaches which can be incorporated in standard obesity care by general practitioners. It would help the practitioners to incorporate these advices and manage high burden of obesity in the absence of a dietitian and/or a multidisciplinary team.

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