Meeting The Lifestyle Challenges In Obesity

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INTRODUCTION

Obesity is a ‘BIG’ challenge today and ‘GIANT’ steps must be taken to contain it as the numbers of overweight and obese subjects have reached alarming levels. Presently it is a ‘GLOBAL’ phenomenon. Obesity with its associated complications like diabetes mellitus, atherosclerotic cardiovascular disease, cancers, osteo-arthritis, and liver disease is probably the biggest health problem today. The problem is even starker in developing countries, like India, which has not yet been able to come out of the clutches of infectious diseases and still has the highest number of T2DM patients in the world !!!

LIFESTYLE CHANGES - THE ROOT OF THE PROBLEM

With advances in technology and globalization we have arrived at an age of fast-foods and faster cars. In our ‘successful’ efforts to make life ‘easier’ and ‘comfortable’, human beings have evolved from an ‘energy expending’ species to an ‘energy conserving’ species. In older days, since a lot of energy was spent for procuring simple food, ‘conscious’ efforts to maintain body-weight were not required, as ‘daily activity’ did most of the energy balancing work. Today, the environment is ‘OBESOGENIC’. There is a limitless choice of energy dense foods, easily available without much effort. Under these circumstances, the only way to maintain weight is a ‘conscious’ effort to achieve a negative energy balance in the form of decreased dietary intake, increased physical activity or both.

LIFESTYLE INTERVENTION - THE SOLUTION TO THE PROBLEM

Lifestyle intervention in the form of a healthy diet and increased physical activity is the soul of obesity prevention, treatment and weight maintenance. Though there are rare monogenetic causes of obesity, most cases are due to persistent positive energy balance over years. A minor imbalance in energy equation over years leads to severe obesity, e.g. a mere 5% positive energy balance results in a gain of 5 kg per year. Severe obesity will occur if this positive energy balance persists for just few years.

CHALLENGES TO LIFESTYLE INTERVENTION

Two major challenges in dealing with this epidemic are -
A) Challenges in adopting a healthy eating habit
B) Challenges in adhering to physical activities.

A) Challenges in Adopting a Healthy Eating Habit
a) Lack of awareness
   i. Poor choice of food
   ii. Harmful and wasteful (loss of nutrients) methods of cooking
b) Lack of interest in
   i. Choosing and buying healthy food
   ii. Washing and cutting vegetables / fruits
c) Lack of time for cooking and eating resulting in
   i. Eating out
   ii. Eating packaged / processed foods
   iii. Home delivery of energy dense foods
   iv. Eating infrequently but in large amounts
d) Improved economic status
   i. Frequent eating out
   ii. Frequent partying
   iii. Eating luxury items daily, instead of occasionally
e) Social obligations
   i. Eating even when not required
   ii. High calorie food for special occasions
f) Psychological / job stress
   i. Depression / fatigue leading to overeating
g) Family habits, local dietary patterns
h) Need of an obese individual to eat more to maintain energy

B) Challenges in Adhering to Physical Activities
a) Lack of awareness and inspiration
b) Lack of time due to demanding workload
c) Lack of space due to
   i. Overcrowding
   ii. Poor roads, traffic pollution and litter
   iii. Security concerns - crime, road accidents
   iv. Poor infrastructure like playgrounds, proper gymnasiums
d) Health problems arising out of obesity, limiting physical activity, like:
   i. Cardiac problems
   ii. Osteoarthritis, osteoporosis, gout
   iii. Lack of stamina
   iv. Visual problems due to diabetic / hypertensive retinopathy
   v. COPD, restrictive lung disease due to severe obesity
   vi. Diabetic neuropathy, hemiparesis following CVA
   vii. Chronic kidney disease

MEETING THE CHALLENGES - Facing and Dealing with the Challenges
Though the challenges in diet and physical activity have been listed separately, they are not exclusive of each other, rather inter-related and must be dealt together. They can be approached together as following:-
1) Awareness and education
2) Attitude and behavior changes; and dealing with lack of time
3) Lifestyle intervention in people with co-morbid conditions

1) Awareness and Education
The first step in meeting the challenge is creating awareness. Like the useful adage that ‘Eyes cannot see what mind doesn’t know’, ‘Mind doesn’t tell our body to do what it doesn’t know.’ Around 30% overweight men and 10% overweight women believe themselves to be having a healthy weight\(^3\). So, awareness must be created that there is a problem, that lifestyle is the ‘cause’ of obesity and its protein complications, and that lifestyle is the ‘treatment’.

Awareness must be created in schools, at home, in the office, and at community level by doctors, other health professionals, parents, teachers, government, NGOs and various forms of media.

The diet and physical activity advices must be practical and the goals realistic. A negative energy balance can be attained through either eating less, exercising more, or both. An individual’s fitness level is a more important predictor of death than conventional risk factors like smoking, hypertension, dyslipidemia and diabetes\(^4\). As approximately 7700 kcal negative balance is required for one kg weight loss, 500 kcal energy deficit per day is recommended to achieve one pound weight loss per week\(^5\). But, whether this energy deficit should come from decreasing food intake or increasing physical activity is the major question. 500 kcal/day reduction in calorie intake is much easier than to increase similar amount of calorie expenditure\(^6\). As a person weighing 80 kg needs approximately one hour of jogging at 5 km/hr, or 35 minutes of jump- rope to burn 500 kcal energy\(^6\). Walking at 3 miles/hour uses approximately 100 kcal per mile, while a hamburger sandwich from a fast food restaurant has 630 kcal. Therefore, around 2½ hours of brisk walking is needed to burn off a single hamburger.

There are three traditional caloric goals of food intake for prevention and treatment of obesity - diets for weight maintenance, moderate weight loss, and aggressive weight loss\(^7,8,9\). To accomplish these goals a clinician can advise an isocaloric weight maintenance diet, a low calorie diet (total 800-1500 kcal/day or 500 kcal deficit/day for a weight loss of 0.5 kg/wk), or a very low calorie diet (VLCD) (total <800 kcal/day) respectively. VLCDs should be implemented only for severely obese subjects for a short period, under medical supervision. Monitoring for detection of anemia and electrolyte abnormalities like hypokalemia is required for VLCDs.

The next step is to provide a balanced diet. 45-60% of the day’s calories should come from carbohydrates, 15-20% from proteins and < 35% from fats. Saturated fats should provide <7%, PUFA 10% and MUFA 20% of calories. There should be no or minimal trans-fat. Diet should contain at least 30gm of fiber per day. Salt intake should be <6gm of sodium chloride or 2.4gm of sodium. There should be moderation of alcohol intake and cessation of smoking.

High protein, low carbohydrate diets such as the Atkins diet have 27 - 34% protein content\(^10\). These diets are generally
also beneficial in the prevention and management of other chronic conditions like low back pain, osteoporosis, and impaired physical function in frail and elderly persons. Both aerobic endurance exercise and resistance training have similar effects on bone mineral density and insulin sensitivity. For weight control, aerobic exercise is considered as a significant calorie burner and resistance training helps in calorie expenditure by increasing lean body mass and BMR that can be favorably affected by resistance training. Resistance training favorably affects many chronic diseases in cardiac patients and middle-aged persons.

Weight reduction increases the metabolic efficiency, mediated through increased catecholamine and thyroid sensitivity. Hence, energy requirement to maintain body weight is diminished after weight loss. So, reduced obese subjects need to consume lesser calories and to exercise more for maintaining their weight compared to the similar-weight never-obese subjects.

2) Attitude and Behaviour Changes (ABC); and Dealing with Lack of Time

In this fast-paced, cut-throat competitive world where the focus is on performances, numbers and deadlines, the above mentioned way of life seems ‘utopian’ and impossible. The most common cause for physical inactivity and unhealthy diet is ‘lack of time’. The focal point here is adopting healthy lifestyle even in the face of these challenges.

Dietary recommendations must be flexible, with due attention to the person's preferences. Healthy eating is probably more effective than counting the calories. Increasing fruit and vegetable intake; consuming whole grain products; reducing portion sizes; minimum intake of sugar-sweetened beverages; consumption of low fat milk; intake of fish and low fat poultry; are some of the practical approaches to a balanced and low calorie-diet. Limitation of salt, moderation of alcohol and cessation of smoking are also important. Healthier ways of cooking like grilling and steaming should be encouraged. Regular and planned eating by sitting down at the table results in lesser calorie intake than a quick bite of a calorie-rich snack. It is more filling and creates a better sense of well-being also. Distraction during meal, like watching television, working with computer must be avoided, as it results in overeating. People usually consume a particular amount of food at meal-times regardless of the calorie content. Hence green leafy vegetables and fruits, and other calorie-light food which creates bulk must be eaten. Reading labels in food, keeping only healthy items in fridge and kitchen store, eating slowly and together are some other ways of limiting

On an average, the composition of weight loss is approximately 70% fat and 30% lean body mass. As the muscles utilise maximum energy, loss of lean body mass actually reduces the BMR and thereby decreases energy expenditure. So, individuals will regain weight if they fail to restrict calories or to exercise after a weight loss. This is most important for those who reduce weight by ‘diet-control’ only, as the loss of their lean body mass is very marked. As soon as their calorie restriction fails, they regain weight rapidly. Exercise minimises this loss of lean body mass, thereby reduces the decrease in metabolic rate that accompanies weight loss. Adding physical activity to weight loss programs is therefore crucial to maintain the reduced weight. Physical activity provides additional health benefits independent of weight loss. It improves the metabolic complications of obesity even without weight loss, prevents cardiovascular disease, cancer, diabetes and weight gain, and improves mood through many mechanisms.

Minimum of 30 minutes moderate intensity aerobic exercise must be undertaken on at least 5 days/week, preferably daily. This would result in 600-1200 calories energy expenditure per week. This should be gradually increased to 60 min/day for improved weight loss and weight maintenance. Some form of abdominal exercise is essential to combat the most hazardous visceral adiposity. Resistance training exercise must be performed by those having no contraindications. Both aerobic endurance exercise and resistance training can promote substantial benefits in physical fitness. Aerobic exercise results in maximum oxygen uptake (VO_{2}max) and more effectively modifies atherosclerotic cardiovascular risk factors. Resistance training reduces sarcopenia, offers greater development of muscle mass, strength and endurance, and assists in the maintenance of BMR. It is also beneficial in the prevention and management of other chronic conditions like low back pain, osteoporosis, and impaired physical function in frail and elderly persons. Both aerobic endurance exercise and resistance training have similar effects on bone mineral density and insulin sensitivity. For weight control, aerobic exercise is considered as a significant calorie burner and resistance training helps in calorie expenditure by increasing lean body mass and BMR that can be favorably affected by resistance training. Resistance training favorably affects many chronic diseases in cardiac patients and middle-aged persons.

The composition of these diets usually relies on animal proteins that are often high in total fat, saturated fat, and cholesterol. It is important to note that carbohydrates not only provide calories but are an important source of water soluble vitamins and minerals. Hence, a low calorie, carbohydrate based diet is a safe and effective way of losing and maintaining weight.

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calorie intake. The food industry should take responsible steps by providing reduced portion size, decreasing use of saturated and trans-fat, and proper labeling.

Physical activity can be increased by decreasing the amount of time being inactive like television watching or computer use; getting involved in daily household activities like cleaning, washing, mopping, gardening; being more active in office like taking walk-breaks, using stairs; parking cars at far end of parking lot; and engaging in regular physical activity of at least 30 minutes per day. There should be change in the attitude towards doing work for self and family like washing, cooking, sweeping, mopping, vacuuming and these tasks should not be considered the ‘domain’ of ‘domestic-helps’. For those who have no time, multiple shorter bouts of activity (such as 10 minutes) that include occupational and recreational activity or the tasks of daily living may be undertaken16. It has similar cardiovascular and other health benefits if performed at moderate intensity level with an accumulated duration of at least 30 minutes per day16.

There should be a change in the general attitude of the society at large. Social get-togethers, meeting-up with friends and parties can be made healthier and enjoyable by including physical activities like variety of games and dance, with limitation of calorie dense foods. Eating out can still be healthy by choosing healthy items on the menu, eating small-sized items and eating slowly. There are healthier ways of spending money for those who want to spend rather than ‘eating-out’, like going to a flower show, art-exhibition, indulging in leisure and competitive sports like swimming, horse-riding, cycling, golf etc. The choice of physical activity for those who want to spend time and money is limitless.

The stress of school and work-place should be properly dealt with. Defective schooling with focus solely on academic performance with scant regard to physical health has produced obese, inactive and unhealthy children. In such an environment of defective education system with tubular-vision, children instead of playing outside school hours, go for a series of tuitions and therefore become too tired to exercise and consume excess calories leading to weight gain. School education system should be overhauled and appropriate changes instituted. Health education must be included in text-books and its proper application in real-life made mandatory. Schools should provide a balanced education and develop the individual as a whole - in knowledge, physical, social and mental health. Adequate and safe playground should be a must in all schools. A strict law should be instituted to this effect.

The stress of job leads to lack of time, depression and overeating. An individual must realise that one’s health comes first and that if ‘health is lost, everything is lost’. Psychological help should be provided if deemed necessary. In work-places canteens should provide healthy foods and there should be facilities for physical activity like indoor and outdoor games.

It is the responsibility of the society, local organizations and government to provide and maintain clean and safe walking space, parks and playground.

Lifestyle intervention becomes pleasurable if approached with a positive attitude. An active life, walking with family, playing with friends, consuming a variety of delicious fruits and vegetables of varied taste, color and hue is really a ‘wonderful’ way of living to attain ‘good’ health.

3) Lifestyle Intervention in People with Co-morbid Conditions

The next major challenge in lifestyle intervention is dealing with the limitations faced by obese individuals arising out of co-morbidities associated with obesity.

a) Individuals with Arthritis:

Regular physical activity produces weight loss and promotes long-term weight management which is beneficial in patients with arthritis. It keeps the muscles around affected joints strong, decreases bone loss, replenishes lubrication to the cartilage of the joint and reduces stiffness and pain22. Exercise enhances energy and stamina by decreasing fatigue and improving sleep; and improves psychological health by providing a sense of well-being. In osteo-arthritis, the aerobic and resistance training exercises have similar significant improvements in disability symptoms and physical performance23. Aquatic aerobic training programs have many advantages in patients with arthritis related to the buoyancy of water. Physicians should provide specific recommendations for exercise plan that include range of motion exercises24. Exercise classes by qualified instructors, physical therapists and exercise scientists may be important. Exercising with people with arthritis is a safe and effective way to learn to exercise.

b) Individuals with Cardiovascular Disease:

Obese people with established clinically stable cardiovascular disease should aim to achieve 30 minutes or more of
moderate intensity physical activity on most days of the week; less intense and even shorter bouts of activity with more rest periods may suffice for those with advanced cardiovascular disease. People with well compensated, clinically stable CVD may have regular low-to-moderate level resistance activity, initially under the supervision of an exercise professional. Benefits of regular moderate physical activity for people with cardiovascular disease include augmented physiological functioning, reduced cardiovascular symptoms, enhanced quality of life, improved coronary risk profile, superior muscle fitness, and for survivors of acute myocardial infarction lower mortality.

These benefits may be achieved even at relatively low levels of physical activity. People who were least active before beginning regular physical activity get the greatest benefit. Pre-activity evaluation depends on the person’s symptoms, signs, overall CVD risk, clinical CVD, other co-morbidities, intensity of anticipated physical activity, and should involve a medical review, physical examination and a history of physical activity, to ensure there is no contraindication to becoming more active. The risks of exercise are small. In persons without existing heart disease, the risk of a cardiac event ranges between 1 in 400,000-800,000 hours of exercise. For those with existing heart disease, an event may occur once in 62,000 hours. Risk of a cardiac event is significantly lower among regular exercisers. Moreover, contrary to popular view, 90% of heart attacks occur in the resting state, not during physical activity.

c) Individuals with Neuropathy and Retinopathy:

After proper evaluation, patients with neuropathy should start walking on safe surfaces wearing appropriate footwear. Swimming, rowing and various upper-body exercises may strain the weight-bearing joints less than walking. Patients with active foot ulcers should never engage in weight-bearing activities. Non-weight-bearing activities like arm ergometry and chair aerobics are appropriate for patients with foot ulcers. Pool exercises should not be done by patients with open wounds. Patients with active proliferative diabetic retinopathy (PDR) should avoid strenuous exercises, as they may precipitate vitreous hemorrhage or retinal detachment.

CONCLUSION

Obesity is a medical condition arising from interplay of modifiable and non-modifiable factors. Obesity never comes alone, but brings along a host of problems affecting every system of our body. Behind the recent epidemic of obesity, modifiable factors in the form of faulty diet and physical inactivity have the biggest role to play. Amendment of the modifiable factors in the form of lifestyle intervention is the most effective way to combat this dangerous epidemic. Inventions and discoveries over the course of human civilisation are meant to help us understand things better, make life more comfortable and improve longevity. We cannot afford to turn these advances in technology and improvement in food-production meant for our well-being, into our nemesis.

We humans are intelligent beings. We must make the best use of knowledge gained over years to our advantage, and spare ‘sometime’ to fight this biggest enemy of mankind.


