

A Case Report on SMART-EST Action Plan with Lifestyle Medicine Approach in the Non-pharmacologic Management of the Metabolic Syndrome

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Obesity and overweight are considered health risks for non-communicable diseases. Most clinical practice guidelines suggest lifestyle modification as the primary management and as an adjunct to pharmacologic treatment. Using the SMART-EST goal-oriented action plan and lifestyle medicine may improve weight reduction outcomes.

The case presented had clinical criteria (3/5) for metabolic syndrome, diagnosed previously as obese stage II, asthma moderately uncontrolled, prediabetes, and mild dyslipidemia. Baseline weight and waist-to-hip ratio were taken and interpreted as obese stage II with a very severe risk for comorbidity.

The diagnostics used were fasting plasma glucose, lipid profile, HbA1c, and 2-D echocardiography on the eight months of intervention only.

Using the SMART-EST action plan plus Lifestyle medicine approaches as non-pharmacologic management for metabolic syndrome. There was an 11.4 % reduction in weight, improved fasting glucose, lipid profile, and 2-D echocardiography within the eight months of intervention.

Key words: Metabolic syndrome, SMART-EST action plan, lifestyle medicine

INTRODUCTION

Health risk-presenting abnormal or excessive fat accumulation is meant by the terms “overweight” and “obesity.” Overweight is defined as a body mass index (BMI) of 25, and obesity is a BMI of greater than 30.¹ It had a worldwide prevalence of 39% and 13%, respectively, for adults aged 18 and above (WHO). In the Philippines, the prevalences were 28% for overweight and 9.6% for obese.¹ It is one of the significant risk factors for several non-communicable diseases (NCD), including osteoarthritis, gout, osteoporosis, coronary heart disease, hypertension, stroke, certain forms of cancer, type 2 diabetes, gallbladder disease, dyslipidemia, and pulmonary disorders (PAHO). An increased risk was seen across the obese I and obese II categories, with a monotonic connection between maximum BMI and death.² The various clinical practice guideline for NCDs worldwide focuses on lifestyle modifications as clinical management for the prevention and in combination with existing pharmacotherapy. Thus, lifestyle medicine offers interventions focusing on six domains: nutrition,

physical activity, stress, sleep, connectedness, and avoidance of risky substances (ACLM). In order to better manage the patients using lifestyle modifications as the primary management of NCD, family and lifestyle physicians have difficulty advising how to start the lifestyle modifications. Thus, these case reports gave new insights into how to make it happen.

In outpatient internal medicine clinic settings, preventive cognitive-behavioral lifestyle methods were more effective than standard family medicine methods at causing weight loss.³ Although some studies show little to no time is spent on lifestyle medicine counseling during patient encounters, the SMART-EST objective framework makes it easier to have a thorough conversation about lifestyle medicine and to create a patient-centered action plan for changing one’s behavior.⁴ The SMART-EST is an acronym for the specific, measurable, attainable, relevant, time-bound, evidence-based, strategic, and tailored action plan for patient management of obesity and overweight,⁴ together with a lifestyle medicine approach that focuses on a diet of whole food plant-based, physical activities, a good sleep, free from stress, avoidance of

risky substances and social connectedness (ACLM). These approaches can help the patient decrease their weight. In the Philippines, a lifestyle medicine program was used in a residential school. The health status and lifestyle practices of the individuals who take part benefited from a customized lifestyle intervention. Changing your lifestyle does not necessarily need spending money; thus is economically helpful for the patients.⁵ Hypertensive patients with strict adherence to lifestyle modification can remarkably lower their systolic blood pressure reading.⁶

The objective was to use a lifestyle medicine approach using SMART-EST goal-setting oriented action plan to manage the metabolic syndrome.

Clinical Case

Presented is a case of a 45-year-old male working as a physician from Tetuan, Zamboanga City. Seven years before the consult, he had been diagnosed with obesity stage II prediabetes. Mostly he had been doing his weight loss program on and off. He had tried Chinese herbal remedies, Metformin, and fasting to decrease his weight. Temporarily it decreases by 10 kilograms and relapses many times. No lifestyle medicine consult was done. He self-managed his conditions based on his medical knowledge and preference. For his comorbidity, he has asthma moderately uncontrolled, a lordotic spine, and slight dyslipidemia. He is allergic to most crustaceans, environmental dust, and animal dander. He uses a salbutamol inhaler as-needed prescription for his maintenance medication, rosuvastatin 20 mg non-compliance, and cetirizine 10 mg as-needed prescription. His family history shows the prevalence of stroke, which caused death the of his mother and grandmother. Hypertension, asthma, and dyslipidemia are prevalent for both paternal and maternal lineage. Obesity and overweight were present more on his maternal side. For personal history, he is single living with his father and male siblings. He seldom socialized with his peer after covid pandemic and had no romantic relationships. For his diet, he mainly had fried red meat and processed food, no vegetable, seldom fruits, 2 liters of soft drinks per day, loves sugary meals daily, and snacks during office hours. He does not have any physical activity. Most of the office days, he sits for more than 6 hours. He sleeps mostly at midnight due to watching youtube and playing video games. He says he feels stress in his work, but manageable. He is an occasional alcoholic drinker, non-smoker.

The vital signs are the following: Blood pressure is 120/80, pulse rate is 88, respiratory rate of 16, and temperature is 37.2 °C. The weight is 89.6 kilograms, with a BMI of 32.13, waist circumference is 106 cm, and hip circumference is 100cm, with a waist-to-hip ratio of 1.06. The Asia-Pacific International Obesity Task Force classifies the BMI as Obese II. A high waist-to-hip ratio is classified as a very severe risk for comorbidity. The rest of the physical examinations are unremarkable.

The diagnostic reference that the patient had was from 2017. Which details the following: Fasting blood sugar is 110, HbA1c is 6.5. Uric acid 418.79, Cholesterol is 187, HDL is 53.3, LDL is 132.5 and triglyceride is 96. The 2-D echocardiography shows an ejection fraction of 59.06%, with Left Ventricular remodeling, dilated

left atrium, atherosclerotic aorta present, with mild pulmonary hypertension. Metabolic syndrome criteria were used in establishing the diagnosis of the patient. The clinical criteria were 3 out of the 5 criteria to establish the diagnosis. The patient had elevated waist circumference >102 cm, reduced HDL-C of <40 mg/dl, and elevated fasting glucose of >100 mg/dl.

The intervention used the SMART-EST action plan with a lifestyle medicine approach. It is a non-pharmacologic management for obesity and overweight. It is more of a planning strategy that sets a goal for every level of accomplishment; the patient moves to the next level of the goals. Table 1 shows the entire strategy of the goal-oriented lifestyle modification to decrease the patient's weight. Before the intervention was initiated, the patient was required to have a digital weighing scale and a digital watch for monitoring the progress. The process starts by making an action plan and goal achievement for each level in the patient's ability to accomplish. The patient makes the choices for the plan and approves which plan he can achieve for every level. Initial baseline anthropometric data was taken before the intervention. Then the action plan should be followed to the detail as possible. If the patient fails, he continues the same level he failed until he achieves the next level. The intervention depends on the patient's ability to achieve the ladderized goal. He was given a timetable of weekly achievement until the final level of the maintenance phase, during which he will choose to go beyond the target goal. The intervention's lifestyle medicine approach mainly focuses on nutrition, physical activity, stress, and connectedness. For sleep and risky substances, it had two levels of achievement, which is stated in the history that the patient can achieve quickly. The nutrition goals started with a decrease in the number of meals and calorie management and progressed to a once-a-day large meal with backup 100 to 150 kcal plant-based milk for hunger relief. For the physical activity, he should start 1000 steps by walking at his own pace, then progress to 10,000 steps of walking, plus physical resistance training. For stress, he incorporates mindfulness in physical activity while decreasing the workload that makes him stressed at work. Furthermore, the last goal is that he felt the stress no longer affected him. For connectedness, the patient starts with his own family, spend about 15 minutes, and progress to 1 hour daily, reconnect with friends, achieve self-goal, and create meaning in their life.

DISCUSSION

Using a SMART-EST action plan in the lifestyle medicine approach helps the patient improve his medical issues and psychological mindset. The person-centered care is the core of the management of metabolic syndrome. Making a weight reduction can help reduce the risk of cardiovascular diseases to existing comorbidity. The intervention had no lifestyle medicine counseling in the beginning. However, it used self-motivation to change by enrollment in the diplomate course of lifestyle medicine, a continuous self-motivation that reminded that as physician, you walk the talk, and the assistance of digital watch in monitoring the health progress attributed for the success. The intervention gave an 11.4% weight reduction after 8 months of intervention in the patient-paced goal setting.

Table 1. Action plan.

Intervention	Level I	Level II	Level III	Level IV	Level V	Level VI
Nutrition	Decrease the number of meals to 3	Decrease meal to 2. Add vegetables to every meal. Calorie target meal of 2110 kcal/day Alternate soft drink with water.	Schedule meal. Decrease meat and fried foods. Breakfast 1200kcal Snack: 200 kcal Lunch: 500 kcal Dinner: 200 kcal, such as low-fat milk or apple. Shift soft drinks to low-calorie drinks	Schedule meal. Shift to a more plant-based diet. Breakfast: 1200 kcal No snack Lunch 500 kcal Dinner: 200 kcal. Decrease low-caloric drinks, and add plain water to your drink schedule.	Schedule meal: Whole food plant-based diet. Preferably home cooked by the patient. Breakfast: 1500kcal No snack Lunch: 500 kcal No dinner Shift low caloric drink to plain water	Once a day large meal breakfast of 1500 kcal. Plain Water drinks only.
Physical activity	You are walking- in your pace target step 1000 daily.	Walking increased to 5000 steps	Walking-brisk to 8000s steps.	Brisk walking to >10, 000 steps	Brisk walking to >10, 000 steps for 30 minutes/ day Resistance exercise	Running Resistance exercise Balance Stretching
Stress	Mindfulness practices during night time. No internet browsing.	Mindfulness and meditations.	Mindfulness during walking exercise. Do breathing meditations during your free time.	Decreasing workload in the office, meditations, and mindfulness training	Maintain the stress free status.	
Connectedness	Family interaction for 15 minutes daily	Family interaction for 30 minutes daily	Family interaction for 1 hour daily	Add reconnect with friends via social media	Add reconnecting with office mates by talking more	Add Reconnect to your soul spiritually. By knowing your meaning,, and goals in life.
Sleep	Schedule the sleeping time and waking time	Maintain the schedule				
Risky substance	Remove all risky substance	Maintain free risky substance				

Lifestyle intervention significantly reduced metabolic syndrome (odds ratio [OR] = 0.28; 95% CI 0.18–0.44), with a 31% (21–41) absolute risk reduction, corresponding to 3.2 (2–5) patients needing to be treated to prevent 1 case after 12 months. The intervention significantly reduced the prevalence of central obesity (OR = 0.33; 0.20–0.56), hypertriglyceridemia (OR = 0.48; 0.31–0.75), and the incidence of diabetes (OR = 0.23; 0.06–0.85).⁷ Unlike the intervention done in another case which uses targeted education, close follow-up, and a dietary supplement, it significantly decreased body weight and body fat within 23 months.⁸ In comparison, the intervention uses a

simple education, computing the caloric intake needed, monitoring her sugar, and bi-weekly follow-up. The case intervention is more a physician-led intervention than the case presented, which was person-centered care; it allows the patient to make their plan and allows the patient to ask the physician what education they need.

The case report is a self-reported case of the author himself. This case report was submitted to the Philippines College of Lifestyle Medicine as a requirement for the diplomate examination. The case report may have biases by the author. However, the author has tried to eliminate the biases to achieve the established scientific standards.

Table 2. Patient progress.

Measures	Initial	January 2022	August 2022
Weight	110	89.6	79.4
BMI	39.44	32.13	28.47
BSA	2.1	1.98	1.88
% Fats	32.29	31.71	29.03
Waist	110	106 cm	101 cm
Hip	100	100 cm	99 cm
W/H ratio	1.1	1.06	1
Steps	1000	3759	9436
Laboratory	2017		2022
FBS	110		91
HbA1c	6.5		5.6
Uric acid	418.79		281.3
Cholesterol	187		193
HDL	35.3		44.79
LDL	132.5		115.83
Triglyceride	96		88.5
2 D echocardiography	2014	2017	2022
Ejection fraction	63.92%	59.06%	63%
LV remodeling	Yes	Yes	Normal
Dilated left atrium	Not mention	Yes	Normal
Atherosclerotic aorta	Seen in CXR	Yes	Mitral valve sclerosis
Pulmonary hypertension	mild	mild	none

Establishing a working action plan program and testing personally provided experiential strategies for metabolic syndrome patients in the future. Most of the problem that arises from relapse was noticed in the ninth month when the author had been attending medical conventions, where the rampant availability of unhealthy foods, easy access to fast foods, and sibling returning home leading to bonding moments by eating meals together.

Another problem was the unavailability of alternative whole-food greens and fresh vegetables in the locality and difficulty of procuring it. The toxic work environment of the hospital play a role in increasing stress levels. In order to address the relapse and prevent failure, a new set of goals was established for his diet and exercise to target 70 kg weight within 3 months and 10 000 steps of walking for 30 minutes. The notable improvement in the patient's health was the reduction of asthma attacks, reduced back pain, and decreased snoring.

CONCLUSION

In conclusion, using the SMART-EST action plan and lifestyle medicine can help patients reduce weight by improving nutrition, physical activity, stress relation, social connectedness, and avoidance of risky substances. The result shows an 11.4% weight reduction after 8 months.

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