



RESEARCH ARTICLE

EFFECT OF LIFESTYLE MODIFICATION ON REDUCTION OF BMI OF AN OBESE ADULT: A CASE REPORT

*¹Dr. Reema Kashiva, ²Nikita Jitkar and ³Dr. Dattatraya Patil

¹MDMedicine, Director of Center of Excellence For Diabetes And Obesity, Head of Department, Noble Hospital, Pune, India

²MSc Nutrition and Dietetics, Nutritionist, Noble Hospital, Pune, India

³DNB Medicine 3rd Year Resident Doctor, Noble Hospital, Pune, India

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ABSTRACT

A 36 yr old female suffering from obesity and pre-diabetes was able to lose 30 kgs of her initial body weight in the tenure of 6 months with the help of diet, exercise and meal replacement therapy. Meal replacement therapy was given for short period of time and was discarded after achieving a particular target. Therefore a multidisciplinary approach of diet, exercise and medication along with strong will power promoted to lose tremendous weight.

Key words: Weight loss, BMI, HbA1c, Diet, Exercise, Meal Replacement.

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INTRODUCTION

Obesity is defined as excessive or abnormal fat accumulation in the body which can affect the health (WHO, 1997). The prevalence rate of obesity in the world for men is 36.9% whereas it is 38% for female, which state that female are more prone to obesity as compare to male (Tom Flemings *et al.*, 2013). Individual having BMI equal or more than 30 kg/m² belongs to obese category (WHO, 2004). Obesity and overweight are emerging as a global epidemic and becoming a serious public problem (Nada Abahussain *et al.*, 2012). It can increase the risk of morbidity and mortality rate by increasing the risk of comorbidities such as type 2 diabetes mellitus, respiratory disorder, cardio vascular disease, hypertension, dyslipidemia, few type of cancer and psychological problems (Who, 2004). Therefore it needs to manage through various non- pharmacotherapeutic treatment such as proper diet and physical activity and meal replacing supplement (Fatemeh Azizi *et al.*, 2014). In severe cases bariatric surgery is also done (Who, 2004). By following proper treatment we can reduce significant burden of health system (Who, 2000).

Case

A 36 year old female visited "Centre Of Excellence For Diabetes And Obesity", Noble Hospital, Pune for weight loss

with K/C/O obesity and pre-diabetes, where her height was 156 cm and weight was 117 kg with HbA1c 5.6 % .Her dietary lifestyle stated that she was pure vegetarian and consumed 3 heavy meals per day with no physical activity. Based on her BMI 48.07 kg/m² she was diagnosed as obesity grade 3. (WHO, 2004). Her treatment included a multi disciplinary approach such as diet, exercise and pharmacological treatment.

Table 1. Procedure of treatment

No. of months	Treatment
1	Metformin + Diet + Exercise
2	Meal Replacement + Metformin + Diet + Exercise
3	Meal Replacement + Metformin + Diet + Exercise
4	Meal Replacement + Diet + Exercise
5	Meal Replacement + Diet + Exercise
6	Diet + Exercise

On the initial visit she was advised lifestyle modification, where in lifestyle counselling small and frequent meal patterns with low fat, moderate carbohydrates, high protein diet with brisk walking of atleast 45 mins for 5 times a week was directed along with the pharmacological treatment that is Metformin was advised to bring the HbA1c within the normal range (Table 1). At the 2nd month of follow up, she had lost 2.4 kg of weight where she was instructed to include a meal replacement in which she replaced her dinner with the meal replacement shake along with salad, soup or fruit with the previous treatment (Table 1). After the completion of 3 months Metformin was stopped, as her HbA1c was within the normal

*Corresponding author: Dr. Reema Kashiva,

MDMedicine, Director of Center of Excellence for Diabetes and Obesity, Head of Department, Noble Hospital, Pune, India.

range. On the completion of 5 months, she had lost 25.9kgs of weight compliance with diet and exercise. After a great significant weight loss a meal replacement therapy was discarded and only a lifestyle modification with increased in physical activity of about 60 mins per day for 6 times a week was advised (Table1). On the next follow up after 1 month she had lost more 4.1 kgs of weight comprising of 30 kgs in the duration of 6 months (Table 1).

RESULTS

The below table denotes that she had loss 2.4 kgs of weight after 1 month of the treatment (Table 2.1).

Table 2.1 Difference between the previous weight and weight after 1 month treatment

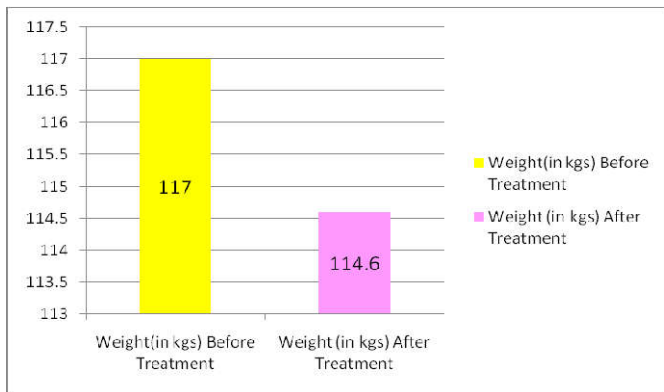
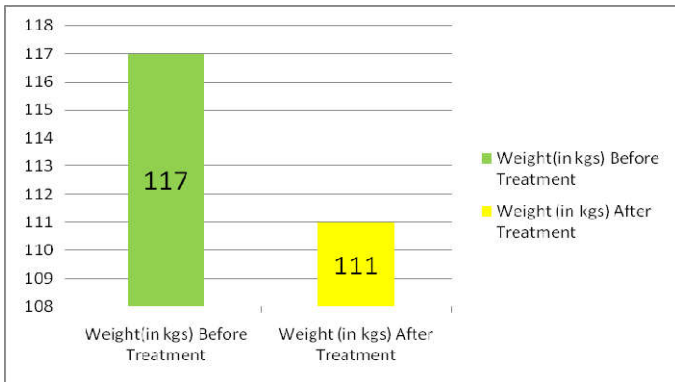


Table 2.2 Difference between the previous weight and weight after 2 months of the treatment



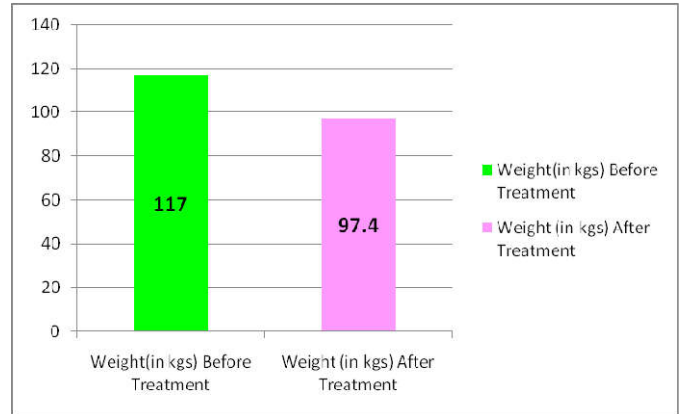
The above table signifies that she lost 6 kgs of weight after the completion of 2 months of the treatment (Table 2.2).

Table 2.3 Difference between the previous weight and weight after 3 months of the treatment



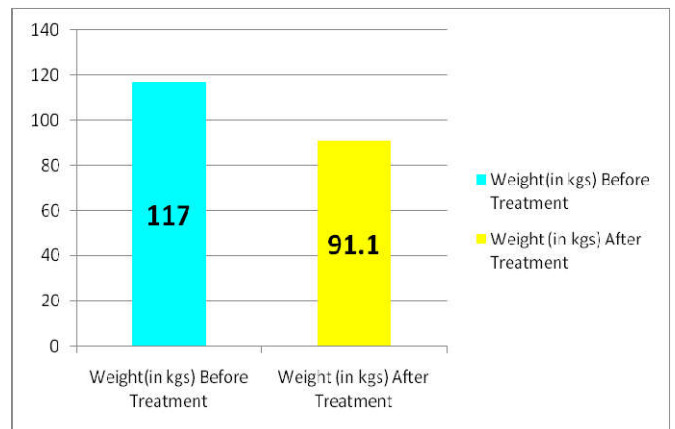
The above table indicate that there was 12.1kgs of weight loss after the completion of 3 months of the treatment (Table 2.3).

Table 2.4. Difference between the previous weight and weight after 4 months of the treatment



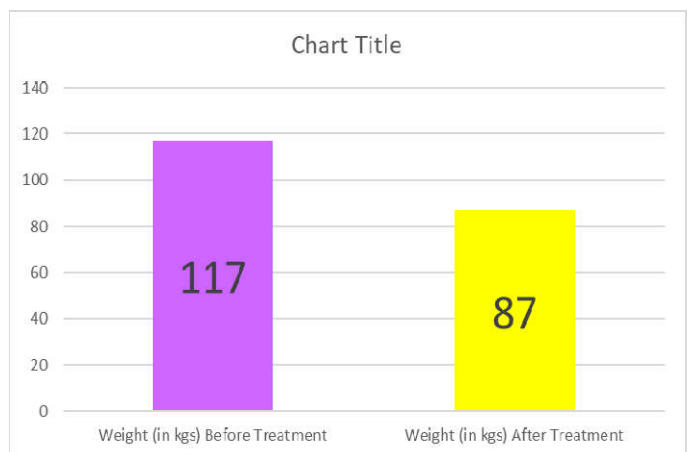
The above table derives that 19.6 kgs of weight loss was achieved after the treatment of 4 months (Table 2.4)

Table 2.5 Difference between the previous weight and weight after 5 months of the treatment



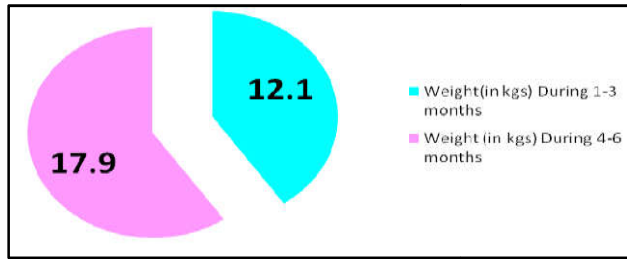
The above table signifies thatshe lost 25.9 kgs of weight after the 5 months of the treatment (Table 2.5).

Table 2.6. Difference between the previous weight and weight after 6 months of the treatment



The above table indicates that there was 30 kg of weight loss after the tenure of 6 months of treatment (Table 2.6).

Table 2.7. Difference between the weight loss during the 1-3 months and 4-6 months



The above diagram denotes that she had lost 12.1 kgs of weight loss during 1-3 months and 17.9 kgs of weight loss during 4-6 months (Table 2.7).

DISCUSSION

We found that lifestyle modification along with meal replacement therapy promoted a significant weight loss of about 30 kgs in 6 months. Initially her weight before treatment was 117 kgs where as she lost 12.1 kgs within 3 months of treatment, where she was advised lifestyle modification such as diet, exercise along with meal replacement shake and metformin. Similar research was conducted on adults which states that upto 2.5 kgs of weight loss is caused due to metformin (Thomas A Wadden, 2012). During the duration of 4-6 months she lost about 17.9 kgs of weight with lifestyle modification and meal replacement shake. Similar research was conducted on adults which states that 10 kgs of weight loss is caused because of lifestyle modification and behavioral therapy (Thomas A Wadden, 2012). Her BMI was 48.07 kg/m² before treatment which dropped to 43.10 kg/m² during the 1st – 3 months and later on it came down to 35.74 kg/m². Her HbA1c before treatment was 5.6% which denoted that she was pre-diabetic but after the completion of 3 months with metformin along with lifestyle modification it came down to 5.4%. Similarly a study conducted on 20 diabetic patient stated that metformin when consumed for 2 months result in drop in HbA1c by more than 1%. (Manuel Gonzalez Ortiz, 2012). Therefore it can be determined that lifestyle modification tends to loose more than 10 % of initial body weight when followed for more than 4 months. Similarly study conducted on adults stated 7% of weight loss than the initial body weight (Thomas A Wadden, 2012).

Conclusion

A BMI of 35.74 kg/m² along with HbA1c of 5.4 % was achieved which reduced the risk of diabetes and bariatric surgery.

Recommendations

Based on the study observation we found that:

- There is a need for educating people about balance diet and proper eating pattern.
- Also we need to create an awareness about importance of physical activity.

Limitations

The study was carried out on a single individual, for reliability the study should be carried out on mass number of samples.

Summary

This patient with BMI 48.07 kg/m² and pre-diabetic on metformin was able to lose 25.65% of initial body weight with low fat, moderate carbohydrates, high protein diet along with exercise and meal replacement therapy in the time frame of 6 months. Metformin was stopped after 3 months when the HbA1c was within the normal range. Therefore lifestyle modification with meal replacement therapy reduced the risk of complications related to obesity.

Acknowledgement

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