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Weight Loss & Inch Loss through an Online Intermittent Fasting Programme

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ABSTRACT

The study aims to evaluate the effectiveness of a Healthy Feasting and Fasting Program for weight management and reduction of abdominal girth. Although BMI correction is the key objective of any weight loss program in western countries, the Asian-Indian genotype and phenotype with thinner limbs and abdominal adiposity requires reduction of waist circumference as an equally important parameter. Retrospective data analysis of Sepalika's No-Touch, Completely Online Healthy Feasting and Fasting Program was conducted. Data came from all participants in this program. The final sample size taken is 55 participants who completed at least two months and shared their measurements on a weekly/bi-weekly basis. The study evaluates weight loss percentage, change in body mass index, and inch loss across the waist and hip from baseline. Approximately 96.2% (53 out of 55) of participants lost weight between baseline and completion of the program. Those who adhered to the programme for at least two months reported an average weight loss of 3.8 ±0.9 kg, inch loss of 2.3±0.5inches from the waist and 2.0±0.2inches from hip. The results of this study support the efficacy of Sepalika's Online Healthy Feasting and Fasting Program for weight loss, inch loss, and reduction in BMI. This program has successfully led to people becoming healthier by ensuring sustainable abdominal inch-loss in addition to weight loss. The results showed a clinically significant weight loss and inch loss in the majority of participants.

Keywords: Obesity, Weight loss, intermittent fasting, abdominal adiposity

INTRODUCTION

Obesity is the condition of being overweight and is a global issue today. Recent studies have reported that globally, more than 1.9 billion adults are overweight and 650 million are obese (1).Approximately 2.8 million deaths are reported as a result of being overweight or obese as per the World Health Organisation (WHO). Overweight is here defined as a body mass index (BMI) of 25 to 29.9 kg/m2 and obesity as a BMI of ≥ 30 kg/m2 (2).

The BMI (ratio of height and weight, expressed as kg/m^2) cut-offs considered in the article for diagnosing overweight and obesity have been universally recommended. BMI alone can be considered as a reliable marker to define obesity only if body fat alone varied and the composition of water, muscle, bone remained the same. A linear relationship does not exist between BMI and body fat. BMI continues to change with the smallest change of the components in our body. As per BMI cut-offs, people like professional wrestlers, with greater muscle mass, would be called 'obese' but their body fat is actually not excessive(3). Conversely, individuals with low muscle mass and higher fat percentage will be wrongly considered non-obese. Asians have a characteristic obesity phenotype, with relatively lower BMI but higher abdominal obesity, so BMI alone cannot estimate

obesity and risk associated with it(4). The specific pattern of fat deposition in and around the abdomen and also low lean mass are contributory to early-onset insulin resistance, diabetes and metabolic syndrome among Asians (5). Regional fat distribution is also associated with increased risk of heart diseases. Changing lifestyle and the fast-food culture have further aggravated the rate of metabolic syndrome. MONW "metabolically obese normal weight" is the term coined by Neil Ruderman for "non-obese" people having predisposition for diabetes, dyslipidaemia, and premature atherosclerosis(6). It is likely that these "MONW" subjects have high total body fat at a "normal" value of BMI. Adults with higher waist circumference measurements are at increased adverse health risk as compared to those with lower waist circumference for any given BMI category. Fat deposited in abdominal area is metabolically more important than other fat deposits. Waist circumference is strongly associated with intra-abdominal or visceral fat. Waist circumference is included as a component of Indian Diabetes Risk Score (IDRS),(7) which has been shown to be a very effective tool for predicting undiagnosed diabetes and also for identifying the metabolic syndrome in this population. Due to the consumption of nutrient-poor-energy-dense food (i.e., unhealthy food habits) and sedentary lifestyle the developing countries are facing a high risk of obesity and their adverse consequences (8). Severe obesity increases the risk of other diseases as well. For instance, ischemic heart disease, hypertension, metabolism disorder, type 2 diabetes, coronary heart disease, stroke, gallbladder disease, osteoarthritis, sleep apnoea, respiratory problems, and endometrial, breast, prostate, and colon cancers are some of the examples of the diseases (9). People with these diseases, combined with obesity, have a lower quality of health.(8) In some cases, these can lead to disability or early death (10). Being overweight and obese poses a major public health challenge.

In overweight and obese individuals, weight loss reduces risk factors for diabetes and cardiovascular disease (CVD)(11)(12). Moreover, weight loss reduces blood pressure in overweight hypertensive, reduces serum triglycerides and increases high-density lipoprotein (HDL)-cholesterol, and decreases total serum cholesterol and low-density lipoprotein (LDL)-cholesterol (13).Weight loss reduces blood glucose levels in overweight and obese persons without diabetes, and weight loss also reduces blood glucose levels and HbA1c in patients with type 2 diabetes(14). Health reports show that reducing abdominal obesity can improve body composition and reduce the risk of heart diseases and other components of metabolic syndrome (15). Reduction in waist circumference is a critical treatment target for reducing adverse health risks for both men and women (16)Nutritional intervention is an important strategy to handle obesity and fasting is a timeless approach towards this.

A single bout of fasting can also have significant positive effects, but temporary changes only produce temporary results. It is more important to focus on finding a healthy diet plan that can sustain long-term. Intermittent fasting (IF) involves the specific pattern of food restriction (fasting) followed by normal eating (feasting). The core reason is that IF helps reduce the amount of insulin secreted in the body (17). Insulin is our fat-storage hormone, and the shorter the time it is active for in our blood, the more the fat burnt and the greater the weight loss. The entire idea of IF is to allow the insulin levels to go down far enough and for long enough that we burn off our fat (18). Intermittent fasting targets stored body fat. When a person doesn't eat over a period of time, the body makes integral changes to use up stored fats to release energy. Here the preferred fuel of body is fatty acid and fatty acid derived ketones against glucose from glycogenolysis. The body initiates adipose

tissue lipolysis to produce more fatty acids and glycerol. The free fatty acids are transported to the liver for oxidation results in the production of Hydroxybutyrate and acetoacetate which in turn, is converted into energy through beta-oxidation. This process involves an increased level of circulating fatty acids and other crucial changes in metabolism and hormone activity-all of which benefit in the long run. This mechanism leads to utilization of fat and hence fat loss. The depletion of glycogen stores in the liver results in the metabolic switch, usually after 12 hours of the last meal(19). This is why IF works so well for weight loss in chronic diseases that are caused by hormonal imbalances, like Diabetes Type 2, cholesterol issues, and PCOS. When we eat, insulin levels rise. Similarly, when the body is fasting, insulin levels drop down to facilitate fat burning. Fasting increases levels of HGH or Human Growth Hormone many times, this promotes fat-loss while aiding muscle-gain(20). During fasting, the nervous system sends norepinephrine or noradrenaline to fat cells to break them down. This breakdown of stored body fat into free fatty acids that fuels the body results in weight loss. Intermittent Fasting promotes hormonal changes in the body that boosts fat-burning to encourage weight loss(21). This is why IF is helpful when it comes to losing excess body fat without losing muscle mass. This study aims to evaluate the effectiveness of Intermittent Fasting (IF) for the management of weight and abdominal girth.

MATERIALS AND METHODS

Sepalika's Healthy Feasting and Fasting Program

Sepalika runs a completely online program to aid weight loss through healthy feasting and fasting. A group of55 people enrolled in the program from across India and completed at least two months based on their association with Sepalika. The programme considered people in the 18-65 age group who wished to lose weight. Exclusion criteria included type 1 diabetes patients, pregnant women, and lactating mothers. All participants were required to submit a detailed medical record before the program began and submitted reports on blood tests to determine Complete Blood Indices, thyroid profile, Iron studies, lipid profile, liver profile and vitamin profile on case to case basis. The initial communication from Sepalika to participants also included a personal call to understand the eating habits of participants. During this call, Sepalika also explained to them the science of nutrition and metabolism. Vitamin and mineral supplements were prescribed to each participant as per their lab reports, and the importance of these was explained to them. Participants were informed that deficiency and stress slow down metabolism and hinders the process of losing weight as the body tries to store fat to compensate for the deficient nutrient.

The pre-established aim for the programme is weight-loss, reduction in waist-to-hip ratio, inch-loss, BMI correction within 1-3 months as per enrolment, and the secondary outcome includes programme satisfaction, building awareness around healthy eating in a sustainable way. The "design-for-sustainability" aspect of the programme is its key advantage. While crash diets and highly restrictive diets can provide far greater weight loss, participants often report going back to their old lifestyle and gaining back the weight over the course of a year or more, defeating the whole purpose of weight loss efforts. Sepalika's Online Healthy Feasting and Fasting program clearly acknowledges this feature of weight loss efforts and hence, has provisions for different life situations that a person could face in their healthy life journey-celebrations, travel, work stress, eating with a large family, out of a common kitchen, etc. The incorporation of existing food culture into the programme-DNA, via traditional food tips to digest foods better (inclusion of asafoetida, ginger, lemon shots, etc) helps to ensure sustainability of the eating habits which in turn ensures inch

loss and good health over a longer period of time.

Followers of the program only ate during a certain time-frame, which induces a prolonged fasting period. For example, the eating window may be between noon and 8:00 p.m. followed by fasting until noon the next day. This time pattern is known as the 16:8 fast, meaning that participants are fasting for 16 hours with an 8-hour eating window. People who are just starting may choose a 12:12 pattern such as 7 a.m. to 7 p.m. or follow at 14:10 pattern, i.e. 10:00 a.m. to 8:00 p.m. to ease into it. The period set for the eating window can be tailored to what works best for an individual's schedule. Many people consider this to be the easiest and most sustainable approach to fasting. To measure baseline weight status, we used BMI categories of normal weight (BMI of 18.5-25), overweight (BMI of 25-30), and obese (BMI>30). To measure adherence to the program, we used regular review calls, survey questions and food journals that tapped the level of participation and compliance.

In the first month, participants were introduced to time-restricted feeding 12 hr fasting and 12 hr feeding window. In the feeding window, participants were encouraged to have a healthy balanced diet, making sure each meal is balanced in terms of macronutrients-i.e. good-quality complex carbohydrates, proteins and good fats. Although fasting is structured around when to eat, what to eat was given equal importance. During the eating period, participants were encouraged to focus on good fats, clean protein, and complex carbohydrates from vegetables and whole food sources. Once on their Intermittent Fasting journey, most participants found that they feel satiated for a longer duration than earlier. The combination of macros and other nutrients gave them the energy they need to enhance the benefits of the fasting journey. The program made sure to take into account any individual food intolerances and provide customized support guide for any particular case. To support their choices in the feeding window, participants were provided with regular support like recipe documents, brand directory of clean organic produce etc. They were provided with travel and eating-out guidelines to ensure compliance. Weekly follow-up and regular online support helped most of the participants to adopt this new lifestyle. By using WhatsApp Text Chat support, Sepalika ensures that people are able to get their queries addressed quickly, so that the right dietary choices can be made at all times. Intermittent fasting does not necessarily mean a calorie-controlled diet, so participants were encouraged to eat according to their personal caloric needs, keeping in mind their levels of activity and their family situations. The highlight of the second month was elimination of processed and inflammatory foods like sugar, dairy, and gluten. This included abstaining from processed foods that contain added sugar. Sugars are often hidden in products such as ketchup, bread, packaged cereals, bottled juices etc. Healthier alternatives to such eliminated products were provided to participants, to ensure that craving did not get the better of them.

Participants reported overwhelming results. One of the participants who previously struggled with weight issues in spite of dieting reported improved sleep and better skin tone in addition to substantial weight loss after the programme. Another one reported that the uncomfortable bloating episodes totally vanished as a result of the program. One participant lost weight at menopause with almost 4.5 inches at waist and hip. Many reported better energy levels throughout the day. Almost everyone appreciated feeling empowered and self-reliant to make good food choices, while eating to their satisfaction and within their established family lifestyles. Many participants highlighted the feeling that the programme felt "sustainable" for a lifetime; since it was designed for gradual behaviour change and gave various healthy alternatives provided to processed foods that people usually craved for, these points may

have been crucial to the success of the program.

RESULTS

We stratified results for the primary and secondary outcomes by baseline weight status and participants' self-reported adherence to the program. More than 53 participants successfully lost weight. 55 people from the age group 18 to 65 enrolled for the program. Baseline weight was in the range of 51 kg to 132 kg and the average weight was 79.63 kg 19 out of 55 people had a BMI of more than 30, and 27 had a BMI between 25 and 30. 53 people successfully lost weight (Fig 1) The majority (51out of 55) reported weight loss in the first month itself. The average waist size in inches was 37.85, and 47 people reported inch loss at the waist with an average of 2.26 inches (Fig 4) and 46 reported inch loss at the hip with an average of 1.92 inches at the end of two months(Fig 3)

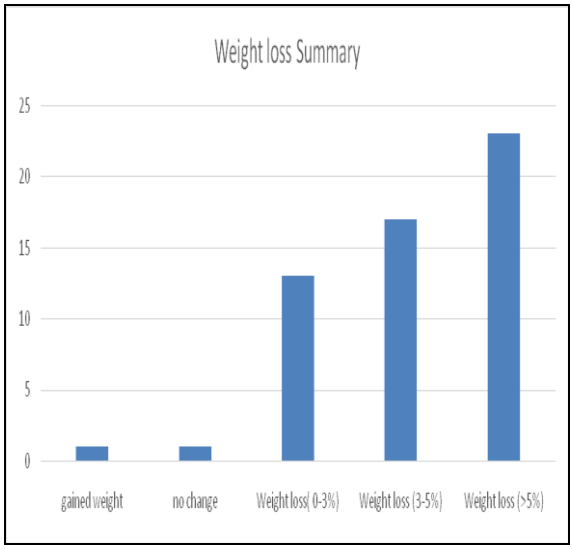

Fig 1: A bar Plot on Weight Loss Summary

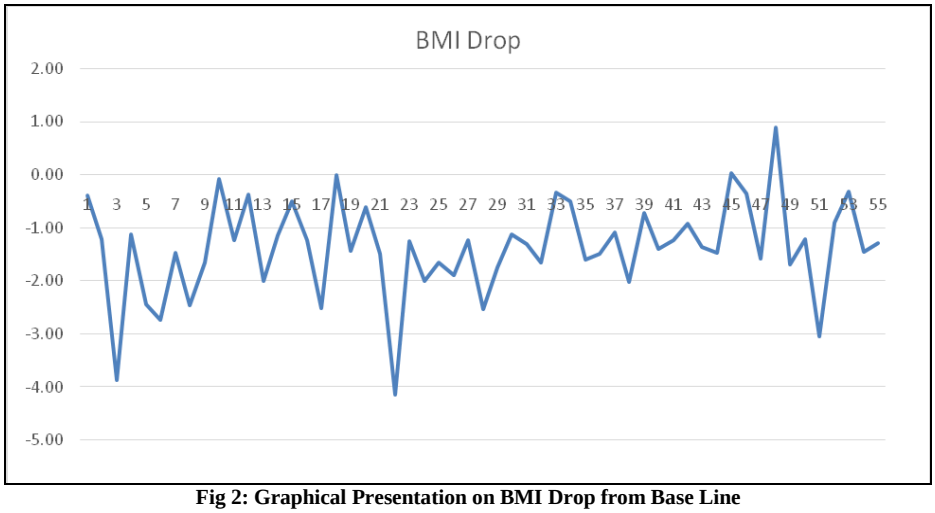

Fig 2: Graphical Presentation on BMI Drop from Base Line

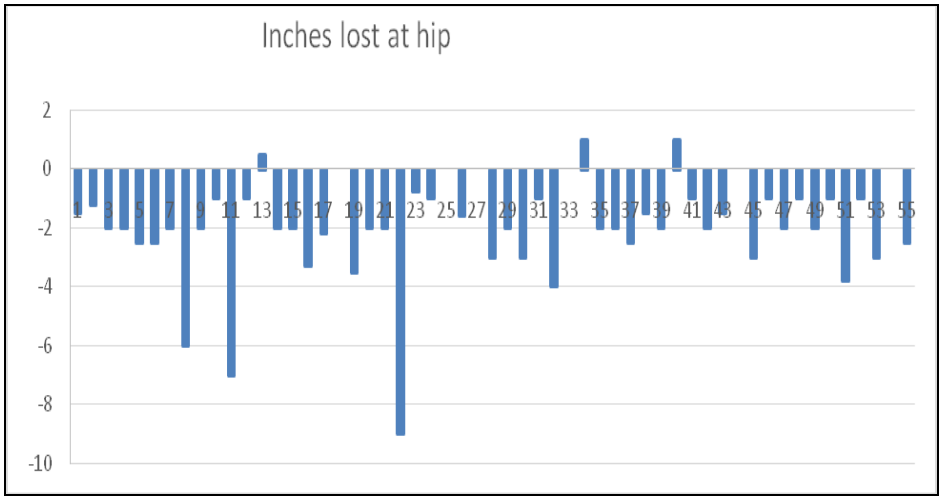

Fig 3: A Graphical Presentation on Inches Lost at Hip

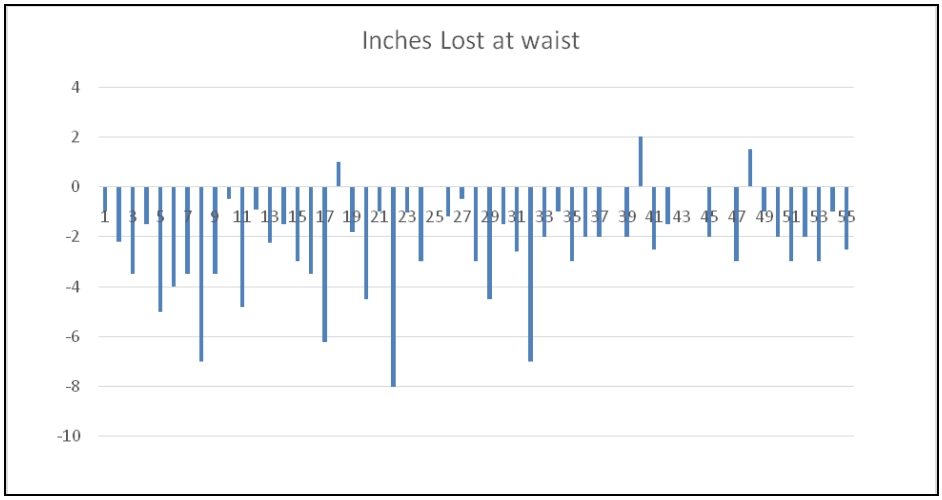

Fig 4: Graph Based On Inches Lost At Waist

More than 209 kilos were lost of the cohort with an average of 3.81 after two months. Participants who extended the program for another month showed very exciting results. The BMI also improved in 52 out of 55 participants. Average BMI reduction was 1.37 (Fig 2) and the participants reported average of 2.26 inch loss from the waist and 1.92 inch loss from the hip. A total of 209 kg, 124.5 inches from the waist, and 105.35 inches from the hip were lost. It is observed that intermittent fasting also helped people in maintaining blood sugar levels, eight participants provided before and after blood test reports. Six out of eight participants reported drop in fasting insulin in the range of 0.9 to 22.3 units with an average drop of 4.41 units and HomaIR levels in the range of 0.12 to 5.72 with an average drop of 1.24 units.

In addition to the weight and inch-loss, participants also achieved improved health as a result of the Sepalika programme. The testimonials noted that healthy and timely eating has reduced lethargy and improved sleep. Several participants also noted that the programme and personal guidance along with weekly reviews helped them curb cravings. The programme helped people achieve an overall lean appearance and also helped them fight health issues such as high blood pressure, thyroid as well as digestive distress issues like acidity. The direct benefits of the programme, for instance, reduced health problems and improved quality of sleep also influenced the mood of the participants making them feel calmer, as reported. Overall, the programme has successfully influenced the life of participants and helped them improve their lifestyle and reduce health-related challenges.

The study conducted an exploratory statistical analysis using XLSTAT 2020 that included descriptive analysis. While the statistical significance (alpha) was 0.05, the p-values were less than 0.001(Table-2). Descriptive statistics were generated (Table1) for different outcome variables include weight change, BMI, waist circumference, and hip circumference. There was 55 paired observations after two months of starting the program. The average baseline weight in this cohort was 79.638kg (SD±16.806). The average final weight was 75.831 kg (SD±15.927). The weight loss was 4.735kg which was statistically very significant. The average inch loss at the waist, hip, and change in BMI was 2.26, 1.92, and 1.37 respectively which was statistically significant. Correlation between baseline weight and weight-loss was studied by using the Spearman correlation test. Results of the Spearman correlation test showed that baseline weight status is not significantly associated with %weight loss (p-value > 0.05).

Table 1: Descriptive Statistics

Variable	Obser.	Obser. with missing data	Obser. without missing data	Min.	Max.	Mean	Std Dev.
Initial Weight	55	0	55	51.500	132.800	79.638	16.806
Final weight	55	0	55	49.200	129.000	75.831	15.927
Waist size Initial	55	0	55	25.500	48.000	37.694	4.767
Waist size Final	55	0	55	23.500	50.000	35.430	4.823
Hip size initial	55	0	55	33.000	53.000	42.804	3.940
Hip Size Final	55	0	55	33.500	52.000	40.888	3.727
Initial BMI	55	0	55	21.720	48.780	29.327	4.929
Final BMI	55	0	55	21.141	47.383	27.952	4.669

Table 2: T-test for two paired samples/Two-tailed test after two months:

T test result	Change in weight*	Change in Waist size*	Change in hip size*	Change in BMI*
Difference	3.807	2.264	1.915	1.375
t(Observed value)	11.599	8.305	8.097	11.192
t (Critical value)	2.005	2.005	2.005	2.005
DF	54	54	54	54
p-value (Two-tailed)	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Alpha	0.05	0.05	0.05	0.05

Significant value at <0.0001*

DISCUSSION

The dangers of obesity are well known and accepted, and a recent shift to a healthy lifestyle is observed(22). This program has successfully helped people reduce weight, abdominal obesity and adapt to a healthy lifestyle(23). It is important to focus on the deficiency levels and nutritional status and therefore, blood tests are integral to begin the process(24). Intermittent fasting helps the body achieve the metabolic shift required to achieve the desired weight(19). Lifestyle management is significant for reducing metabolic syndrome and controlling cholesterol (22) Research suggested that weight loss prevents converting type 2 diabetes to insulin dependent (25). The primary impact of the program was witnessed in the participants who adhered to the schedule provided. Participants stated that it became easier to follow a healthy schedule after the program. Sepalika emphasised a change in the quality of the feeding window - meal combinations, food choices and showed weight loss, reduction in abdominal girth in nearly 89% given the shift in eating behaviour post participation in the program. The study strongly recommends the program as the results of weight loss, BMI correction and inch loss in participants who adhered to the schedule shows the efficiency of the prescribed schedule. The research design of this study may induce some unintended limitations. It did not have a control group, there were minor gaps in self-reported data, and there is a selection bias in terms of those who enrolled to the programme. Due to non-availability of any standard norms defining clinically significant inch loss at waist and him, we are unable to quantify the medical relevance of the same, despite statistically significant reduction in these parameters. The data retrieved was self-reported as it was an online programme and the study had to rely on the data reported.

CONCLUSION

The need for weight loss, reduction in abdominal girth and comfort of technology is the backbone of Sepalika's Online Healthy Feasting and Fasting Program. Sepalika offers a simple and holistic approach to fast and feast right that can result in substantial weight loss and inch loss. The entire programme is delivered via a No-Touch Online system, using a combination of voice calls, emails, videos and WhatsApp instant text support, a factor that may prove to be very valuable in a Covid-19 and post-Covid-19 era. This study reveals that Sepalika's Online Healthy Feasting and Fasting Program are effective in delivering significant weight loss, inch loss, and reduction in BMI.

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