ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/26oct721

Weight Reduction Following a Calorie-Modified Dietary Intervention: A Case Report

Shyamala Devi P.[1]; Rahul R. K.[2]; Sakthi S.[3]

[1]Professor, Department of Fasting and Dietetics, Sree Ramakrishna Medical College of Naturopathy and Yogic Sciences, Kulasekharam.
[2]Lecturer, Department of Acupuncture, Sree Ramakrishna Medical College of Naturopathy and Yogic Sciences, Kulasekharam.
[3]CRRI, Sree Ramakrishna Medical College of Naturopathy and Yogic Sciences, Kulasekharam.

Publication Date: 2026/10/27

Abstract:

- ***Background:***

Obesity is a chronic condition associated with an increased risk of metabolic and cardiovascular diseases. Dietary energy modification is an established approach to weight management.

- ***Case Presentation:***

An adult woman presented with a body weight of 66.8 kg, height of 143 cm, and body mass index (BMI) of 32.7 kg/m². A calorie-modified dietary programme was implemented, with an estimated daily energy requirement of 1,503 kcal. The dietary plan included traditional cereals, pulses, vegetables, fruits, and other commonly consumed foods. The programme was conducted from October to February, with an intermediate weight-maintenance phase. Body weight decreased to 59.6 kg during the initial phase and subsequently to 55 kg.

- ***Outcome:***

Body weight decreased by 11.8 kg, representing a reduction of approximately 17.7% from baseline. BMI decreased from 32.7 to 26.9 kg/m². Waist circumference decreased from 74 to 60 cm, hip circumference from 90 to 72 cm, right mid-arm circumference from 27 to 22 cm, left mid-arm circumference from 26 to 21 cm, and abdominal circumference from 84 to 71 cm.

- ***Conclusion:***

This case demonstrates substantial weight reduction during a calorie-modified dietary programme. Further assessment and longer-term follow-up are required to evaluate the sustainability of weight reduction and its effects on metabolic health.

Keywords: *Obesity, Calorie Modification, Dietary Intervention, Weight Reduction, Body Mass Index, Anthropometry, Case Report.*

How to Cite: Shyamala Devi P.; Rahul R. K.; Sakthi S. (2026) Weight Reduction Following a Calorie-Modified Dietary Intervention: A Case Report. *International Journal of Innovative Science and Research Technology*, 11(10), 1819-1822. https://doi.org/10.38124/ijisrt/26oct721

I. INTRODUCTION

Obesity is a chronic disease characterised by excessive accumulation of body fat and is associated with several health conditions, including type 2 diabetes, cardiovascular disease, and musculoskeletal disorders (World Health Organization, 2025). Body mass index (BMI) is widely used to classify adult weight status and assess the degree of excess body weight (WHO, n.d.).

Dietary energy restriction is an established component of weight-management programmes. Evidence-based guidelines recommend individualised dietary interventions that reduce energy intake while maintaining nutritional adequacy and supporting long-term adherence (Jensen et al., 2014; National Institute for Health and Care Excellence, 2025). Clinical studies have also demonstrated the effectiveness of structured weight-management interventions, although outcomes vary according to intervention design and adherence (Franz et al., 2007; Hartmann-Boyce et al., 2014).

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The present case report describes changes in body weight, BMI, and anthropometric measurements following a calorie-modified dietary programme incorporating traditional foods commonly consumed in India.

II. CASE PRESENTATION

An adult woman presented with a body weight of 66.8 kg and a height of 143 cm. Her baseline BMI was 32.7 kg/m², corresponding to obesity according to conventional adult BMI classification.

➢ *The Baseline Anthropometric Measurements were as Follows:*

- Weight: 66.8 kg
- Height: 143 cm
- BMI: 32.7 kg/m²
- Waist circumference: 74 cm
- Hip circumference: 90 cm
- Right mid-arm circumference: 27 cm
- Left mid-arm circumference: 26 cm
- Abdominal circumference: 84 cm

The estimated desirable body weight was 42.9 kg, and the estimated daily calorie requirement was 1,503 kcal.

➢ *Dietary Intervention*

A calorie-modified dietary programme was implemented from October through February. The programme incorporated a structured meal plan with specified meal timings, portion sizes, and estimated energy values.

The dietary plan included traditional foods such as ragi dosa, oats upma, barnyard millet pongal, jowar dosa, brown rice, chapathi, thinai pongal, idli, pearl millet idli, pulses, vegetables, fruits, sambar, rasam, chutneys, buttermilk, and boiled legumes.

The estimated daily energy intake for Monday through Saturday ranged from 1,410 to 1,500 kcal. Sunday was designated as a juice-based fasting day, comprising vegetable juices, fruit juices, and lemon-honey water.

The programme consisted of two weight-reduction phases separated by a one-month weight-maintenance period. During the initial phase, from October to December, body weight decreased to 59.6 kg. Following the maintenance phase, a further weight-reduction phase was undertaken from January to February, with a final recorded weight of 55 kg.

III. RESULTS

The final assessment demonstrated a reduction in body weight and all recorded circumference measurements.

Table 1 Pre and Post Assessment

Parameter	Baseline	Final	Change
Weight (kg)	66.8	55.0	−11.8
BMI (kg/m²)	32.7	26.9	−5.8
Waist circumference (cm)	74	60	−14
Hip circumference (cm)	90	72	−18
Right mid-arm circumference (cm)	27	22	−5
Left mid-arm circumference (cm)	26	21	−5
Abdominal circumference (cm)	84	71	−13

The total body-weight reduction was 11.8 kg, equivalent to approximately 17.7% of the initial body weight. BMI decreased by 5.8 kg/m², from 32.7 to 26.9 kg/m².

The final BMI was within the conventional overweight category for adults. Reductions were also recorded in waist, hip, mid-arm, and abdominal circumferences. Waist circumference is a useful complementary anthropometric measure in the assessment of health risks associated with excess adiposity (WHO, 2011).

IV. DISCUSSION

This case describes a substantial reduction in body weight during a structured calorie-modified dietary programme. The reduction from 66.8 to 55 kg represented approximately 17.7% of baseline body weight, accompanied by a decrease in BMI from 32.7 to 26.9 kg/m².

➢ *Dietary Energy Modification*

Dietary energy restriction is a well-established strategy for weight management. Clinical guidelines recommend reducing energy intake while maintaining a nutritionally balanced diet and individualising dietary advice according to health status and personal circumstances (NICE, 2025). The American College of Cardiology, American Heart Association, and The Obesity Society also recommend comprehensive lifestyle-based management for adults with overweight or obesity (Jensen et al., 2014).

Recent evidence from a systematic review and meta-analysis of 99 randomized controlled trials involving 6,582 participants suggests that both intermittent fasting and conventional calorie restriction support weight loss, while certain intermittent-fasting regimens may offer modest additional benefits for weight reduction and selected cardiometabolic outcomes (Aswathy H V et al., 2025).

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The dietary programme in this case incorporated a variety of traditional cereals, pulses, vegetables, fruits, and other commonly consumed foods. Its estimated daily energy intake was approximately 1,410–1,500 kcal on six days of the week. The recorded energy values describe the prescribed meal plan; actual intake and adherence were not independently quantified.

Evidence from systematic reviews supports the effectiveness of structured dietary and behavioural interventions for weight reduction, although the magnitude and durability of outcomes differ across programmes (Franz et al., 2007; Hartmann-Boyce et al., 2014).

- *Changes in Anthropometric Measurements*

The reduction in body weight was accompanied by decreases in waist, hip, mid-arm, and abdominal circumferences. These measurements provide complementary information about changes in body size. Waist circumference, in particular, can contribute to the assessment of obesity-related health risk when measured using standardised procedures (WHO, 2011).

However, circumference measurements alone cannot determine the extent of fat loss or distinguish changes in fat mass from changes in lean tissue or fluid balance. The absence of body-composition measurements and biochemical investigations limits further interpretation of the outcome.

- *Weight Maintenance*

The intervention incorporated a one-month maintenance phase between two periods of weight reduction. Maintenance is an important component of long-term weight management because weight regain can occur after an initial reduction. Wing and Phelan (2005) highlighted the importance of sustained behavioural strategies in maintaining weight loss.

Although the programme included an intermediate maintenance period, longer-term follow-up data were not available. Therefore, the durability of the final weight reduction remains undetermined.

V. CLINICAL IMPLICATIONS

The magnitude of weight reduction recorded in this case supports further evaluation of structured, culturally appropriate dietary programmes in clinical practice. Nevertheless, the contribution of individual dietary components cannot be separated, and the case does not establish that any specific food, juice regimen, or meal schedule independently produced the observed outcome.

The nutritional adequacy of the juice-based fasting day was not assessed. Future applications of similar programmes should consider individual nutritional requirements, adequate protein and micronutrient intake, clinical monitoring, and sustainable dietary practices.

Emerging evidence from human studies suggests that micronutrient status, including vitamin D, zinc, iron, folate, vitamin B12, and magnesium, may be associated with depressive and anxiety symptoms, highlighting the importance of considering nutritional adequacy as part of a comprehensive approach to health (Rahul R. K.; et al., 2026).

VI. LIMITATIONS

This report has several limitations. It describes a single case without a comparison group. Detailed medical history, medication use, laboratory investigations, body-composition measurements, actual dietary adherence, adverse-event monitoring, and long-term follow-up were unavailable. The methods used to obtain the anthropometric measurements were also not documented.

Consequently, the findings should be interpreted as a descriptive clinical observation rather than evidence of a causal relationship between the dietary programme and the observed changes.

VII. CONCLUSION

A calorie-modified dietary programme was associated with a recorded reduction in body weight from 66.8 to 55 kg over the intervention period. BMI decreased from 32.7 to 26.9 kg/m², with concurrent reductions in the recorded circumference measurements.

The findings demonstrate substantial anthropometric changes during the programme. Further assessment of nutritional adequacy, metabolic outcomes, safety, and long-term weight maintenance would help establish the broader clinical relevance of this approach.

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