Indian Journal of Modern Research and Reviews

This Journal is a member of the *'Committee on Publication Ethics'*

Online ISSN:2584-184X

Research Paper

Impact of Calcium-Rich Diet on Obesity Management and Lipid Profile: A Nutritional Perspective

Dr. Deepa Singh

Assistant Professor, Department of Home Science, MBPG College, Haldwani, Uttarakhand, India

Corresponding Author: *Dr. Deepa Singh

DOI: https://doi.org/10.5281/zenodo.20407586

ABSTRACT

Obesity has emerged as one of the most serious public health concerns worldwide, affecting individuals across all age groups and socio-economic backgrounds. The increasing prevalence of obesity is associated with unhealthy dietary habits, sedentary lifestyles, and metabolic disorders. Nutritional interventions have gained considerable attention for obesity management, among which calcium intake has shown promising effects.

The present research paper focuses on the role of calcium-rich diets in regulating body weight, lipid metabolism, and fat excretion. The study evaluates the comparative effects of dairy and non-dairy calcium sources on obesity and associated metabolic parameters. Evidence from various studies suggests that adequate calcium intake contributes to a reduction in body fat accumulation, improvement in lipid profile, and enhanced faecal fat excretion. Dairy-based calcium sources appear more effective due to the presence of bioactive compounds that support metabolic functioning.

The paper highlights the importance of balanced nutrition, lifestyle modification, and dietary calcium in obesity prevention and management. The study also emphasises the need for nutritional awareness and public health strategies to combat obesity in developing countries like India.

Manuscript Info.

- ✓ **ISSN No:** 2584-184X
- ✓ **Received:** 13-01-2025
- ✓ **Accepted:** 25-02-2025
- ✓ **Published:** 28-02-2025
- ✓ **MRR:3(2):**2025;94-96

- ✓ **Peer Review Process:** Yes
- ✓ **Plagiarism Checked:** Yes

How To Cite

Singh D. Impact of calcium-rich diet on obesity management and lipid profile: a nutritional perspective. Indian J Mod Res Rev. 2025;3(2):94-96.

KEYWORDS: Obesity, Calcium Intake, Lipid Profile, Dairy Products, Weight Management, Nutrition, Health.

1. INTRODUCTION

Obesity is defined as excessive or abnormal fat accumulation that may impair health. According to the World Health Organisation (WHO), obesity has become a global epidemic and is one of the leading causes of chronic diseases such as diabetes, cardiovascular disorders, hypertension, and certain cancers. The Body Mass Index (BMI) is commonly used to classify overweight and obesity. Individuals with a BMI above 25 are considered overweight, whereas those with a BMI above 30 are categorised as obese. India is witnessing a rapid increase in obesity due to urbanisation, changing dietary patterns, reduced physical activity, and increased consumption of processed foods. The shift towards high-calorie and nutrient-poor diets has significantly contributed to the rising burden of obesity among both adults and children. Nutritional management plays a significant role in preventing obesity and related complications. Among various nutrients, calcium has attracted attention for its potential role in regulating body weight and fat metabolism. Studies suggest that high calcium intake may reduce fat absorption, increase lipid oxidation, and improve metabolic health.

2. REVIEW OF LITERATURE

Several researchers have examined the relationship between calcium intake and obesity management.

Hannah et al. (2017) reported that obesity was strongly associated with altered lipid profiles and reduced HDL cholesterol levels. Increased waist circumference was linked with higher triglyceride concentrations.

Guillermo et al. (2012): Observed that obese school children with higher calcium intake showed improved lipid metabolism and lower body fat percentages.

Sosi-Aho et al. (2017): Concluded that acquired obesity affects serum lipid profiles and metabolic functioning irrespective of genetic influences.

Layman et al. (2013) demonstrated that diets rich in protein and calcium improved body composition and supported weight reduction among obese adults.

Due et al. (2014): Found that dairy-based calcium sources produced greater reductions in body weight compared to calcium supplements.
Research evidence indicates that calcium-rich diets, especially dairy sources, may contribute significantly to obesity control and improvement in metabolic health.

CAUSES OF OBESITY
Excessive intake of high-fat and energy-dense foods
Sedentary lifestyle and lack of physical activity
Increased consumption of processed and fast foods
Hormonal imbalance and metabolic disorders
Genetic predisposition
Psychological stress and emotional eating
Urbanisation and lifestyle changes
Environmental and social factors also contribute significantly to unhealthy dietary patterns and reduced physical activity.

3. OBJECTIVES OF THE STUDY

- To analyse the effect of calcium-rich diets on obesity management.
- To compare dairy and non-dairy sources of calcium in reducing body weight.
- To examine the relationship between calcium intake and lipid profile.
- To assess the role of calcium in faecal fat excretion and fat metabolism.
- To evaluate the importance of nutritional interventions in obesity prevention.

NEED OF THE STUDY
Obesity has become a major public health issue in India and other developing countries. Increasing rates of obesity among children, adolescents, and adults have led to a rise in chronic diseases. Dietary modifications are considered effective and economical methods for obesity management. Calcium intake has shown beneficial effects in reducing body fat accumulation and improving lipid metabolism. However, awareness regarding calcium-rich diets remains limited. Therefore, this study is important to understand the nutritional significance of calcium in obesity prevention and management.

4. METHODOLOGY

The present study is based on secondary data collected from books, journals, research articles, W.H.O reports, and published nutritional studies related to obesity and calcium intake.

Sources of Data:
Research journals
WHO reports
Nutrition and dietetics books
Scientific articles and online databases

Method of Analysis:
Comparative and analytical methods were used to evaluate the impact of calcium intake on obesity and lipid profile.

ROLE OF CALCIUM IN OBESITY MANAGEMENT
Calcium plays an essential role in metabolic regulation and fat metabolism. Adequate calcium intake may contribute to obesity reduction through the following mechanisms:

Reduction in Fat Absorption: Calcium binds with dietary fats in the intestine and increases faecal fat excretion, thereby reducing fat absorption.

Regulation of Fat Metabolism: Higher calcium intake suppresses hormones responsible for fat storage and promotes fat breakdown.

Improvement in Lipid Profile: Calcium-rich diets may help reduce total cholesterol and triglycerides while increasing HDL cholesterol.

Appetite Regulation: Dairy products rich in calcium and protein increase satiety and reduce overall calorie intake.

Enhancement of Thermogenesis: Calcium may stimulate energy expenditure and fat oxidation, contributing to weight loss.

DAIRY V/S NON-DAIRY CALCIUM SOURCES

Dairy Sources:
Milk, Yoghurt, Cheese, and Buttermilk
Dairy products provide calcium along with proteins and bioactive compounds beneficial for metabolism.

Non-Dairy Sources:
Green leafy vegetables, Soy products, Almonds, Sesame seeds, and Ragi

Although non-dairy foods are healthy calcium sources, dairy calcium has shown comparatively greater effectiveness in obesity management studies.

5. FINDINGS OF THE STUDY

High calcium intake contributes to a reduction in body weight and fat accumulation. Dairy calcium sources are more effective than non-dairy sources in improving lipid profiles.
Increased calcium intake enhances faecal fat excretion. Calcium-rich diets support better metabolic health and obesity control. Nutritional awareness and balanced dietary practices are essential for obesity prevention.

6. CONCLUSION

Obesity is a growing nutritional and health challenge that requires immediate attention through dietary and lifestyle interventions. Calcium-rich diets have emerged as an effective nutritional strategy for obesity management. Research findings suggest that adequate calcium intake improves lipid metabolism, increases fat excretion, and supports weight reduction. Dairy-based calcium sources appear particularly beneficial due to their combined nutritional properties. However, healthy lifestyle practices, balanced diets, and regular physical activity remain essential components of long-term obesity prevention. The study concludes that promoting calcium-rich foods and nutritional education can contribute significantly toward improving public health and reducing obesity-related complications.

REFERENCES

1. Astrup A. The role of calcium in energy metabolism and obesity. Nutr Rev. 2015;63(12):417-20.
2. Due A, et al. Effect of normal fat diets on bodyweight in overweight subjects. Int J Obes. 2014; 28:1283-90.
3. Guillermo-Guisado J, et al. Obesity in school children and its relationship with lipid profile. Obes Res J. 2012; 18:950-62.
4. Hannah L, et al. Effect of obesity and body fat distribution on lipids and lipoproteins. Obes Res J. 2017;8(1):1-12.
5. Heaney RP. Dairy intake and obesity management. Am J Clin Nutr. 2015;82(1):276-81.
6. Layman DK, et al. Dietary carbohydrate to protein ratio and body composition during weight loss. J Nutr. 2013;133(2):411-7.
7. Sosi-Aho M, et al. Acquired obesity and changes in serum lipid profile. PLoS One. 2017;12(8):e0180171.
8. Teegarden D. Calcium intake and reduction in body fat. Nutr J. 2018;17(3):120-8.
9. World Health Organisation. Obesity and overweight fact sheet. Geneva: World Health Organisation; 2012.
10. Zemel MB. Calcium modulation of hypertension and obesity. J Am Coll Nutr. 2016;20(5):428-35.