FIRST

Clinical Obesity

CONFERENCE

Iran

اولین همایش چاقی بالینی ایران

OFFICIAL

Conference Booklet

DATES

November 22–23, 2026

Sunday & Monday · 1–2 Azar 1405

VENUE

Razi International Conference Center

Iran University of Medical Sciences, Tehran

ORGANIZERS

Iran University of Medical Sciences

Iranian Society for Clinical Nutrition



CONFERENCE TOPICS

- Physical Activity & Exercise Programs
- Pathophysiology of Obesity
- Pharmacotherapy
- Complications of Obesity
- Childhood Obesity
- Longevity
- Medical Nutrition Therapy

Held alongside ESPEN Lifelong Learning courses and International Obesity Federation SCOPE courses · Maximum continuing education credits

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Iranian Society for Clinical Nutrition Reg.No:52141

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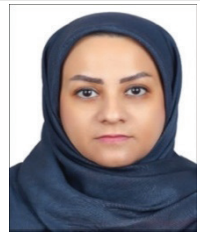
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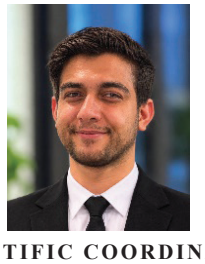
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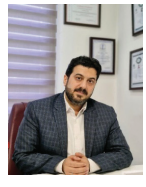
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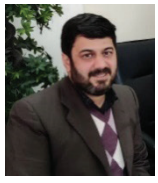
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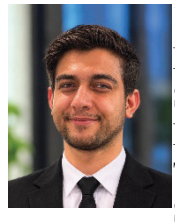
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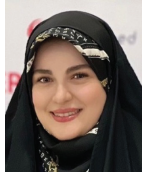


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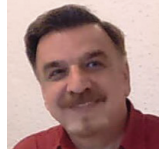
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Conference Official Messages

Conference Chair Message



Obesity has emerged as one of the most pressing global public health challenges and a major contributor to the growing burden of chronic non-communicable diseases (NCDs), which remain the leading causes of morbidity and mortality worldwide. Clinical obesity, in particular, plays a substantial role in the development and progression of several major NCDs. In Iran, the prevalence of obesity has increased steadily over the past two decades. Currently, approximately 51% of the adult population is affected by excess body weight, while nearly 30% have clinical obesity. According to projections by the International Association for the Study of Obesity, Iran is expected to experience a substantial further increase in obesity prevalence over the coming decade. By 1415 (2036), approximately 70% of the country's urban population is projected to be overweight or living with obesity. This growing epidemic is expected to further intensify the burden of NCDs, including diabetes, metabolic dysfunction-associated steatotic liver disease (MASLD), and, particularly, cardiovascular diseases. Epidemiological projections further suggest that, by 1415, the costs associated with obesity-related complications could account for approximately 3.5% of the country's per capita income.

Nevertheless, recent national developments offer grounds for optimism. The adoption of the National Document for the Prevention of Chronic Non-Communicable Diseases by the Supreme Council for Health and Food Security in Aban 1405 (October–November 2026), which underscores the importance of obesity prevention and management, represents an important step toward addressing this challenge. Furthermore, advances in medical technology and the growing capacity of Iran's high-tech pharmaceutical industry to develop and manufacture innovative anti-obesity medications provide additional opportunities to change the projected trajectory of obesity and its associated complications by 1415.

Against this background, the First Iranian Clinical Obesity Conference, the country's inaugural educational initiative dedicated to healthcare professionals involved in obesity prevention and management, will be held on Azar 1–2, 1405 (November 22–23, 2026). Jointly organized by the Secretariat of the Tehran Province Supreme Council for Health and Food Security and Iran University of Medical Sciences, this conference aims to advance clinical knowledge, strengthen professional competencies, and foster interdisciplinary collaboration in the field of clinical obesity. In recognition of the importance of advancing nationally relevant research, the Minab Award will also be presented to an outstanding research project in the field of obesity. Established in memory of the 167 innocent children from Minab who lost their lives during the Ramadan offensive of the imposed war, this award seeks to honor their memory while encouraging scientific contributions that can improve public health.

It is my sincere hope that this conference will serve not only as a platform for introducing the latest scientific advances and evidence in clinical obesity; but also as an opportunity for researchers, healthcare professionals, policymakers, and other stakeholders to exchange knowledge, strengthen professional networks, and develop coordinated strategies for policy, research, education, and clinical practice. Through these collective efforts, we can take meaningful steps toward reducing the burden of obesity and improving the health and well-being of our society.

Nader Tavakoli, MD, PhD
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Mahdi Shadnoush, MD, PhD
Executive Secretary, The First Iranian Clinical Obesity Conference



Abdolreza Norouzy, MD, PhD
Scientific Secretary, The First Iranian Clinical Obesity Conference

Dear Colleagues and Distinguished Guests,

It is my pleasure to welcome you to the First Clinical Obesity Conference of Iran. This inaugural gathering provides an opportunity to bring together colleagues from across disciplines to exchange knowledge, share clinical experience, and strengthen collaboration in obesity prevention and care.

Obesity challenges us to look beyond body weight alone and consider its effects on health, physical function, and quality of life. Effective care requires an understanding of each person's circumstances, respectful communication, and coordinated support over time. Our shared responsibility is to translate scientific knowledge into practical, individualized care that patients can access and sustain. The conference brings together complementary perspectives on nutrition, physical activity, pharmacotherapy, childhood obesity, obesity-related complications, and longevity. Through this exchange, we hope to encourage thoughtful discussion of emerging evidence, its relevance to everyday practice, and the challenges of delivering comprehensive obesity care in our communities.

As Executive Secretary, my priority has been to help create a welcoming and well-organized environment in which scientific exchange and professional connections can flourish. I am grateful to the organizing institutions, the scientific and executive committees, our distinguished speakers, and every colleague whose dedication has helped bring this first conference to life. I extend particular thanks to the executive team for their commitment and careful work behind the scenes.

Above all, I thank our participants. Your questions, experience, and contributions will give this conference its value and help shape its future. May this inaugural meeting mark the beginning of lasting collaborations, continued learning, and meaningful improvements in the care of people living with obesity.

I wish you a productive and inspiring conference.

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ORAL

Neurodevelopmental Disorders and Obesity in Children: A Review

Fahimeh Soheilipour*

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ARTICLE INFO

Keywords:
Neurodevelopmental disorders
Autism spectrum disorder
Obesity
Children

ABSTRACT

Obesity disproportionately affects children or adults with neurodevelopmental disorders (NDDs), including autism spectrum disorder (ASD), attention-deficit/hyperactivity disorder (ADHD), and intellectual disability (ID). Psychotropic medications are major modifiable contributors. Second-generation antipsychotics can promote weight gain and metabolic abnormalities. In ADHD, stimulants usually suppress daytime appetite but can contribute to evening rebound eating. Medication can interact with disorder-specific behavioral phenotypes, whereas executive dysfunction and impulsivity in ADHD can impair eating regulation. Shared genetic vulnerability may further increase the risk. Sleep disturbances, circadian disruption, altered gut-brain signaling, hypotonia, motor coordination difficulties, and environmental barriers can reinforce unhealthy weight trajectories. Clinical management includes assessment of weight, body mass index (BMI), dietary patterns, medication exposure, and cardiometabolic risk and appropriate longitudinal monitoring. Nutritional interventions should accommodate sensory preferences and gradually expand food acceptance. ADHD management may include behavioral strategies and optimization of medication timing. Individuals with ID or genetic hyperphagia often require structured food environments and sustained caregiver involvement. When antipsychotic-associated weight gain develops, treatment should be reassessed and suitable alternatives or adjunctive metformin are considered. Incretin base medications may benefit eligible patients with obesity, but there is limited evidence in this issue. Gastrointestinal side effects, communication difficulties, nutritional adequacy, and preservation of muscle mass are important issues. Coordination among pediatricians, psychiatrists, endocrinologists, dietitians, and therapists supports consistent treatment delivery. Overall, effective care combines proactive surveillance, sensory-adapted nutrition, judicious pharmacotherapy, and family-centered support. Treatment should prioritize sustainable behavioral changes, functional wellbeing, and reduction of long-term cardiometabolic risk while respecting developmental abilities and caregiver resources.

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ORAL

Deconvoluting Adipose Tissue Complexity: A Review

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ARTICLE INFO

Keywords:
Adipose tissue
Adipocyte
Body mass index
Obesity
Type 2 diabetes

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ABSTRACT

The rising prevalence of obesity has created an urgent need for a clinically meaningful definition and diagnosis of the condition. Current diagnostic practice rests on body mass index (BMI), which can both underestimate and overestimate adiposity. BMI remains a useful screening tool for identifying people with possible obesity, but it is now recommended that the diagnosis no longer rely on BMI alone. The newer framework introduces two diagnostic categories: “clinical obesity” and “preclinical obesity”. More than 80% of adults with confirmed obesity meet the criteria for clinical obesity; they carry a 2.8-fold higher risk of incident cardiovascular disease and a 7.9-fold higher risk of type 2 diabetes. Excess adiposity in clinical obesity should be confirmed by direct measurement of body fat or by at least one anthropometric criterion in addition to BMI. Heterogeneity among parenchymal adipocytes has led to the identification of brown, beige (brite), and white adipocytes. When present in excess, this tissue contributes to several disorders, including obesity and type 2 diabetes. The heterogeneity of the adipose organ has been debated for many decades. This presentation will address adipose tissue plasticity, the thermogenic potential of brown and white adipose tissue, the distinct pathways in white adipose tissue (WAT), and the influence of adipose tissue heterogeneity on obesity and type 2 diabetes.

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ORAL

Adipose Tissue Lipolysis and Metabolic Health: A Review

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ARTICLE INFO

Keywords:
Adipose tissue
Lipolysis
Nutrition
Dietary interventions
Metabolic health

ABSTRACT

Adipose tissue is no longer regarded as a passive site of energy storage; it is now recognized as an active endocrine organ that helps maintain whole-body energy balance. Lipolysis is the hydrolysis of triglycerides into free fatty acids (FFAs) and glycerol. Tight regulation of basal and stimulated lipolysis is essential for supplying energy during fasting and exercise, whereas its dysregulation is a major hallmark of metabolic disorders. Overnutrition expands adipose tissue and promotes low-grade inflammation, marked by macrophage infiltration and the secretion of adipokines such as tumor necrosis factor alpha (TNF-α) and interleukin 6 (IL-6). This inflammation disturbs the lipolytic system, producing inadequate postprandial lipolysis and elevated FFA levels, which are linked to ectopic fat deposition, lipotoxicity, insulin resistance, and the metabolic syndrome. This presentation examines the interplay between nutrition and the molecular regulation of lipolysis, with emphasis on two key enzymes: adipose triglyceride lipase (ATGL) and hormone-sensitive lipase (HSL). It discusses how dietary strategies, including caloric restriction, intermittent fasting, and the intake of specific nutrients such as omega-3 fatty acids, can modulate lipolytic activity and improve metabolic flexibility. It also reviews the potential of dietary bioactive compounds to stimulate lipolysis and to influence the browning of white adipose tissue. Finally, it considers the clinical implications of translating these nutritional approaches into effective dietary interventions for obesity and related metabolic disorders.

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ORAL

The Role of Brown Adipose Tissue in Health and Disease: A Narrative Review

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ARTICLE INFO

Keywords:
Brown adipose tissue
Thermogenesis
Obesity
Type 2 diabetes
Cardiometabolic risk

ABSTRACT

Brown adipose tissue (BAT) is a thermogenic adipose depot that dissipates chemical energy as heat through mitochondrial uncoupling protein 1 (UCP1). However, the extent to which BAT activation translates into clinically meaningful benefits in obesity remains uncertain. This narrative evidence synthesis prioritized peer-reviewed human studies, systematic reviews, meta-analyses, and large imaging-based cohort analyses. In adults, metabolically active BAT is most consistently detected in the supraclavicular and deep cervical regions. Its detectable prevalence varies substantially with age, sex, body mass index, ambient temperature, season, and imaging protocol. Large retrospective FDG-PET/CT analyses have associated BAT presence with lower prevalence of type 2 diabetes, dyslipidemia, hypertension, coronary artery disease, and heart failure. Cold exposure reliably increases BAT activity and can acutely raise energy expenditure, but the magnitude is generally insufficient to support clinically meaningful weight loss by itself. Pharmacologic approaches, particularly β3-adrenergic agonists can increase BAT-related thermogenesis in selected human studies. Evidence for dietary supplements and exercise-induced BAT activation in humans is heterogeneous, small-scale, and insufficient to support routine clinical recommendations. BAT is a biologically plausible and scientifically important target in obesity and cardiometabolic medicine. Current evidence supports an association between detectable BAT and favorable metabolic and cardiovascular profiles, but does not demonstrate that BAT activation independently produces clinically meaningful weight loss or disease prevention. Standardized imaging endpoints, adequately powered randomized trials, longer follow-up, and hard clinical outcomes are required before BAT-targeted interventions can be incorporated into obesity care.

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ORAL

Managing Obesity after Liver Transplantation in the Era of Novel Anti-Obesity Therapies

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ARTICLE INFO

Keywords:
Liver transplantation
Obesity
Sarcopenia
Metabolic dysfunction-associated steatotic liver disease
Nutritional management

ABSTRACT

Obesity after liver transplantation is a significant long-term clinical challenge. As survival improves, attention increasingly turns to cardiometabolic health and functional recovery. Post-transplant weight gain is multifactorial. Contributing factors may include improved appetite, higher energy intake, limited physical activity, pre-existing metabolic disease, behavioral factors, and immunosuppressive therapy. Its consequences enroll diabetes, hypertension, dyslipidemia, cardiovascular risk, and recurrent metabolic dysfunction-associated steatotic liver disease (MASLD). Assessment should extend beyond body mass index to include weight trajectory, waist circumference, dietary intake, muscle strength, physical function and body composition. Sarcopenia and sarcopenic obesity may coexist with excess adiposity, and fluid shifts can distort weight-based measures. In clinically stable recipients, management prioritizes sustainable fat loss; while preserving muscle mass, nutritional adequacy, and graft function. The foundations remain an individualized moderate energy deficit, adequate protein intake, a Mediterranean-style dietary pattern, and progressive aerobic and resistance exercise. Semaglutide and tirzepatide demonstrated substantial weight-loss efficacy in general-population trials; in liver transplant recipients, however, the evidence is limited and derives mainly from observational cohorts and small clinical series. These agents may be considered selectively, in collaboration with transplant team, after evaluation of transplant stability, comorbidities, renal function, oral intake, and medication-related risks. Dietitians play a key role in identifying malnutrition and sarcopenia, safeguarding protein and micronutrient adequacy, and monitoring hydration, strength, and function. Obesity after liver transplantation therefore calls for individualized, multidisciplinary, long-term care, and treatment success should be judged not by weight reduction alone but also by the preservation of muscle, physical function, nutritional status, and graft health.

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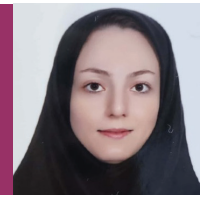
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ORAL

The Role of Body Mass Index and Body Composition in Predicting Hematopoietic Stem Cell Transplantation Outcomes: A Review

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ARTICLE INFO

Keywords:
Hematopoietic stem cells
Transplantation
Body mass index
Body composition
Sarcopenia

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ABSTRACT

Hematopoietic stem cell transplantation (HSCT) is an important therapeutic approach for a range of hematological disorders. Nutritional status may influence post-transplant outcomes, yet the predictive value of body mass index (BMI) remains uncertain. This presentation examines the associations of BMI, weight change, nutritional status, and body composition with clinical outcomes after HSCT. Evidence on BMI, weight loss, malnutrition, sarcopenia, and muscle mass indices was integrated, with particular attention to overall survival, relapse, non-relapse mortality, and post-transplant complications. The available evidence shows inconsistent associations between BMI and survival after HSCT. Some studies reported better survival among patients with higher BMI, whereas others linked overweight and obesity to adverse outcomes, including certain transplant-related complications. By contrast, weight loss before and after transplantation was associated with a higher risk of relapse and non-relapse mortality in several studies. Sarcopenia and low skeletal muscle mass were associated with poorer overall survival, higher non-relapse mortality, and longer hospital stays. Severe malnutrition, as identified by nutritional assessment tools, was likewise associated with greater risks of complications and mortality. Given the limitations of BMI in characterizing body composition, and the inconsistent findings on its association with transplant outcomes, BMI alone may be insufficient for comprehensive nutritional risk assessment in HSCT recipients. An integrated assessment that combines BMI, weight trajectory, nutritional status, and muscle mass may offer a fuller picture of the patient. Further prospective studies using standardized methods of body composition and nutritional assessment are warranted to clarify the independent and combined predictive value of these indicators.

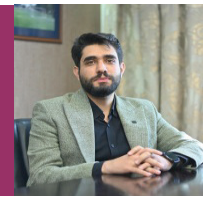
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ORAL

Obesity, GLP-1/GIP Therapies and Cancer Survivorship: A New Frontier Review in Oncology Nutrition

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ARTICLE INFO

Keywords:
Sarcopenia
Obesity
Glucagon-like peptide-1
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ABSTRACT

Obesity is increasingly recognized as a major modifiable risk factor in cancer development, treatment-related complications, recurrence, and long-term outcomes among cancer survivors. The growing use of glucagon-like peptide-1 (GLP-1) receptor agonists and dual GLP-1/Gastric inhibitory polypeptide (GIP) receptor agonists has introduced new opportunities for effective weight management, while also raising important questions regarding their role in oncology and cancer survivorship. These therapies can induce substantial weight loss and improve insulin resistance, glycemic control, and other metabolic abnormalities that may contribute to cancer risk and progression. From an oncology nutrition perspective, however, weight reduction should not be considered solely in terms of body weight. Preservation of skeletal muscle mass, nutritional adequacy, physical function, and overall body composition are particularly important in cancer survivors, who may already be at increased risk of sarcopenia and malnutrition. Furthermore, evidence regarding the effects of GLP-1/GIP-based therapies on cancer incidence, recurrence, treatment outcomes, and survival remains evolving. This presentation reviewed the current evidence linking obesity and cancer survivorship, discusses the potential benefits and limitations of GLP-1/GIP therapies in cancer survivors, and highlights key nutritional considerations during pharmacological weight management. Particular attention is given to protein intake, resistance exercise, preservation of lean mass, micronutrient adequacy, gastrointestinal adverse effects, and individualized nutritional assessment. Finally, the presentation emphasizes the importance of shared decision-making and multidisciplinary collaboration between oncology, nutrition, and obesity-management teams when integrating pharmacological weight management into survivorship care.

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ORAL

Women with Obesity across the Reproductive Life: A Review on Fertility, Preconception, Pregnancy, Postpartum and Breastfeeding

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ARTICLE INFO

Keywords
Women
Obesity
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ABSTRACT

Obesity in women of reproductive age is a multifactorial condition that affects reproductive function, pregnancy outcomes, postpartum health, and breastfeeding. Its management requires an individualized, life-course approach addressing metabolic, nutritional, hormonal, and psychosocial factors. Preconception interventions should prioritize metabolic optimization, dietary improvement, physical activity, and appropriate weight reduction to improve ovulatory function and fertility, particularly among women with polycystic ovary syndrome (PCOS). During pregnancy, the focus should shift to adequate gestational weight gain (generally 5-9 kg), nutritional adequacy, physical activity, and prevention or early detection of maternal and fetal complications, including gestational diabetes and hypertensive disorders. Postpartum care should address weight retention, metabolic health, nutritional recovery, and sustainable lifestyle modifications. Additionally, antenatal counseling and targeted lactation support are important given the increased risk of delayed lactogenesis and reduced breastfeeding rates among women with obesity. Overall, multidisciplinary, evidence-based care across the reproductive life course is essential to optimize maternal health and pregnancy outcomes while promoting the long-term health of both mother and offspring.

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ORAL

Nutrition during Menopause: A Review on Evidence-Based Dietary Guidance for Bone, Cardiometabolic and Muscle Health

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ARTICLE INFO

Keywords:
Menopause
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Mediterranean Diet
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Calcium
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ABSTRACT

Menopause brings declining estrogen levels, a shift toward central adiposity, and accelerated loss of bone and muscle mass, all of which heighten cardiometabolic and fracture risk. This presentation reviewed current guideline-based nutritional approaches to these changes. The overall quality of the dietary pattern matters more than any single food or so-called “anti-menopause” supplement. A Mediterranean- or dietary approaches to stop hypertension (DASH)-style pattern is recommended to be rich in vegetables, fruit, whole grains, legumes, fish, and unsaturated oils, and low in processed meat, sugar-sweetened beverages, salt, and saturated fat. Weight management should combine moderate energy adjustment with physical activity, while very-low-calorie diets, which risk muscle loss, should be avoided. Assessment should go beyond body weight to include waist circumference, grip strength, blood pressure, lipids, glycemia, and bone health. Key targets include a protein intake of 1.0-1.2 g/kg/day, with a protein source at every meal, to preserve muscle; food-first calcium intake (1,200 mg/day from age 51); vitamin D within reference intakes; and strength training at least twice weekly. The evidence does not support specific diets, soy isoflavone supplements, or “hormone-balance” products for hot flashes, and some herbal products raise safety concerns. Supplements should be targeted to documented need. Women with diabetes, kidney disease, osteoporosis, early menopause, malabsorption, or cancer require individualized plans.

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ORAL

Obesity and Secondary Infertility in Women: A Review on the Role of Personalized Clinical Nutrition in Optimizing Metabolic and Reproductive Health

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ARTICLE INFO

Keywords:
Obesity
Infertility
Women
Reproductive health
Personalized medicine

ABSTRACT

Obesity is a chronic and multifactorial disease that may adversely affect female reproductive function through metabolic, hormonal, and inflammatory disturbances. Increased visceral adiposity, particularly through insulin resistance, hyperinsulinemia, altered ovarian steroidogenesis, changes in sex hormone metabolism, and chronic low-grade inflammation, may be associated with ovulatory dysfunction, alterations in oocyte maturation and quality, impaired endometrial function, and changes in follicular metabolic environment. These alterations may potentially influence fertilization, and outcomes of assisted reproductive technologies. Individualized medical nutrition therapy tailored to individual metabolic and reproductive characteristics, incorporating moderate energy intake adjustment, improved dietary carbohydrate and fat quality, adequate protein and essential micronutrient intake, and regular physical activity, may contribute to improvements in insulin sensitivity, body composition, and overall metabolic health. Nevertheless, evidence regarding live birth rates remains limited. Furthermore, the timing and intensity of weight-loss interventions should be determined for maternal age, ovarian reserve, the underlying cause of infertility, and the planned infertility treatment to avoid unnecessary delays in initiating infertility care. The management of obesity in women with secondary infertility requires a shift from a weight reduction-centered approach toward a comprehensive strategy focused on optimizing metabolic and reproductive health. Therefore, personalized nutritional interventions and systematic monitoring of metabolic and nutritional responses may have an important role in preconception management and multidisciplinary infertility management. Despite the potential benefits of these interventions in improving metabolic and reproductive health, prospective studies are necessary to evaluate their effectiveness using clinically fertility outcomes, particularly clinical pregnancy and live birth.

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ORAL

Nutritional, Functional, and Psychological Considerations for Incretin-Based Therapies in Children and Adolescents: A Narrative Review

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ARTICLE INFO

Keywords:
Nutrition
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ABSTRACT

Incretin-based therapies offer new opportunities for managing obesity in children and adolescents; however, treatment success should extend beyond weight reduction to encompass growth, health, and quality of life. Drawing on the European association for the study of obesity (EASO), European federation of the associations of dietitians (EFAD), and European coalition for people living with obesity (ECPO) consensus framework for adults and pediatric evidence, this presentation examined the nutritional, functional, and psychological considerations associated with these therapies. The nutritional domain addresses how appetite suppression and gastrointestinal adverse effects may affect energy, protein, micronutrient, and fluid intake, alongside strategies to maintain dietary quality. The functional domain focuses on body composition, preservation of lean mass and muscle strength, bone health, and age-appropriate physical activity. Psychological considerations include screening for disordered eating, assessing body image, treatment expectations, and mental health, and addressing family influences and weight stigma. Pediatric care requires concurrent monitoring of linear growth, pubertal development, and developmental needs. Limited long-term evidence also cautions against directly extrapolating adult recommendations to younger populations. Finally, a practical framework for pretreatment assessment, ongoing monitoring, and identification of warning signs is presented. The central message is the importance of individualized, multidisciplinary care to achieve sustained health improvements; while safeguarding nutritional adequacy, physical function, and psychological well-being throughout childhood and adolescence.

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ORAL

Childhood Obesity: A Review on Its Management and Risk Assessment

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ARTICLE INFO

Keywords:
Child
Obesity
Body mass index
Psychology
Lifestyle

ABSTRACT

Childhood obesity is a major public health concern with substantial short- and long-term consequences. It is characterized by excessive accumulation of body fat and is associated with an increased risk of persistent obesity and related health complications in adulthood. Its development is influenced by a complex interaction of genetic, behavioral, familial, and environmental factors. This overview summarized key concepts and recommendations regarding childhood obesity, including anthropometric assessment, risk factor identification, psychosocial evaluation, and intervention strategies. Important risk factors include parental obesity, high birth weight, maternal smoking during early pregnancy, early introduction of solid foods, socioeconomic deprivation, excessive screen time, unhealthy dietary habits, and physical inactivity. Body mass index (BMI)-for-age percentiles are commonly used to assess weight status in children, with values between the 85th and 95th percentiles indicating overweight and values above the 95th percentile indicating obesity. Obesity during childhood, particularly in adolescence, increases the likelihood of obesity in adulthood. Effective management requires a comprehensive, multilevel approach involving the individual, family, school, and community. Key interventions include dietary modifications, regular physical activity, behavioral therapy, and active parental involvement. Practical recommendations include reducing sugar-sweetened beverages and energy-dense snacks, increasing fruit and vegetable consumption, limiting sedentary activities to less than two hours daily, and encouraging at least 60 minutes of enjoyable, age-appropriate physical activity per day. Childhood obesity is a multifactorial condition requiring early identification and comprehensive intervention. Family-centered behavioral modifications, healthy dietary patterns, increased physical activity, and supportive school and community environments are essential components of effective prevention and management.

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ORAL

Management Targets beyond Weight in Children with Obesity: A Narrative Review

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ARTICLE INFO

Keywords:
Management
Weight
Obesity
Children
Cardiometabolic health

ABSTRACT

Childhood obesity is a complex, chronic disease shaped by biological, behavioral, psychological, familial, and environmental factors. Contemporary guidance, including the 2025 Canadian clinical practice guideline and 2026 World Health Organization (WHO) guidelines, emphasizes integrated, individualized, people-centered care focused on health, functioning, and quality of life. In this presentation, key targets were cardiometabolic health, growth and development, physical fitness, mental health, healthy behaviors, and social well-being. Cardiometabolic assessment encompasses blood pressure, glycemia, lipid profile, and obesity-related comorbidities. Equally important are improvements in cardiorespiratory fitness, strength, mobility, sleep, dietary quality, and sustainable physical activity. Psychological and psychosocial outcomes including self-esteem, body image, emotional well-being, eating behaviors, social participation, and freedom from weight-based teasing and stigma should be considered. Family engagement and supportive home, school, and community environments are essential to sustaining behavioral change. A comprehensive care plan should use shared decision-making and age-appropriate, family-centered, multicomponent interventions integrating nutrition, physical activity, behavioral and psychological support, and, when indicated, pharmacotherapy or metabolic and bariatric surgery. Monitoring should combine anthropometric measures with clinical, functional, behavioral, and patient-reported outcomes, rather than relying on body mass index (BMI) change alone. Goals must be individualized according to age, pubertal stage, obesity severity, comorbidities, and family priorities. As a conclusion, successful pediatric obesity care is not defined solely by a smaller number on the scale, but by healthier growth, improved physical and mental well-being, reduced disease risk, greater participation, and better quality of life across the life course for every child and family.

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ORAL

Human Genetics of Obesity and Metabolic Disease: A Narrative Review

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ARTICLE INFO

Keywords:
Children
Obesity
Metabolic syndrome
Genetics
Precision medicine

ABSTRACT

Childhood obesity is a biologically heterogeneous condition arising from interactions among genetic susceptibility, neuroendocrine regulation, adipose tissue function, and environmental exposures. This review presented a clinically oriented synthesis of the genetic and metabolic mechanisms underlying pediatric obesity and their implications for diagnosis, risk stratification, and treatment. Genetic contributions to pediatric obesity encompass rare monogenic and syndromic disorders, chromosomal abnormalities, and the cumulative effects of common variants. Disruption of leptin–melanocortin signaling involving leptin–melanocortin signaling involving leptin (LEP), leptin receptor (LEPR), proopiomelanocortin (POMC), proprotein convertase subtilisin/kexin type 1 (PCSK1), and melanocortin 4 receptor (MC4R) can impair satiety and produce severe early-onset obesity. Genetic susceptibility also influences adipose tissue expandability, fat distribution, ectopic lipid deposition, and insulin resistance, contributing to metabolic heterogeneity beyond body mass index. Variants in patatin-like phospholipase domain-containing protein 3 (PNPLA3) and transmembrane 6 superfamily member 2 (TM6SF2) modify susceptibility to metabolic dysfunction–associated steatotic liver disease. Epigenetic regulation provides an interface between environmental exposures and gene expression. Selected molecular diagnoses can guide targeted treatment, including leptin replacement and melanocortin-4 receptor agonism in carefully selected patients with appropriate clinical and molecular eligibility. Genetic findings should complement, rather than replace, careful phenotyping and conventional cardiometabolic assessment. Targeted genetic evaluation is most informative in children with severe early-onset obesity, marked hyperphagia, syndromic features, or suggestive family history. Integrating molecular diagnosis with metabolic phenotyping offers a practical pathway toward precision care, although most polygenic and epigenetic markers are not yet ready for routine clinical decision-making.

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ORAL

Pediatric Obesity in Children with Attention-Deficit/ Hyperactivity Disorder and Autism Spectrum Disorder: A Narrative Review

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ARTICLE INFO

Keywords:
Attention-deficit/hyperactivity disorder
Autism spectrum disorder
Food
Nutrition
Pediatric obesity

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ABSTRACT

Obesity in children with attention-deficit/hyperactivity disorder (ADHD) and autism spectrum disorder (ASD) represents an important public health challenge. In children with ADHD, impulsivity, impaired inhibitory control, difficulty delaying gratification, emotion regulation difficulties, and executive function deficits may contribute to impulsive eating, heightened responsiveness to food cues, and irregular meal patterns. In children with ASD, sensory sensitivities to food texture, smell, taste, and appearance, food selectivity and repetitive eating patterns restrict dietary variety and may lead to preferences for energy-dense foods. Familial and genetic factors, adverse psychosocial circumstances, sleep disturbances and use of psychotropic medications, particularly second-generation antipsychotics (SGAs), may further increase the risk of weight gain and metabolic disturbances. The pooled prevalence estimates of obesity and overweight were 21.8% and 19.8%, respectively, among individuals with ASD, and 14.7% and 20.9%, respectively, among individuals with ADHD. In children with ADHD, establishing regular meal patterns, structuring the eating environment, and addressing impulsive and emotional eating behaviors are particularly important. In children with ASD, gradual expansion of dietary variety, interventions tailored to sensory sensitivities, and assessment of micronutrient adequacy should be prioritized. Screening for eating disorders, particularly loss-of-control (LOC) eating, and emotional symptoms before initiating interventions is essential. In eligible adolescents, anti-obesity pharmacotherapy may be considered as an adjunctive treatment to achieve greater body mass index (BMI) reduction. Overall, successful obesity management in children with ADHD and ASD requires nutrition interventions tailored to behavioral and sensory phenotypes, family involvement, multidisciplinary collaboration, and long-term monitoring of metabolic, psychological, and functional outcomes beyond BM) changes.

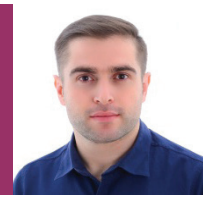
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ORAL

Promoting Adherence to a Healthy Diet: From Individual Behavioral Change to a Supportive Environment: A Review

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ARTICLE INFO

Keywords:
Diet
Weight loss
Social support
Food
Behavior

ABSTRACT

Adherence to weight-loss diets is shaped not only by personal motivation but also by social, clinical, and structural circumstances. Targeted, structured search of PubMed-indexed systematic reviews and meta-analyses published through November 2026 identified evidence on adherence to dietary and lifestyle-based weight-management interventions. Twenty-two adults with overweight or obesity who received dietitian-prescribed weight-loss diets (11 adherent and 11 non-adherent; 13 women and 9 men; mean age 35.5 years) were recruited. Semi-structured interviews were analyzed using conventional content analysis in max qualitative data analysis (MAXQDA), following Graneheim and Lundman; trustworthiness was assessed using Lincoln and Guba criteria. The qualitative study generated 2,552 coded segments and eight subthemes (four barriers and four facilitators). At individual level, emotional eating, entrenched habits, negative emotions, and fluctuating motivation undermined adherence, while meaningful goals, self-monitoring, coping skills, and perceived progress supported it. At interpersonal level, social judgment, food-related cultural expectations, and competing family demands created barriers, whereas encouragement and practical support from relatives and peers were facilitating factors. At clinical and program level, disengagement from treatment process and inflexible or impractical prescriptions discouraged adherence; collaborative counseling, flexible meal plans, and ongoing follow-up made dietary recommendations easier to sustain. At socioeconomic and environmental level, food costs, work and study schedules, limited access to appropriate foods, and wider economic instability constrained dietary choices, whereas financial resources and supportive everyday settings enabled them. More sustainable care require affordable and adaptable dietary prescriptions, empathetic and continuous counseling, self-regulation and lapse-management support, family engagement, and action to reduce financial and environmental barriers.

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ORAL

Obesity as a Fundamental Driver of Health: A Review on Insights into Appetite and Diet

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ARTICLE INFO

Keywords:
Obesity
Weight
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ABSTRACT

Obesity is a multifactorial condition. Appetite regulation involves both homeostatic mechanisms controlling energy balance and non-homeostatic pathways associated with reward, motivation, and emotional responses to food. This presentation explored neurobiological regulation of eating behavior, emphasizing roles of appetite-regulating hormones, genetic susceptibility, ultra-processed foods, gut microbiota, and metabolic adaptations in obesity and weight regain. Leptin plays a central role in energy homeostasis by signaling adiposity to hypothalamus and regulating appetite and energy expenditure. However, leptin resistance impairs these mechanisms and contributes to persistent appetite dysregulation. Interactions between hypothalamic pathways, particularly neuropeptide Y to agouti-related peptide ratio (NPY/AgRP) and proopiomelanocortin to alpha-melanocyte-stimulating hormone ratio (POMC/α-MSH) neurons, further illustrate complexity of appetite control. The increasing consumption of ultra-processed foods may activate brain reward pathways, promote excessive energy intake, and interfere with physiological satiety signals. The protein leverage hypothesis suggests that inadequate protein intake may stimulate compensatory food consumption through neuroendocrine mechanisms involving fibroblast growth factor 21(FGF21). Weight loss is accompanied by metabolic adaptations, including reduced resting energy expenditure, changes in appetite-regulating hormones, and increased hunger. Effective obesity management requires addressing both homeostatic and hedonic appetite pathways. Nutritional strategies including adequate protein intake, preservation of lean body mass, dietary fiber, fermented foods, improved sleep, mindful eating, and sustainable behavioral interventions may support appetite regulation and long-term weight maintenance. Integrating these approaches with appropriate pharmacological treatments targeting glucagon-like peptide-1 (GLP-1) pathways may further improve obesity management. Understanding neurobiology of appetite is essential for developing personalized nutritional interventions and achieving sustainable metabolic health.

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ORAL

Non-Classic Risk Factors of Obesity: A Review

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ARTICLE INFO

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Environmental factors
Diet
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ABSTRACT

The topic of non-classic risk factors of obesity addresses important environmental factors that are developing into our modern communities. Other than diet related factors, such as diet quality, dietary habits and speed of eating, other key factors are regarded as non-dietary domains. These include unsteady economic situations, endocrine-disrupting chemicals (EDCs), sleep quality and quantity, psychotropic medications, light and air pollution and ambient noises importantly presented as non-traditional causes and/or determinants of obesity. The detailed mechanisms by which these factors contribute to obesity have not yet been fully described. However, newer evidence supports the fact that the environmental factors are associated with an increased prevalence of obesity. Additional studies investigating the relationship and the mechanism of such novel risk factors are warranted. At the moment, we need to be more cautious regarding these potential risk factors at both personal and public levels.

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ORAL

The Growing Role of Artificial Intelligence in Obesity Management: A Review

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ARTICLE INFO

Keywords:
Artificial Intelligence
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ABSTRACT

Obesity is one of the most significant global public health challenges. Artificial intelligence (AI) has is a promising tool in obesity management to improve diagnosis, risk prediction, and personalization of therapeutic interventions. Machine learning algorithms, image-processing technologies and deep learning techniques can analyze body mass index, body fat distribution, metabolic markers, dietary patterns, physical activity, and medical history. Its applications enroll food image analysis, estimation of energy and nutrient intake, assessment of dietary patterns, and provision of nutritional recommendations tailored to individual characteristics. Intelligent applications, chatbots, and digital coaching systems can improve dietary behaviors, increase physical activity, monitor sleep, and maintain patient motivation. AI may help predict individual responses to anti-obesity medications, including glucagon-like peptide-1 (GLP-1) receptor agonists and dual glucose-dependent insulinotropic polypeptide/glucagon-like peptide-1 (GIP/GLP-1) receptor agonists. AI and large language models (LLMs) provide opportunities for patient education, delivery of medical information, summarization of clinical records, and support for physicians' clinical decision-making. Clinical application of AI can face several challenges, including limited evidence from clinical trials, algorithmic bias, data quality and interoperability, privacy protection, and ethical concerns. The ability of algorithm to accurately predict clinical outcomes does not necessarily translate into improvements in patient health outcomes. Overall, AI has the potential to transform obesity management from generalized, one-size-fits-all approaches toward personalized, predictive, and continuous care. However, the successful implementation of this transformation depends on clinical validation, prospective studies, rigorous evaluation of effectiveness, and the responsible integration of AI technologies alongside the expertise of physicians, nutrition specialists, and multidisciplinary healthcare teams.

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Oral

Effects of Glucagon-Like Peptide-1 Receptor Agonists (GLP-1 RAs) on Skeletal Muscle Strength and Physical Function in Adults with Overweight or Obesity: A Systematic Review and Meta-Analysis

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ABSTRACT

Background: Glucagon-like peptide-1 receptor agonists (GLP-1 RAs) have emerged as effective pharmacological treatments for obesity. Effects of GLP-1 RAs on skeletal muscle strength and physical function in adults with overweight or obesity were determined.

Methods: A systematic literature search conducted in PubMed, Scopus, Web of Science, and Embase identified randomized controlled trials regarding effects of GLP-1 RAs agonists, including semaglutide, liraglutide, and tirzepatide, on skeletal muscle outcomes in adults with overweight or obesity. Primary outcomes will include changes in muscle strength and physical performance, while secondary outcomes were lean body mass and skeletal muscle mass.

Results: The pooled analysis suggested a modest, but statistically non-significant, improvement in skeletal muscle strength following GLP-1 RA treatment [weighted mean differences (WMDs)=2.88; 95%CI: −0.41-6.12; p=0.08], with substantial heterogeneity (I^2=92.31%). Subgroup analysis indicated a significant improvement in studies with intervention durations of less than 8 weeks (WMD=6.16; 95%CI: 4.81-7.43; p<0.001), whereas no significant effect was observed in studies lasting 8 weeks or longer (WMD=0.53; 95%CI: −0.73-1.44; p=0.52). The difference between subgroups was statistically significant (p<0.001). Meta-regression identified body mass index (BMI) as a significant moderator (p=0.03), while age and intervention duration were not significant moderators.

Conclusion: GLP-1 RAs may have variable effects on skeletal muscle strength, with potential differences according to intervention duration and BMI. However, substantial heterogeneity and the limited consistency of subgroup findings highlight the need for further studies investigating muscle strength and physical function during GLP-1 RA-associated weight loss.

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ORAL

Different Types of Beverages and Central Obesity: A Network Meta-Analysis

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ABSTRACT

Background: Beverage selection may influence energy intake and body weight. Comparative evidence is needed to clarify whether specific beverages offer advantages over commonly consumed alternatives. To evaluate and compare the effects of different beverage types on central obesity in adults using evidence from randomized controlled trials.

Methods: PubMed, Scopus, and Web of Science were searched through January 2023 to identify eligible randomized trials involving adults. Studies comparing two or more beverage interventions, or evaluating a beverage against water or no intervention, were included. A Bayesian random-effects network meta-analysis was conducted to integrate direct and indirect comparisons. Treatment effects were reported as mean differences (MDs) with 95% credible intervals (CrIs).

Results: The analysis incorporated 78 randomized trials comprising 4,168 participants. In the main analysis incorporating all trials, low- and no-calorie sweetened beverage (LNCSB) drinking was effective for waist circumference (WC) reduction compared with water (mean difference: -1.85 cm, 95%CrI: -3.47, -0.22; low certainty evidence). Other beverages were not effective for WC reduction compared with either no intervention or other beverages (very low- to low certainty evidence). Based on surface under the cumulative ranking curve (SUCRA) values, LNCSB was the most effective beverage for WC reduction.

Conclusion: Substituting low- or no-calorie sweetened beverages for alternative beverages may yield modest improvements in WC. Nevertheless, the low certainty of the available evidence and the lack of consistent findings in sensitivity analyses limit the strength of these conclusions. Further rigorous randomized trials are required to determine the long-term implications of beverages.

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ORAL

Association between Dietary Carotenoid Intake and Risk of Overweight and Obesity: Results from the PERSIAN Cohort Study

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ARTICLE INFO

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ABSTRACT

Background: Dietary carotenoids may have independent positive impacts on a range of health-related outcomes such as obesity. The purpose of this study was to examine the associations between individual and total dietary carotenoids and the likelihood of being overweight or obese.

Methods: Dietary intakes of 4,202 participants from the PERSIAN cohort study were investigated using a 237-item food frequency questionnaire (FFQ), and carotenoid intake was determined using United States Department of Agriculture (USDA) food databases. Models of logistic regression were applied to assess the association between obesity and overweight and dietary intake of carotenoids after adjusting for confounders.

Results: Higher total carotenoid intake was associated with reduced risk of overweight (energy-adjusted OR: 0.647, 95%CI: 0.429-0.975, p=0.037) and obesity (energy-adjusted OR: 0.395, 95%CI: 0.244-0.640, p<0.001). Specific individual carotenoids, including β-carotene (OR: 0.510, 95%CI: 0.356-0.731, p<0.001), lutein/zeaxanthin (OR: 0.479, 95%CI: 0.331-0.692, p<0.001), and phytoene (OR=0.450, 95%CI=0.306–0.661, p<0.001) exhibited stronger inverse associations compared to lycopene and astaxanthin.

Conclusion: Diets rich in specific carotenoids, particularly β-carotene, lutein, and phytoene, may reduce the risk of both overweight and obesity. Future research ought to examine the mechanisms behind the relations of carotenoids with public health issues.

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Oral

Postbiotic and Prebiotic Orchestration of the Gut-Hypothalamic Axis in Metabolic Syndrome: A Systematic Review and Meta-Analysis of Short-Chain Fatty Acid Supplementation on Satiety Neuropeptides

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ARTICLE INFO

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Glucagon-like peptide-1
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ABSTRACT

Background: Metabolic syndrome and obesity feature gut microbial dysbiosis, impaired intestinal barrier integrity, and blunted appetite signaling. Prebiotics and postbiotic short-chain fatty acids (SCFAs: acetate, propionate, butyrate) modulate energy balance via the gut-brain-hypothalamic axis by activating free fatty acid receptors 2/3 (FFAR2/FFAR3). This systematic review and meta-analysis quantified the clinical efficacy of SCFA-targeted interventions on circulating satiety neuropeptides and acute caloric intake in metabolic syndrome.

Methods: Adhering to Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) 2020 guidelines, databases (PubMed, Scopus, Web of Science, Cochrane Central) were screened through October 2026. Eligible randomized controlled trials (RCTs) investigated prebiotics or targeted postbiotic SCFA delivery versus controls in adults with metabolic syndrome or central obesity. Primary outcomes were weighted mean differences (WMDs) in postprandial peptide YY (PYY), active Glucagon-like peptide-1 (GLP-1), and fasting acylated ghrelin. Secondary outcomes included ad libitum energy intake reduction.

Results: Twenty-two RCTs (1,486 participants) met criteria. Targeted prebiotic and postbiotic SCFA supplementation significantly elevated postprandial PYY (WMD: +18.42 pmol/L; 95%CI: 12.15-24.69; $p<0.001$) and active GLP-1 (WMD: +4.87 pmol/L; 95%CI: 2.63-7.11; $p<0.001$), while suppressing fasting acylated ghrelin (WMD: −34.65 pg/mL; 95%CI: −49.12-−20.18; $p<0.001$). Colonic propionate and high-amylose resistant starch yielded the strongest neuroendocrine response, correlating with reduced acute energy intake (WMD: −132.8 kcal; 95%CI: −184.5-−81.1; $p<0.001$).

Conclusion: Targeted prebiotic and postbiotic SCFA interventions orchestrate the gut-hypothalamic axis by enhancing peripheral incretin and satiety peptide secretion; while suppressing orexigenic drive, supporting their role as viable adjuvant therapeutics in metabolic realignment.

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ORAL

Pomegranate Peel Extract Supplementation Promotes Reductions in Body Weight and Waist Circumference in Patients with Non-Alcoholic Fatty Liver Disease: A Randomized, Double-Blind, Placebo-Controlled Clinical Trial

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ABSTRACT

Background: Obesity and abdominal adiposity are closely associated with non-alcoholic fatty liver disease (NAFLD). This study investigated the effects of pomegranate peel extract supplementation on body weight and waist circumference (WC) in patients with NAFLD.

Methods: In this randomized, double-blind, placebo-controlled clinical trial, 77 patients with NAFLD were allocated to receive either 1,000 mg/day of pomegranate peel extract in two divided doses (n=39) or a matching placebo (n=38) for eight weeks. Both groups also received an energy-restricted dietary plan, Mediterranean diet recommendations, and physical activity advice. Body weight and WC were assessed at baseline, midway, and at the end of study. Changes in anthropometric measures were evaluated using repeated-measures analysis and adjusted between-group comparisons.

Results: Body weight decreased significantly in both groups; however, reduction was significantly greater in pomegranate group (p<0.001). After adjustment for baseline values and potential confounders, including physical activity and energy intake, the mean reduction in body weight was greater in pomegranate group (−5.10±1.14 vs. −0.93±1.48 kg; p<0.001). WC decreased by 6.08±0.93 cm in pomegranate group compared with 1.40±0.40 cm in placebo group after adjustment, indicating a significant reduction with supplementation (p<0.001).

Conclusion: Eight weeks of pomegranate peel extract supplementation, alongside an energy-restricted diet and lifestyle recommendations, resulted in significantly greater reductions in body weight and waist circumference compared with placebo in patients with NAFLD. These findings suggest that pomegranate peel extract may be a promising complementary nutritional strategy for improving anthropometric outcomes in this population. Further trials with longer follow-up are warranted to confirm these effects.

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ORAL

From Better Growth to Emerging Obesity: Maternal Socioeconomic Status and Early Childhood Growth Patterns in the PERSIAN Birth Cohort Study

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ABSTRACT

Background: In low- and middle-income countries, under-nutrition increasingly coexists with obesity, creating a double burden of malnutrition (DBM). We examined maternal socioeconomic status (SES) and child growth from infancy to 24 months, including potential emerging obesity risk.

Methods: We analyzed 7,169 PERSIAN Birth Cohort children assessed at 2, 4, 6, 12, and 24 months. Maternal SES was classified into quintiles using multiple correspondence analysis. Eight anthropometric indicators were examined. Missing data were handled using multiple imputation (MI). Generalized estimating equations (GEE) assessed SES-related growth patterns, while linear regression examined associations of weight-for-age (WAZ) and height-for-age (HAZ) with body mass index (BMI)-for-age Z-scores (BMI-Z) across SES groups and ages. We compared GEE-derived HAZ-to-WAZ contrast ratios with WAZ-to-HAZ regression coefficient ratios to assess growth balance. Sensitivity analyses used complete-case analyses (CCA).

Results: Higher SES was associated with greater WAZ and HAZ, with widening differences across age, suggesting lower risks of underweight and stunting. However, BMI-Z also increased with age, particularly in the very-high SES group. Where BMI-Z increased, GEE-derived HAZ-to-WAZ ratios were lower than the corresponding regression coefficient ratios, indicating that linear growth did not keep pace proportionally with weight gain. By 24 months, the very-high SES group had higher odds of obesity. Findings were consistent across MI and CCA.

Conclusion: Higher SES reduced under-nutrition risks; but was also associated with disproportionate weight gain relative to linear growth, highlighting the need to promote balanced growth and prevent early obesity.

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ORAL

Effects of a Sustainable Diet, Time-Restricted Eating, and Probiotic Supplementation in Patients with Heart Failure, Reduced Ejection Fraction (HFrEF) and Overweight or Obesity

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ABSTRACT

Background: Lifestyle interventions have been shown to improve arterial stiffness among heart failure patients. This study aimed to investigate the effects of a sustainable diet (SD) and time-restricted eating (TRE), administered alone or in combination with Lactobacillus plantarum 299v (Lp299v), on vascular function in overweight or obese patients with heart failure with reduced ejection fraction (HFrEF), compared to a control group.

Methods: A 60-day, randomized, double-blind, placebo-controlled, three-arm clinical trial was conducted. Participants were randomly allocated in one of three groups. Group A was SD+TRE+Lp299v supplementation (n=25), Group B was SD+TRE+placebo supplementation (n=25), and Group C was control group receiving only placebo supplementation (n=25). Pulse wave velocity (PWV) and augmentation index (AI) were measured on the right side using the SphygmoCor XCEL device.

Results: After 60 days of intervention, significant reduction in body weight was observed in SD+TRE+Lp299v and SD+TRE+placebo, while no notable alteration was found in the control group. Using a multivariable linear model, a 60-day intervention significantly reduced PWV in both SD+TRE+Lp299v (ß=−1.605 m/s; $p<0.001$) and SD+TRE+placebo (ß=−1.262; $p=0.004$). No significant changes were observed in the control group. In contrast, a significant reduction in AI was observed only in the SD+TRE+Lp299v (ß=−9.092; $p=0.004$) after adjustment for confounders.

Conclusion: Our findings indicate that dietary interventions, particularly when combined with probiotic supplementation, may exert beneficial effects on anthropometric indices and vascular function in patients with heart failure and overweight/obesity.

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ORAL

Differential Postprandial Glycemic and Insulinemic Responses to Plant- and Animal-Protein-Based Meals in Overweight and Obese Men

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ABSTRACT

Background: Dietary protein sources may differentially affect postprandial glucose and insulin responses. This study aimed to compare postprandial glycemic and insulinemic responses following consumption of plant- and animal-protein-based mixed meals in overweight and obese men.

Methods: This randomized crossover trial included 48 overweight and obese men (mean age: 33.48±8.35 years; mean BMI: 29.15±2.33 kg/m²). Participants consumed two isocaloric high-protein mixed meals based on animal protein (AP) and plant protein (PP), separated by a 7–10-day washout period. Both meals provided 30% of energy from protein, 40% from carbohydrates, and 30% from fat, with matched energy and fiber content. Fasting and postprandial glucose and insulin concentrations were measured. Generalized Estimating Equations (GEE) assessed the effects of protein source, time, and their interaction.

Results: Significant protein source×time interactions were observed for insulin (p<0.001) and glucose (p=0.01). A significant main effect of protein source was also found for insulin (p<0.001). Both meals increased insulin concentrations, peaking at 60 minutes, with a substantially greater response following the AP meal. The AP meal also produced an earlier glucose peak at 60 minutes, followed by a decline to below-baseline levels. In contrast, PP meal resulted in a more stable postprandial glucose profile. No significant carry-over effect was detected.

Conclusion: Protein source significantly influenced postprandial metabolic responses in overweight and obese men. Compared with PP meal, AP meal elicited greater insulin responses and a more pronounced early glucose peak, whereas PP meal was associated with a more stable glycemic profile.

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ORAL

Dietary Protein Intake and Weight Management in Adults with Type 2 Diabetes: A Meta-analysis of Randomized Controlled Trials

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ABSTRACT

Background: Weight management is an important component of type 2 diabetes mellitus (T2DM) care. This study aimed to assess the effects of high-protein diets on body weight in this population.

Methods: PubMed, Scopus, and Web of Science were searched from inception to August 2026 to identify randomized controlled trials (RCTs) investigating high-protein diets in adults with T2DM. Eligible interventions lasted at least four weeks and provided at least 20% of total energy from protein. The pooled effect on body weight was calculated as weighted mean difference (WMD) with 95% confidence interval (95%CI) using a random-effects model. Heterogeneity, leave-one-out sensitivity analysis, and potential publication bias were assessed.

Results: Twenty-two RCTs involving 1,899 participants contributed data on body weight. Compared with control diets, high-protein diets were associated with a statistically significant reduction in body weight (WMD: −1.16 kg; 95%CI: −1.85-−0.47; p=0.001). Moderate heterogeneity was observed across the studies (I^2=51.15%; p=0.003). Leave-one-out sensitivity analysis indicated that the pooled effect was robust. Neither Begg's rank correlation test (p=0.18) nor Egger's regression test (p=0.86) indicated evidence of publication bias. The trim-and-fill analysis yielded a similar estimate (WMD: −1.16 kg; 95%CI: −1.84-−0.47).

Conclusion: High-protein diets were associated with a modest but significant reduction in body weight among adults with T2DM. These findings support the potential role of dietary protein modification in weight management, although moderate heterogeneity across trials highlights the need to consider differences in intervention characteristics and study populations.

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ORAL

Beyond Brain Health: A Meta-Analysis of Randomized Trial on MIND Dietary Pattern, Weight Status and Central Obesity in Adults

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ABSTRACT

Background: The Mediterranean intervention for neurodegenerative delay (MIND) diet, which combines the Mediterranean and dietary approaches to stop hypertension (DASH) patterns to slow cognitive decline, is rich in fiber and low in energy density. We estimated its pooled effect on body weight (BW), body mass index (BMI), and waist circumference (WC) in adults.

Methods: This prospective register of systematic reviews (PROSPERO)-registered (CRD420261450618) review followed preferred reporting items for systematic reviews and meta-analyses (PRISMA) guidance. PubMed, Scopus, and Web of Science were searched for randomized controlled trials in adults comparing a MIND-based intervention with a control. Risk of bias was assessed with Cochrane Risk of Bias 2 (RoB 2) and certainty with grading of recommendations, assessment, development, and evaluations (GRADE). Weighted mean differences (WMDs) with 95% confidence intervals (95%CIs) were pooled using random-effects models, with leave-one-out, subgroup, meta-regression, and small-study-effect analyses.

Results: Seven trials (32-213 participants; 4-144 weeks) from Iran, Hong Kong, and the USA were included. The MIND diet reduced BW by 1.52 kg (95%CI: 0.74-2.30; 5 trials), BMI by 0.57 kg/m² (0.31-0.84; 6 trials), and WC by 1.66 cm (0.43-2.88; 6 trials), without heterogeneity (I^2=0%). Effects were clearest in participants with baseline BMI above 30 kg/m², those under 55 years, and smaller trials. Meta-regression showed no effect modification and no small-study bias emerged.

Conclusion: The MIND diet modestly improves adiposity in adults. Given the few trials and reliance on a single study, larger and more heterogeneous trials are needed.

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ORAL

Familial Resemblance and Heritability of Diet and Adiposity: Meta-Analytic Evidence and Tehran Cardiometabolic Genetic Study

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ABSTRACT

Background: The relative contributions of genes, shared environment and time remain unresolved. We integrated three meta-analyses with five original studies from the Tehran Lipid and Glucose Study and Tehran Cardiometabolic Genetic Study (TLGS/TCGS).

Methods: The meta-analyses pooled Fisher-z-transformed correlations (random effects) across twin, sibling, spouse and parent–child dyads (30 and 21 studies) and pooled twin and family heritability estimates (18 studies; Falconer's H^2, A^2, E^2). Cohort analyses (9,798 adults in 4,338 families) estimated correlations and likelihood-based heritability for nutrients, food groups and seven adiposity indices, and tracked correlations over nine years.

Results: Resemblance was highest in monozygotic twins (energy r=0.47, versus 0.21 in dizygotic twins and 0.25 in non-twin siblings) and weak to moderate in parent–child dyads (pooled r=0.05-0.27), strongest in mother-daughter pairs. Spouses resembled one another appreciably in diet [polyunsaturated fatty acids (PUFA): r=0.41; refined-grain intraclass correlation coefficient (ICC): 52%] but weakly in adiposity (ICC: 3-10%). Heritability was higher in twin (h^2 30-55%) than in family studies (16-39%); within TCGS, it ranged from 3-21% for nutrients, 6-26% for food groups and 28-43% for adiposity, and highest for BMI. Over nine years, parent-offspring and spousal correlations largely regressed toward the mean and mineral correlations declined (calcium in all dyads), whereas several sister-sister correlations were strengthened.

Conclusion: Familial similarity in diet and adiposity reflects genetic influences interacting with shared and evolving environments, with sex- and relationship-specific trajectories. Family-centered interventions should prioritize mother-daughter dyads, early life and out-of-home food environments.

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ORAL

Pomegranate Peel Extract and Body Composition Remodeling during Calorie Restriction in Adults with Non-Alcoholic Fatty Liver Disease

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ABSTRACT

Background: Calorie restriction is a cornerstone of obesity management in both fat and fat-free compartments. This study aimed to investigate the effects of pomegranate peel extract supplementation on body composition changes in adults with non-alcoholic fatty liver disease (NAFLD) undergoing calorie restriction.

Methods: In this randomized, double-blind, placebo-controlled clinical trial, 76 adults with NAFLD were assigned to receive either pomegranate peel extract (1500 mg/day; n=39) or placebo (n=37), alongside an individualized diet with a 500-kcal/day energy deficit for 8 weeks. Body composition was assessed before and after the intervention. Between-group changes were evaluated using adjusted analyses accounting for baseline values, body weight, energy intake, and physical activity.

Results: Compared with placebo, pomegranate peel extract supplementation resulted in significantly greater reductions in fat mass index (−1.49±0.86 vs. −0.21±0.15; $p<0.001$) and trunk fat (−3.93±3.07% vs. −0.64±0.25%; $p<0.001$). Fat-free mass also decreased in intervention group (−0.92±0.90 kg), whereas no meaningful change was observed in placebo group ($p<0.003$). In contrast, total body water increased by 2.35±1.83% in intervention group compared with 0.51±0.16% in placebo group ($p<0.001$). These differences remained significant after adjustment for potential confounders.

Conclusion: Pomegranate peel extract supplementation alongside calorie restriction was associated with favorable changes in fat mass index and trunk fat in adults with NAFLD. However, the concurrent reduction in fat-free mass highlights the importance of monitoring lean tissue changes during dietary weight-loss interventions.

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ORAL

Anthropometric Changes during GnRH Agonist Therapy in Girls with Idiopathic Central Precocious Puberty: A Cohort Study

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ABSTRACT

Background: Changes in body mass index (BMI) during gonadotropin-releasing hormone agonist (GnRHa) therapy for idiopathic central precocious puberty (ICPP) remain a clinical concern. This study aimed to assess whether anthropometric changes during GnRHa therapy differed according to baseline weight status.

Methods: This prospective cohort study included 80 girls aged 5–8 years with ICPP who received GnRHa therapy. Height, weight, and BMI were measured every three months; mean treatment duration was 21.68±12.66 months. BMI-for-age percentiles were determined using Center for Disease Control (CDC) growth charts. Participants were classified as normal weight (<85th percentile), overweight (85th–94th percentile), or obese (≥95th percentile). Changes in weight, height, and BMI z-scores were evaluated within each category. All girls were at Tanner stage II; treatment was intramuscular (3.75 mg), given monthly or every three months. All participants received routine nutritional recommendations.

Results: In normal-weight participants, weight, height, and BMI z-scores increased significantly (0.20±0.44, p=0.006; 0.11±0.35, p=0.014; and 0.35±0.71, p<0.0001, respectively). Among overweight participants, only height Z-score increased significantly (0.20±0.24, p=0.022); changes in weight and BMI z-scores were not significant (p=0.089 and p=0.584, respectively). No significant changes in weight, height, or BMI z-scores were observed among obese participants (p=0.184, p=0.371, and p=0.293, respectively).

Conclusion: Anthropometric changes during GnRHa treatment varied by baseline weight status. Weight and BMI Z-scores increased significantly only in normal-weight girls, whereas height Z-score increased in normal-weight and overweight girls. These findings support monitoring weight status and growth during treatment.

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Poster

Effects of Non-Soy Legume Consumption on Circulating Adiponectin and Leptin Levels: A Systematic Review and Meta-Analysis

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ABSTRACT

Background: Adiponectin and leptin are important adipokines involved in energy homeostasis, insulin sensitivity, and obesity-related metabolic disturbances. However, evidence regarding the effects of non-soy legume consumption on these biomarkers remains incomplete, particularly for leptin.

Methods: A systematic search was conducted in PubMed, Scopus, Web of Science, and Embase to identify randomized controlled trials investigating the effects of non-soy legume consumption on circulating adiponectin and leptin levels in adults. Eligible interventions included beans, lentils, chickpeas, peas, and other non-soy legumes. Two independent reviewers performed study selection, data extraction, and risk-of-bias assessment. Random-effects models were used to calculate pooled mean differences and 95% confidence intervals (95%CI). Heterogeneity, subgroup analyses, sensitivity analyses, and publication bias were evaluated.

Results: The number of eligible studies, total participants, pooled effect estimates, 95%CI and heterogeneity statistics were reported following quantitative data synthesis. Glucagon-like peptide-1 receptor agonists (GLP-1 RAs) treatment was associated with a non-significant overall reduction in leptin levels [Weighted mean differences (WMDs)=−2.79, 95%CI: −6.02-0.43; p=0.08], with substantial heterogeneity (I^2=95.39%). Subgroup analysis revealed a significant leptin reduction in interventions lasting less than 8 weeks (WMD=−7.16, 95%CI: −8.40-−5.91; p<0.001), but not in longer interventions. Adiponectin increased significantly in studies with intervention durations shorter than 8 weeks (WMD=0.52, 95%CI: 0.06-0.98; p=0.02). Meta-regression identified body mass index (BMI) as a significant moderator of adiponectin effect estimates (p=0.03).

Conclusion: This meta-analysis provided comprehensive evidence regarding the effects of non-soy legume consumption on adipokine regulation and its potential implications for obesity management and metabolic health.

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Poster

Beyond Body Mass Index: A Narrative Review on Gut Hormone Responses and Adiposity Changes Following Synbiotic Supplementation

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ABSTRACT

Glucagon-like peptide-1 (GLP-1) based therapies have become important treatments for obesity, highlighting the role of gut hormones in weight regulation. Synbiotics may also affect GLP-1 and peptide YY (PYY) through microbial metabolites, including short-chain fatty acids and bile acids. As body mass index (BMI) may miss changes in abdominal fat, this narrative review examined both hormonal and body-composition outcomes. PubMed/Medline and Google Scholar were searched for human synbiotic studies published between January 2018 and November 2026. In a 12-week randomized trial involving 80 adults with obesity, *Bifidobacterium animalis subsp. lactis* MN-Gup combined with galacto- and xylo-oligosaccharides reduced body fat percentage and waist circumference more than placebo. Final PYY was higher, although between-group changes were non-significant; and chenodeoxycholic acid also increased. An eight-week trial involving 110 adults with overweight or obesity found that *Akkermansia muciniphila* Akk11 with inulin and fructooligosaccharides increased GLP-1 and PYY and reduced waist-to-hip ratio compared with a prebiotic control, without significant differences in BMI or body fat percentage. A third 12-week trial involving 112 adults reported lower dual-energy X-ray absorptiometry- (DXA) measured visceral fat following multistrain synbiotic supplementation, despite non-significant changes in BMI and waist circumference. Together, these findings suggest that selected formulations may improve measures of abdominal or overall fat without consistent BMI reductions. Gut hormone signaling offers a possible mechanism, but a causal role has not been established.

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Poster

Central Adiposity and Triglycerides in Infertile Women with Polycystic Ovary Syndrome

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ABSTRACT

Background: Women with polycystic ovary syndrome (PCOS) are at an increased risk of metabolic abnormalities, including hypertriglyceridemia. Central adiposity, assessed using waist circumference (WC) and waist-to-height ratio (WHtR), may be associated with serum triglyceride levels. This study aimed to examine the correlations of WC and WHtR with serum triglyceride levels in infertile women with PCOS.

Methods: This cross-sectional study included 280 infertile women with PCOS, aged 18–45 years, from Mashhad, Iran. Trained personnel measured WC and WHtR, and serum triglyceride levels were measured after a 14-hour fasting. Pearson's correlation analysis was used to evaluate the associations between these anthropometric measures and triglyceride levels.

Results: The study population had a mean age of 28.83±5.55 years, with mean values for WC, WHtR, and triglyceride levels of 86.10±10.35 cm, 0.53±0.07, and 126.43±70.27 mg/dl, respectively. Notably, serum triglyceride levels demonstrated significant positive correlations with both WC (r=0.358, p=0.002) and WHtR (r=0.359, p=0.001).

Conclusion: WC and WHtR were significantly and positively correlated with serum triglyceride level in infertile women with PCOS. Routine assessment of central adiposity and lipid profiles may be valuable for identifying women at higher metabolic risk.

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POSTER

Dietary Quality and Inflammatory Potential in Polycystic Ovary Syndrome: Differences beyond Anthropometric Indices

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ABSTRACT

Background: Polycystic ovary syndrome (PCOS) is an endocrine disorder associated with metabolic disturbances and chronic low-grade inflammation, which may be influenced by diet. This study aimed to compare diet quality (Healthy Eating Index: HEI), dietary inflammatory potential (Dietary Inflammatory Index: DII), and anthropometric indices between infertile women with PCOS and healthy controls.

Methods: This case–control study included 160 participants (80 infertile women with PCOS and 80 healthy controls). Diet quality and inflammatory potential were assessed using HEI and DII derived from a 168-item food frequency questionnaire (FFQ). Anthropometric indices and dietary scores were compared between groups using appropriate statistical tests based on data distribution.

Results: No significant differences were observed between infertile women with PCOS and the control group in terms of body mass index (BMI), waist circumference (WC), and body fat percentage [FAT% (p>0.05)]. However, the PCOS group showed a significantly higher DII (−2.15 vs. −2.45, p=0.032) and a significantly lower HEI (56.59 vs. 59.57, p<0.001) compared to the control group.

Conclusion: Infertile women with PCOS had lower diet quality and higher dietary inflammatory potential than healthy controls, despite similar anthropometric profiles. These findings highlight the importance of dietary assessment beyond conventional anthropometric measures and may inform future research on targeted nutritional strategies for women with PCOS.

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Poster

Does DASH Dietary Pattern Reduce Adiposity? A Review on Pooled Evidences from 39 Randomized Trials on Anthropometric Indices and Fat Mass in Adults

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ABSTRACT

Background: Although the Dietary Approaches to Stop Hypertension (DASH) pattern was designed to lower blood pressure, it may also favor fat loss. Because trials report conflicting results, we pooled randomized evidence on its effects on general and central adiposity and body compartments in adults.

Methods: PubMed, Scopus, and Web of Science were searched up to September 2025 for randomized trials comparing DASH-based with usual or alternative diets in adults and reporting anthropometric or body composition outcomes. The review was registered (CRD420251137058) and followed Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) 2020. Risk of bias and certainty were assessed. Weighted mean differences (WMDs) with 95% confidence intervals (95%CIs) were pooled using random-effects models, with subgroup, leave-one-out, and publication-bias analyses.

Results: Thirty-nine trials were included; 7 had high risk of bias. DASH reduced body weight by 1.42 kg (95%CI: 0.51-2.33), body mass index (BMI) by 0.38 kg/m² (0.20-0.57), waist circumference by 1.41 cm (0.73-2.08), hip circumference by 1.44 cm (0.84-2.04), waist-to-hip ratio by 0.016 (0.001-0.030), and fat mass by 2.11 kg (1.08-3.15), with fat-free mass preserved (WMD: −0.83; −1.96-0.31). Heterogeneity for weight was high (I^2=95.7%). After trim-and-fill, the weight effect persisted (−1.98 kg; −3.28-−0.68); but the waist effect lost significance. Certainty was low to very low.

Conclusion: DASH yields small but meaningful reductions in total and central adiposity, mainly through fat-mass loss with lean tissue preserved, making it a practical option in obesity management. Longer, well-designed trials are needed.

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Poster

Association between Obesity and Bone Turnover Markers in Children and Adolescents: A Systematic Review

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ABSTRACT

Background: Evidence linking obesity to bone turnover markers (BTMs) is still inconsistent. This review evaluated associations between obesity and BTMs in children and adolescents.

Methods: Following Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) 2020, PubMed/Web of Science/Scopus were searched (January 2000–April 2026).

Results: Eight studies met the inclusion criteria. Obesity was generally associated with lower osteocalcin, procollagen type 1 N-terminal propeptide (P1NP), and collagen-turnover markers (C-terminal telopeptide of type I collagen (CTX)/collagen type I cross-linked C-telopeptide (CTX-I)), suggesting lower turnover. One study reported lower osteocalcin, particularly in girls; another found low P1NP more frequently in boys and high β-isomerized C-terminal telopeptide of type I collagen (β-CTX) more frequently in girls. In an age-stratified cohort, obesity was associated with lower marker levels in pubertal and postpubertal, but not prepubertal, participants. Leptin correlated with N-terminal cross-linked telopeptide of type I collagen (NTx), irisin with osteocalcin, and insulin-like growth factor-I (IGF-I) with bone-specific alkaline phosphatase; high-sensitivity C-reactive protein was associated with lower P1NP. These observational associations did not establish mediation. One study reported lower 25(OH)D and higher parathyroid hormone (PTH) in children with obesity, whereas another found no adjusted association between 25(OH)D and BTMs. Coexisting metabolic dysfunction-associated steatotic liver disease (MASLD) was associated with more frequent low P1NP.

Conclusion: Pediatric obesity is generally associated with lower circulating formation and resorption markers, varying by marker, sex, and maturational stage. Long-term implications for bone health and fracture risk remain uncertain. Puberty- and sex-specific reference ranges are important for BTM interpretation.

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POSTER

Association between Lifeline Dietary Score and Low-Grade Systemic Inflammation: A Cross-Sectional Cohort Study in Mashhad, Iran

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ABSTRACT

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Background: Recent investigations have explored the relationship between adherence to the Lifeline Dietary Score (LLDS) and various health outcomes. Nevertheless, the available evidence concerning its potential relationship with low-grade systemic inflammation (LG-SI) is still scarce. Accordingly, this study aimed to examine the association between LLDS adherence and LG-SI.

Methods: This cross-sectional study included 5,851 eligible participants from the Mashhad Stroke and Heart Atherosclerotic Disorder (MASHAD) cohort. Binary logistic regression models were employed to examine the relationship between adherence to the energy-adjusted LLDS and the odds of LG-SI, with the highest adherence tertile compared against the lowest tertile.

Results: The energy-adjusted LLDS did not differ significantly between individuals with and without LG-SI. Moreover, the distribution of LG-SI across the tertiles of the energy-adjusted LLDS showed no statistically significant differences. No significant dose–response trend was identified across increasing LLDS tertiles. Consistently, the fully adjusted regression models revealed no significant association between the highest versus lowest tertile of LLDS adherence and the odds of LG-SI. This lack of association persisted in both the overall population and all stratified analyses.

Conclusion: In this analysis, greater adherence to the energy-adjusted LLDS was not significantly related to odds of LG-SI. Further well-designed prospective investigations are needed to validate these results and provide a clearer understanding of the potential relationship between LLDS adherence and systemic inflammation.

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POSTER

Evaluating Oral Orforglipron for Weight Loss and Glycemic Control: A Dose-Response Meta-Analysis of Randomized Controlled Trials

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ABSTRACT

Background: Evaluating oral orforglipron for weight loss and glycemic control is of great importance that was evaluated in this study.

Methods: We searched PubMed, Scopus, Web of Science, and Cochrane Library up to July 2026 for randomized controlled trials (RCTs) investigating orforglipron in adults with obesity and/or type 2 diabetes mellitus (T2DM). Pooled weighted mean differences and relative risks were estimated via random-effects meta-analyses, and one-stage weighted mixed-effects models evaluated dose-response trends. Cochrane tools and grading of recommendations, assessment, development, and evaluations (GRADE) evaluated risk of bias and certainty of evidence (CoE).

Results: Fourteen RCTs met inclusion criteria. Across doses, orfoglipron enhanced body weight (BW), percentage BW changes, body mass index (BMI), and waist circumference (WC). Dose-response evaluations highlighted 24 mg/day as the peak benefit threshold. For obesity, this 24 mg/day dose lowered BW by 7.77 kg (95%CI: −8.98-−6.56), percentage BW by 8.22% (95%CI: −9.21-−7.23), WC by 6cm (95%CI: −6.88-−5.11), fasting blood glucose by 46.3 mg/dL (95%CI: −56.6-−36.0), and HbA1c by 1.27% (95%CI: −1.62-−0.92). In T2DM patients, corresponding decreases were 6.09 kg (95%CI: −6.85-−5.32), 5.29 cm (95%CI: −6.40-−4.18), 51.8 mg/dL (95%CI: −61.6-−42.0), and 1.74% (95%CI: −2.14-−1.35). Homeostatic model assessment of insulin resistance (HOMA-IR) remained unaffected. While gastrointestinal side effects and dropouts increased, serious safety alerts were absent. CoE spanned low to high.

Conclusion: Orforglipron delivers major glycemic and anthropometric gains, identifying 24 mg/day as the optimal dosage. Gastrointestinal side effects remain the main constraint.

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POSTER

Canola Oil Consumption and Changes in Body Weight and Waist Circumference in Adults: A Systematic Review and Meta-analysis

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ABSTRACT

Background: Canola oil is rich in unsaturated fatty acids and may influence adiposity-related outcomes. However, evidence regarding its effects on body weight and waist circumference remains inconclusive. This systematic review and meta-analysis evaluated the effects of canola oil consumption on these two anthropometric measures in adults.

Methods: PubMed, Scopus, and Google Scholar were searched through September 2024 to identify randomized controlled trials investigating the effects of canola oil consumption in adults. Pooled mean differences (MDs) and 95% confidence intervals (CIs) were calculated for body weight and waist circumference.

Results: Thirty-two randomized controlled trials were included in the systematic review. The meta-analysis of 30 studies involving 1,772 participants showed no significant effect of canola oil consumption on body weight (MD=−0.017 kg; 95%CI: −0.195-0.161; p=0.85; I^2=0%). Similarly, the pooled analysis of 14 studies involving 1,144 participants found no significant effect on waist circumference (MD=0.325 cm; 95%CI: −0.47-1.12; p=0.426), with substantial heterogeneity (I^2=71.25%).

Conclusion: Canola oil consumption did not significantly affect body weight or waist circumference in adults. These findings suggest that incorporating canola oil into the diet, by itself, may not produce meaningful improvements in these anthropometric measures.

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Poster

Obesity and Postoperative Surgical Site Complications: A Systematic Review of Surgical Site Infections, Wound Healing, and Postoperative Outcomes

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ABSTRACT

Background: Obesity is associated with increased perioperative risk and may impair wound healing, contributing to surgical site infections and other postoperative complications. This systematic review aimed to evaluate the relationship between obesity and wound-related outcomes across diverse adult surgical populations.

Methods: This systematic search was conducted in PubMed, Scopus, Web of Science, and Google Scholar for studies published between 2010 and 2026. MeSH terms and relevant keywords related to obesity and postoperative wound complications were combined using Boolean operators. Twenty eligible publications were evaluated. Data on study characteristics, patient populations, obesity classification, surgical procedures, and wound-related outcomes were extracted and comparatively synthesized.

Results: Across examined clinical evidences, obesity was associated with an increased risk of postoperative wound complications across multiple surgical specialties. A nationwide cohort covering 159,720 operations identified 1.1- to 4.4-fold higher adjusted odds of surgical site infection (SSI), depending on the procedure. Among 89,148 abdominal surgery patients, obesity was associated with increased SSI odds in clean (OR=1.757) and clean-contaminated procedures (OR=1.239). In a colorectal cohort of 74,891 patients, SSI odds increased progressively across obesity classes I, II, and III (OR=1.5, 1.9, and 2.1, respectively). Orthopedic trauma data involving 53,219 patients also revealed elevated odds of superficial infection (OR=1.67), deep infection (OR=1.52), and wound dehiscence in morbid obesity (OR=2.29). Metabolic health and surgical approach further influenced wound outcomes.

Conclusion: Obesity is an important modifiable risk factor for postoperative wound complications. Preoperative risk assessment, optimized perioperative care, and tailored surgical strategies may reduce adverse outcomes.

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POSTER

Glucagon-Like Peptide-1 (GLP-1) Receptor Agonists in Perioperative Setting: A Systematic Review on Balancing Gastric Emptying, Aspiration Risk, and Surgical Safety in Patients with Obesity

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ABSTRACT

Background: Glucagon-like peptide-1 (GLP-1) receptor agonists are increasingly used to manage obesity; however, their effects on gastric emptying may introduce challenges during anesthesia and surgery. This systematic review aimed to evaluate their perioperative implications, particularly residual gastric content, aspiration risk, and surgical safety.

Methods: A systematic search was conducted in PubMed, Scopus, Web of Science, and Google Scholar for studies published between 2010 and 2026. Relevant studies on GLP-1 receptor agonists and perioperative outcomes were assessed. Data on gastric contents, aspiration risk, and surgical outcomes were extracted from 15 selected publications and qualitatively synthesized.

Results: Evidence demonstrated a consistent association between GLP-1 receptor agonist use and increased residual gastric content despite adequate preoperative fasting. In a study of 124 patients, increased gastric content was detected in 56% of medication users compared with 19% of non-users. Another prospective study involving 220 patients reported corresponding rates of 40% and 3%. A systematic review and meta-analysis of 28 observational studies, including 185,414 patients, found no significant association with pulmonary aspiration (OR=1.04; 95%CI: 0.87-1.25). However, analysis of 165,522 patients revealed significantly higher odds of residual gastric content (OR=5.96; 95%CI: 3.96-8.98). Withholding at least one dose was associated with reduced odds (OR=0.51; 95%CI: 0.33-0.81).

Conclusion: GLP-1 receptor agonists may increase residual gastric content, creating important considerations for perioperative care. Individualized risk assessment, appropriate medication management, and preoperative gastric evaluation may improve anesthetic planning and enhance patient safety without unnecessarily interrupting obesity treatment.

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POSTER

Transforming Metabolic Health through Bariatric Surgery: A Systematic Review of Long-Term Effects on Weight Reduction, Cardiometabolic Outcomes and Obesity-Related Comorbidities

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ABSTRACT

Background: Bariatric surgery has emerged as an effective treatment for severe obesity. This systematic review aimed to evaluate its long-term effects on weight loss, cardiometabolic health, and obesity-related comorbidities.

Methods: A systematic search was conducted in PubMed, Scopus, Web of Science, and Google Scholar for studies published between 2010 and 2026. Clinical trials, observational studies, and reviews examining long-term bariatric surgery outcomes were evaluated. Data on weight changes, cardiometabolic health, surgical techniques, and obesity-related complications were extracted from 15 selected publications and comparatively analyzed.

Results: Bariatric surgery was associated with substantial improvements in body weight and cardiometabolic health. Long-term follow-up demonstrated 16.1% reduction in body weight, while control groups experienced 1.6% increase. At 10 years, excess weight loss reached 43.5% following sleeve gastrectomy and 50.7% after gastric bypass. Beyond 10 years, total body weight reduction reached 25.5% and 27.7%, respectively. Improvements in hypertension, lipid profiles, and other obesity-related conditions were also observed. Favorable changes in waist circumference and metabolic risk factors indicated broader health benefits beyond weight reduction alone. The persistence of these improvements suggested that surgical intervention provided lasting clinical advantages. Variations in outcomes highlighted the importance of surgical technique, baseline patient characteristics, and duration of postoperative follow-up.

Conclusion: Bariatric surgery offers lasting benefits beyond weight reduction by improving cardiometabolic health and obesity-related conditions. Selecting appropriate surgical procedures and ensuring long-term postoperative follow-up are essential to maintaining clinical improvements and optimizing patients' overall health.

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Poster

The Synergistic Impact of Nutrition and Physical Activity on Obesity: A Systematic Review of Long-Term Effects on Body Composition and Cardiometabolic Health

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ABSTRACT

Background: Obesity is a complex metabolic condition requiring integrated therapeutic approaches. Combining dietary strategies with physical activity may provide broader benefits than either intervention alone. This systematic review aimed to assess their long-term effects on body composition and cardiometabolic health.

Methods: A systematic search was conducted in PubMed, Scopus, Web of Science, and Google Scholar for studies published between 2010 and 2026. Randomized trials and observational studies examining combined dietary and physical activity interventions in adults with overweight or obesity were evaluated. Data on body weight, body composition, and cardiometabolic outcomes were extracted from 15 selected publications and qualitatively synthesized.

Results: Combined dietary and physical activity interventions produced meaningful improvements in weight management and cardiometabolic health. In a 12-month intervention involving 626 participants, the intervention group lost 3.2 kg compared with 0.7 kg in the control group. Furthermore, 33.7% of participants achieved at least 5% weight reduction, compared with 11.9% of controls. A separate meta-analysis demonstrated an additional 2.11 cm reduction in waist circumference when exercise was added to dietary intervention (95%CI: 0.99-3.23). Another network meta-analysis of 78 randomized trials involving 5,219 participants ranked calorie restriction combined with exercise as the most effective strategy for reducing body weight and body fat.

Conclusion: Combining dietary interventions with regular physical activity represents an effective approach to obesity management. This integrated strategy supports sustained weight reduction, favorable changes in body composition, and improved cardiometabolic health, highlighting the importance of comprehensive lifestyle modification in long-term obesity.

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POSTER

Personalized Digital Feedback for Physical Activity Promotion and Sedentary Behavior Reduction in Adults with Overweight and Obesity: A Systematic Review

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ABSTRACT

Background: Inactivity and excessive sedentary behavior are detrimental to cardiometabolic wellbeing among adults who were diagnosed with obesity and overweight. The use of digital feedback using mobile health apps, wearables, and mobile messaging can encourage behavioral change through performance monitoring, goal setting, and reinforcement. This study aimed to explore the types of feedback, behaviors and existing knowledge gaps.

Methods: The review was conducted based on Population, Intervention, Comparison, Outcome (PICO) and Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) frameworks. Two independent reviewers conducted searches in PubMed, CINAHL, Medline, Web of Science, SID, and Google Scholar using Boolean and MeSH keywords ("Feedback," "Digital Technology," "Motor Activity," and "Obesity") from 2016 to 2026. After the evaluation process, 10 articles were selected for the study.

Results: Based on the existing literature, personalized digital feedback could increase physical activity through self-monitoring, personalized goal setting, progress monitoring, and activity prompting via mobile applications and wearable technologies. The problem was that there was no clear evidence of the effect of feedback alone, because feedback was usually provided in conjunction with diet or behavior counseling. In addition, sedentary behavior was not considered, and differences in the frequency of feedback provision, study duration, and measurements affected the comparison of findings.

Conclusion: Digital personalized feedback is promising for the promotion of physical activities and healthy movement behaviors in overweight and obese adults. Future research should focus on providing immediate, relevant, and personalized feedback and separately examining physical activity and sedentary behavior.

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POSTER

Protein-Focused Nutrition and Resistance Training Combined with Time-Restricted Eating for Fat Loss and Muscle Preservation in Adults with Overweight and Obesity: A Narrative Review

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ABSTRACT

Obesity is associated not only with increased fat mass but also with reduced muscle quality and physical function; therefore, weight-management strategies should reduce fat while preserving fat-free mass. This narrative review examined protein-focused nutrition, resistance training, and time-restricted eating (TRE) in the management of overweight and obesity. Evidence was identified from PubMed, Scopus, and Web of Science and synthesized narratively. In adults with overweight or obesity, a meta-analysis showed that higher protein intake during weight loss helped prevent muscle mass decline, with benefits expected above approximately 1.3 g/kg/day, although strength and physical function were not significantly protected; in healthy adults, resistance training gains in fat-free mass plateaued at about 1.6 g/kg/day. Intermittent fasting could reduce lean mass, which resistance training may offset. A meta-analysis of seven studies reported that TRE combined with resistance training reduced body mass and fat mass without affecting muscle mass. In an 8-week trial, a 10-hour eating window plus resistance training reduced fat mass more than training alone; while maintaining fat-free mass, whereas TRE alone did not reduce fat mass. Available studies are small and short, often enrolled young participants, and provided limited data on visceral fat and long-term outcomes. Individual responses vary, and adequate energy, protein, micronutrients, and adherence remain essential. Combining sufficient protein, resistance training, and a moderate eating window is a promising approach for fat loss and muscle preservation in adults with overweight and obesity, pending larger, longer trials.

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POSTER

Childhood Obesity: A Narrative Review of Multifactorial Determinants and Early Intervention Strategies

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ABSTRACT

Childhood obesity has reached epidemic proportions globally, with long-term consequences extending into adulthood, including elevated risks of metabolic syndrome, cardiovascular disease, and psychosocial morbidity. This narrative review examined the multifactorial determinants and evidence-based early intervention strategies for childhood obesity (2016–2026). A comprehensive search of PubMed, Web of Science, SID, Magiran, IranDoc, and Google Scholar using keywords "childhood obesity," "determinants," "intervention," "nutrition," and "physical activity" yielded 356 initial records; after screening for methodological quality and relevance, 47 articles were included. Evidence indicated that genetic predisposition, maternal obesity, early-life nutritional exposures, and socioeconomic disparities interacted to shape obesity risk trajectories. Family-based interventions targeting dietary quality, reduced sugar-sweetened beverage intake, and increased physical activity showed consistent but modest effects, while school-based programs demonstrated variable efficacy depending on implementation fidelity. A critical insight is that weight-centric approaches in children may inadvertently promote disordered eating and body image concerns; therefore, interventions should prioritize healthful behaviors and family environments rather than weight outcomes alone. Early-life prevention requires multi-level strategies integrating clinical, community, and policy interventions to disrupt the intergenerational cycle of obesity.

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POSTER

The Effect of Liraglutide on Anthropometric Indices in Women with Polycystic Ovary Syndrome: A Meta-Analysis

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ARTICLE INFO

Keywords:
Liraglutide
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ABSTRACT

Background: Polycystic ovary syndrome (PCOS) is characterized by both ovarian and metabolic disturbances. Glucagon-like peptide-1 (GLP-1) receptor agonists have demonstrated potential in promoting weight reduction among women with PCOS. This study aimed to investigate the effects of liraglutide treatment on anthropometric parameters in women with PCOS.

Methods: A comprehensive search of PubMed, Web of Science, and Scopus was conducted up to October 28, 2026, to identify randomized controlled trials (RCTs) investigating the effects of liraglutide on anthropometric indices. Meta-analyses were conducted using random-effects model.

Results: Finally, six studies with 264 participants met our criteria. The duration of the included RCTs ranged from 12 to 32 weeks. The meta-analysis revealed significant reductions in body weight [Weighted mean differences (WMDs): −5.89 kg; 95%CI: −9.96-−1.81; p=0.005; I^2=80.6%; n=6], body mass index (BMI) (WMD: −1.98 kg/m²; 95%CI: −2.13-−1.82; p≤0.001; I^2=0.0%; n=6), waist circumference (WC) (WMD: −5.04 cm; 95%CI: −5.73-−4.34; p≤0.001; I^2=0.0%; n=5), waist-to-hip ratio (WHR) (WMD: −0.03; 95%CI: −0.04-−0.02; p≤0.001; I^2=0.0%; n=2), and fat mass% (FM%) (WMD: −0.87%; 95%CI: −1.07-−0.68; p≤0.001; I^2=0.0%; n=3).

Conclusion: Liraglutide treatment was associated with significant reductions in body weight, body mass index (BMI), waist circumference (WC), waist-to-hip ratio (WHR), fat mass percentage (FM%) among women with PCOS. Further research is warranted to clarify its long-term effects on anthropometric indices in women with PCOS.

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POSTER

The Effect of Liraglutide on Lipid Profile in Women with Polycystic Ovary Syndrome: A Meta-Analysis

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ABSTRACT

Background: Liraglutide has emerged as a potential therapeutic option for improving lipid profiles in women with polycystic ovary syndrome (PCOS). Nevertheless, existing evidence regarding its effects on lipid parameters remains inconsistent. Accordingly, this systematic review and meta-analysis of randomized controlled trials (RCTs) aimed to determine the impact of liraglutide on lipid metabolism in women with PCOS.

Methods: A systematic search was performed in PubMed, Scopus, and Web of Science from inception through October 28, 2026, to retrieve RCTs assessing the effects of liraglutide on lipid parameters in women with PCOS. Pooled estimates were obtained using random-effects models. The methodological quality of the included trials was assessed using the Cochrane risk-of-bias tool.

Results: Four RCTs involving 185 participants were included, lasting 12-32 weeks. Two were open-label and two double-blind trials. Two studies were rated as poor quality, while the others were rated as good quality. The meta-analysis revealed significant reductions in triglycerides (TG) [Weighted mean differences (WMDs): −0.14 mmol/L; 95%CI: −0.28-−0.01; p=0.041; I^2=0.0%], total cholesterol (TC) (WMD: −0.05 mmol/L; 95%CI: −0.09-−0.00; p=0.041; I^2=0.0%), high-density lipoprotein (HDL) (WMD: −0.02 mmol/L; 95%CI: −0.03-−0.01; p=0.003; I^2=0.0%); while liraglutide treatment did not result in a statistically significant change in low-density lipoprotein (LDL) levels (WMD: 0.01 mmol/L; 95%CI: −0.03-0.06; p=0.633; I^2=0.0%).

Conclusion: Liraglutide demonstrated promising effects in women with PCOS, improving androgen TC and TG.

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POSTER

Targeting Gut Microbiota to Support Glucagon-like peptide-1 Receptor Agonist Therapy: A Narrative Review on the Potential Role of Probiotics and Prebiotics

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ARTICLE INFO

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Probiotics
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ABSTRACT

Probiotics, prebiotics, and Glucagon-like peptide-1 receptor agonists (GLP-1 RAs) influence metabolic regulation, but through different mechanisms. Probiotics and prebiotics modulate gut microbiota and may enhance endogenous GLP-1 signaling, whereas GLP-1 RAs directly activate GLP-1 receptors to improve glycemia and reduce body weight. The gut microbiota can regulate GLP-1 secretion through microbial metabolites. Prebiotics produces short-chain fatty acids (SCFAs), which activate free fatty acid receptors and enteroendocrine signaling pathways that promote GLP-1 release. Bile-acid metabolism and tryptophan-derived microbial metabolites may also stimulate GLP-1 secretion through receptors such as TGR5 and AHR. Combining microbiota-directed therapies with GLP-1 RAs is biologically plausible. Prebiotics provide substrates for bacteria, while probiotics introduce or support strains linked to improve incretin activity. In theory, this could reinforce GLP-1 signaling, improve metabolic response, and reduce gastrointestinal intolerance associated with GLP-1 RAs. Studies suggest that GLP-1 RAs can alter microbial diversity and increase genera associated with favorable metabolic function creating a bidirectional relationship. Microbiota may affect GLP-1 biology, while GLP-1 RAs may modify the microbial environment. For patients on GLP-1 RAs, a fiber-rich diet remains the best strategy to support microbiota. Adequate fluid intake and gradual fiber titration are important, as GLP-1 RAs slow gastric emptying. Prebiotic supplements may worsen gastrointestinal symptoms if introduced too quickly. Probiotics may be a useful adjunct in selected patients but should be strain-specific and clinician-guided.

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Poster

Clinical Management of Olanzapine-Induced Weight Gain: A Narrative Review on Dose-Response Evidence and Guideline-Based Interventions

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ABSTRACT

Olanzapine is highly effective for various psychiatric disorders, including schizophrenia and bipolar depression, but its clinical utility is severely limited by antipsychotic-induced weight gain (AIWG) and metabolic syndrome (MetS). This narrative review aimed to synthesize recent evidence on the mechanisms, clinical consequences, and emerging pharmacological interventions for olanzapine-induced obesity. Recent literature showed that olanzapine induces significant, dose-dependent weight gain (mean difference: 1.72 kg) and central obesity (waist circumference difference: 5.79 cm), with a high prevalence of MetS (35.77%) in young patients. Mechanistically, olanzapine alters gut microbiota, leading to dysbiosis. Clinical guidelines emphasized early metabolic screening, dose optimization, and lifestyle interventions. When pharmacological intervention is required, Glucagon-like peptide-1 (GLP-1) receptor agonists (e.g. Semaglutide) demonstrated robust efficacy, reduced body weight by 9.2 kg and waist circumference by 7.0 cm when compared to placebo, without worsening psychiatric symptoms. Alternatively, adding samidorphan (an opioid antagonist) significantly attenuated weight gain, and switched to antipsychotics with favorable metabolic profiles (such as cariprazine or lurasidone) that are highly effective strategies to prevent MetS; while maintaining psychiatric stability. In conclusion, managing olanzapine-induced obesity requires a multi-pronged, guideline-based approach, prioritizing early metabolic monitoring and utilizing novel pharmacological adjuncts or antipsychotic switching when necessary.

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POSTER

Protein and Energy Delivery against Two Guideline Targets in Mechanically Ventilated Adults with Obesity: A Retrospective Cohort Study

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ABSTRACT

Background: Guidelines disagree on feeding critically ill adults with obesity: ASPEN/SCCM (2016) recommended hypocaloric, high-protein nutrition by ideal body weight, whereas ESPEN (2023) recommended 1.3 g/kg protein by adjusted body weight. We assessed target attainment and outcomes.

Methods: From MIMIC-IV, we included adults with body mass index (BMI) ≥30 kg/m² ventilated invasively for ≥72 hours. Intake was analyzed on ventilation days 1-7 without oral feeding; while energy included propofol and dextrose calories. In day-4 landmark cohort, mean delivery over days of 1-4 (% of target) was related to in-hospital mortality, 28-day ventilator-free days and intensive care unit (ICU) length of stay, adjusting for demographics, obesity class, severity, comorbidity, ICU and admission type, and the other macronutrient.

Results: We analyzed 2,072 patients (10,829 ventilation days; median BMI: 35.4 kg/m²; in-hospital mortality: 28.4%). Median protein targets were 130 g (ASPEN) and 94 g (ESPEN), yet median delivery on days 4-7 was 0.5 g/kg ideal body weight. 80% of protein target was met on 9.2% (ASPEN) and 23.6% (ESPEN) of days 4-7, whereas energy exceeded 110% of target on 25.8% and 11.3%. In landmark cohort (n=1,602), each 10-percentage-point increased in protein attainment was associated with lower mortality (ASPEN: OR: 0.88, 95%CI: 0.80-0.97; ESPEN: OR: 0.91, 0.84-0.98); energy was not (OR: 1.04, 0.99-1.09; 1.05, 0.99-1.12) associated with ventilator-free days or ICU stay.

Conclusion: In ventilated patients with obesity, protein delivery rarely met targets; while energy often exceeded the hypocaloric target. Higher early protein, not energy, was associated with lower mortality.

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Poster

Human Molecular Signatures after Weight Loss: Molecular Persistence, Epigenetic Remodeling, and Associations with Subsequent Weight Outcomes: A Narrative Review

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ARTICLE INFO

Keywords:
Obesity
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ABSTRACT

Weight regain after obesity treatment remains common, but persistent molecular alterations do not necessarily indicate a retained "obesogenic memory." This narrative review examined human evidence on molecular changes persisting after weight loss and on baseline DNA-methylation markers associated with subsequent weight outcomes. Published human longitudinal studies assessing adipose-tissue or peripheral-blood methylation and related metabolic or weight outcomes were identified through focused, non-systematic literature searches; findings were synthesized qualitatively without meta-analysis or formal risk-of-bias assessment. In a 10-year cohort of 22 women after bariatric surgery, methylation profiling of isolated abdominal subcutaneous adipocytes identified 7,729 cytosine-phosphate-guanine (CpG) sites differentially methylated from presurgical baseline at year 2, with no evidence of reversal toward baseline at years 5 or 10. Improved lipogenesis and insulin responsiveness persisted despite regain of 29% of the initially lost weight; these findings do not, by themselves, establish obesogenic memory. In 24 women undergoing Roux-en-Y gastric bypass, preoperative leukocyte major facilitator superfamily domain-containing protein 3 (MFSD3) cg00010266 methylation was correlated positively with 3-year weight regain (r=0.68; p=0.013). In a separate cohort undergoing sleeve gastrectomy (n=179; n=114 at 24 months), preoperative peripheral-blood leukocyte vault RNA 2-1 (VTRNA2-1) hypermethylation was associated with greater excess weight loss at 12 and 24 months, an outcome related to treatment response rather than a direct assessment of weight regain. Human evidence is limited and heterogeneous. Treatment-associated molecular remodeling, retained obesity-associated signatures, and prediction of weight regain should be distinguished; while candidate biomarkers require independent validation before clinical application.

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POSTER

Myostatin/Activin Pathway Inhibition to Preserve Lean Mass during Incretin-Based Weight Loss: A Systematic Review of Phase 2 Randomized Trials

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ARTICLE INFO

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Incretin
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Weight

ABSTRACT

Background: Incretin-based obesity therapies reduce fat mass. Myostatin/activin-pathway blockade was assessed to improve weight-loss composition.

Methods: PubMed/Medline and ClinicalTrials.gov were searched to 5 November 2026 for myostatin/activin inhibitors combined with incretin therapy; sponsor-reported European association for study of diabetes (EASD) 2026 Clinical Outcomes Utilizing Revascularization and Aggressive Drug Evaluation (COURAGE) data were reviewed. Eligible phase 2 randomized trials enrolled adults with overweight/obesity, compared pathway blockade plus semaglutide or tirzepatide with incretin therapy alone/placebo, and reported dual-energy X-ray absorptiometry (DXA)/magnetic resonance imaging (MRI) lean-mass outcomes. Two trials were peer-reviewed reports and one was conference-reported trial. A preliminary outcome-specific Cochrane Risk of Bias 2 (RoB 2) appraisal raised some concerns for Bimagrumab plus semaglutide alone or in combination for the treatment of obesity (BELIEVE) (open-label semaglutide and missing DXA data) and Apitegromab for lean mass preservation during tirzepatide-induced weight loss (EMBRAZE). Clinical heterogeneity precluded meta-analysis.

Results: In BELIEVE (n=507; week 48), DXA total-body lean-mass change from baseline ranged −2.3%-−0.8% across bimagrumab–semaglutide combinations versus −6.9%-−4.7% with semaglutide monotherapy. In EMBRAZE (n=102 randomized; n=87 with week-24 DXA), apitegromab preserved 1.9 kg more lean mass than placebo with tirzepatide (trial-reported 80%CI, 1.2–2.7; nominal p=0.0014; phase-2 α=0.20). In COURAGE's 52-week lower-dose portion, DXA lean-mass change was −5.8% and −4.2% with trevogrumab 25 and 75 mg, respectively, versus −7.3% with semaglutide plus placebo; MRI substudy (n=76) indicated 71.8% and 68.9% relative preservation of thigh-muscle volume.

Conclusion: Phase 2 findings suggest lean-mass preservation. Effects on strength, physical performance, quality of life and long-term safety remain un-established.

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Poster

Effects of Anti-Obesity Pharmacotherapy on Linear Growth, Pubertal Progression, and Skeletal Accrual in Children and Adolescents: A Systematic Review of Randomized Trials

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ABSTRACT

Background: Anti-obesity drugs are used in children with obesity. We synthesized evidence on their effects on growth, puberty, and bone accrual remain uncertain.

Methods: Focused PubMed-indexed reports and ClinicalTrials.gov records were searched until November 1, 2026. Randomized clinical trials (RCTs) enrolled 6-17-year-old subjects with obesity and reported height, Tanner stage, bone age, or dual-energy X-ray absorptiometry (DXA) outcomes. Five trials (n=1,296) were narratively synthesized; and heterogeneity precluded meta-analysis. No prospective registration or formal Cochrane Risk of Bias 2 (RoB 2)/grading of recommendations, assessment, development, and evaluations (GRADE) assessment was undertaken.

Results: Orlistat (1 RCT; n=539; 54 weeks) yielded height gain of 1.82 vs. 1.91 cm with placebo (p=0.74); Tanner distributions were similar. Two liraglutide RCTs showed no apparent growth/puberty differences [adolescents (n=251; 56 weeks), bone-age gain: 1.40 vs. 1.37 years; children aged 6–<12 (n=82; 56 weeks), height gain: 5.8 vs. 5.6 cm and bone-age gain: 1.4 vs. 1.1 years]. Semaglutide (1 RCT; n=201; 68 weeks) was not associated with notable growth/Tanner differences. Phentermine/topiramate ER (1 RCT; n=223; 56 weeks) had height velocity 1.3-1.4 cm/year lower than placebo. Its exploratory DXA subset (n=66) showed smaller lumbar-spine and total-body-less-head Bone mineral density (BMD) gains; total-body less head (TBLH) BMD Z-score declines ≥0.5 occurred in 9% and 30% at 7.5/46- and 15/92-mg doses versus 0% with placebo.

Conclusion: No consistent growth or pubertal differences were reported with orlistat or GLP-1 receptor agonists. Phentermine/topiramate showed a possible growth/bone-accrual signal. Single-reviewer selection, restricted searching, and absent Cochrane Risk of Bias 2 (RoB 2)/GRADE assessments remain unknown.

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POSTER

Omega-3 Fatty Acids and Adipose Thermogenesis in Obesity: A Narrative Review on Mechanistic Evidence and Human Translational Limitations

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Brown adipose tissue

ABSTRACT

Obesity-related adipose dysfunction has prompted interest in omega-3 polyunsaturated fatty acids (n-3 PUFAs) as thermogenic modulators. This review assessed whether eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA) promoted browning of white adipose tissue or brown adipose tissue (BAT) activation and increase human energy expenditure. PubMed/ MEDLINE was searched non-systematically from database inception to 5 November 2026 using correlated keywords. Peer-reviewed English-language mechanistic, animal, human-cell, supplementation, and BAT-imaging studies reporting thermogenic or adipose outcomes were considered and synthesized by evidence level; no formal quality appraisal or quantitative pooling was performed. EPA increased heat through mitochondrial uncoupling protein 1 (UCP1)/ carnitine palmitoyltransferase 1(BCPT1B) expression and mitochondrial function in cultured human preadipocytes. A 2026 systematic review of 20 rodent studies reported increased UCP1, Peroxisome proliferator-activated receptor-γ Coactivator 1-alpha (PGC-1α), and PR domain-containing 16(PRDM16), although interventions were heterogeneous. In 29 adults with overweight/obesity, a four-week fish-oil phase (3.6 g/day EPA+DHA) in a randomized crossover trial did not increase UCP1 expression in abdominal subcutaneous fat or resting energy expenditure. A separate 12-week randomized trial (45 adults with obesity; 39 normal-weight) found that fish oil (3 g/day; EPA 1.1 g plus DHA 0.8 g) modified adipose oxylipin and inflammatory-gene profiles, with larger responses in normal-weight participants; BAT thermogenesis was not assessed. A 2026 cold-exposure study linked BAT activity with circulating n-3 PUFA shifts, but tested no supplementation. Preclinical thermogenic signals remained unconfirmed in supplemented humans. Longer-term trials should separate EPA and DHA and measure BAT activity, adipose phenotype, energy expenditure, and weight.

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POSTER

Beyond Body Mass Index: A Systematic Review on Association of Body Roundness Index with Cancer Risk and Cancer-Related Mortality

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ABSTRACT

Background: Waist circumference (WC) and Body Mass Index (BMI) are widely used as clinical indicators for assessing obesity; however, they fail to fully capture body fat distribution. The Body Roundness Index (BRI), based on WC and height, was introduced to estimate body fat and abdominal obesity. This study investigated the association between BRI and cancer.

Methods: PubMed, Google Scholar, Scopus and Web of Science were searched. Eligible studies included researches conducted on adults that calculated BRI using the formula of $364.2-365.5\times(1-[(WC/2\pi)/(0.5\times height)]^2)^{0.5}$ and examined its association with cancer. The quality of studies was assessed using the Joanna Briggs Institute (JBI) checklists.

Results: In a UK Biobank cohort study, a positive association was observed between BRI and incidence of 10 cancer types, specifically cancers of the esophagus, stomach, colorectal, gallbladder, pancreas, uterine corpus, kidney, bladder, thyroid and Hodgkin lymphoma. Hazard ratios ranged 1.05-1.31, and these associations remained significant after adjustment for body mass index (BMI). For colorectal cancer, higher BRI values were associated with an increased risk, particularly in proximal colon. Regarding prostate cancer, each one-unit increase in BRI corresponded to a 17% rise in odds of occurrence. Additionally, a case-control study found more than twice the odds in the highest BRI quartile. Higher BRI values were associated with increased cancer-related mortality.

Conclusion: The findings indicated that BRI was associated with cancer risk and cancer-related mortality, and some evidence suggests that BRI performs better than BMI in predictive capability.

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POSTER

What Is the Impact of Resveratrol Supplementation on Serum Adipokines: A Graded, Systematic Review and Meta-Analysis of Randomized Controlled Trials

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ABSTRACT

Background: The present study aimed to systematically review and analyze randomized control trials (RCTs) assessing the effects of resveratrol supplementation on serum leptin and adiponectin levels.

Methods: A comprehensive literature search in several databases was performed up to January 2026. Quantitative data synthesis was performed using a random and fixed-effects model, with weighted mean difference (WMD) and 95% confidence intervals (95%CI). Standard methods were used for assessment of heterogeneity, meta-regression, sensitivity analysis, and publication bias.

Results: A total of 23 RCTs were eligible. In our meta-analysis, no significant changes in levels of leptin (WMD: 0.08 µg/mL, 95%CI: −1.22, −1.40, p=0.895), adiponectin (WMD: 0.58 µg/mL, 95%CI: −0.05, 1.23, p=0.074) were found. In sub-group analysis, a significant increase in adiponectin level was found among populations with obesity (WMD: 0.95 µg/mL, 95%CI: 0.04, 1.87, p=0.040). Also, resveratrol supplementation in doses more than 1000 mg/day increased adiponectin levels significantly (WMD: 1.75 µg/mL, 95%CI: 0.07, 3.42, p=0.040).

Conclusion: This meta-analysis showed that resveratrol supplementation had no significant effect on circulating leptin or adiponectin levels. Nevertheless, resveratrol supplementation was associated with increased adiponectin level among populations with obesity, or when administered at doses more than 1000 mg/day.

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POSTER

The Effect of Glutamine Supplementation on Body Composition, Anthropometric Indices and Brown Adipose Tissue Markers in Patients with Stable Coronary Artery Disease: A Randomized Controlled Trial

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ABSTRACT

Background: Central obesity is recognized as one of the modifiable risk factors associated with coronary artery disease (CAD), which could affect appetite, energy expenditure, and brown adipose tissue (BAT). Glutamine can modify obesity by different mechanisms. This study aimed to evaluate the impact of glutamine supplementation on body composition and BAT markers in patients with stable CAD.

Methods: In this randomized, double-blind, and placebo-controlled trial (RCT), 50 stable CAD patients were randomly assigned to glutamine (30 g/day) and placebo for six weeks. BAT-derived markers (fibroblast growth factor 21 and neuregulin 4) and lipid profile were assessed at baseline and postintervention. The Visual Analog Scale (VAS) and bioelectric impedance analysis were used to evaluate subjective appetite ratings and body composition. Anthropometric indices, including fat mass index (FMI), abdominal volume index (AVI), and body adiposity index (BAI) were also calculated.

Results: Glutamine supplementation could significantly improve body mass index (BMI) (−0.64 vs. 0.04 kg/m^2, p=0.03), waist circumference (−2.54 vs. 0.05 cm, p=0.04), weight (−1.8 vs. 0.07 kg, p<0.001), FMI (−0.7 vs. –0.2, p=0.045), and BAI (−1.2 vs. -0.2, p<0.001) after six weeks of intervention. However, no significant improvement was observed regarding other parameters.

Conclusion: Glutamine could have a promising anti-obesity effect in CAD patients. However, more well-designed RCTs are needed.

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POSTER

Fiber and Prebiotic Supplementation in Childhood Obesity: A Critical Narrative Review of Clinical Evidence and Research Gaps

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ABSTRACT

Childhood obesity is hard to treat, and lifestyle programs yield modest, fading gains. Fibers and prebiotics may act via gut bacteria, short-chain fatty acids, gut hormones, and inflammation, but clinical findings are limited and contradictory. We searched PubMed and Google Scholar for fiber, prebiotic, and symbiotic studies in children with overweight or obesity. Nine papers (2017-2026) were appraised: three randomized clinical trials (RCTs), one mechanistic follow-up, two meta-analyses, and three narrative reviews. In a Canadian RCT (n=42), oligofructose-enriched inulin (8 g/day, 16 weeks) lowered weight z-score, body fat, and interleukin-6 and raised Bifidobacterium; while oligofructose alone did not change weight or adiposity. In a Thai trial (n=155), inulin raised fat-free mass, but the gut–muscle pathway remaine hypothetical. A 12-week symbiotic RCT plus diet and exercise gave larger reductions in weight (−4.0% vs. −1.2%), body mass index (BMI) (−5.1% vs. −1.1%), and waist circumference (−6.0% vs. −3.7%) without metabolic differences, but analysis was per protocol (61/101 completed). A network meta-analysis (15 RCTs, 820 participants) linked prebiotics to a 0.71 kg/m² BMI reduction from one trial, whereas symbiotic lowered BMI z-score slightly (−0.07) and raised fasting glucose (+1.12 mg/dL); certainty was mostly low. The evidence does not justify fiber or prebiotics as stand-alone obesity treatment. Benefits are small, inconsistent, and mostly low certainty; symbiotic weight benefits come from short, high-attrition trials, and glucose rise warrant caution. Longer, standardized, microbiome-stratified prebiotic trials are needed. Prebiotics are best an add-on to lifestyle care.

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POSTER

Obesity and Overweight in Ardabil Province, Iran: A Descriptive Synthesis of Published Evidence from 2016 and 2021 STEPS Surveys

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ABSTRACT

Background: Provincial estimates on obesity and overweight in Iran may differ from national patterns. We summarized published STEPwise approach to NCD risk factor surveillance (STEPS) estimates for excess body weight among adults in Ardabil Province and evaluated their comparability across survey years.

Methods: A targeted descriptive synthesis of published Iranian STEPS 2016 and 2021 reports and related epidemiological studies was undertaken. Original article tables were used to extract provincial sex-specific body mass index (BMI) categories, obesity severity, and available confidence intervals. No participant-level datasets were obtained and no new inferential analyses were performed.

Results: In an analysis of STEPS 2016, Ardabil had a reported preobesity prevalence of 40.7%. In STEPS 2021, mean BMI was 27.33 kg/m² (95%CI: 26.76-27.91) in women and 27.08 kg/m² (26.45-27.72) in men. Obesity affected 29.78% (24.71-34.86) of women and 23.12% (18.12-28.13) of men; overweight affected 33.04% (27.38-38.70) and 38.56% (32.46-44.66), respectively. Class I obesity accounted for the largest obesity category in both sexes. The 2016 and 2021 provincial reports did not provide a directly comparable pooled prevalence pair, and no verified 2026 Ardabil estimate was identified.

Conclusion: Published STEPS findings indicate a substantial burden of excess weight in Ardabil, with sex-specific differences. They do not establish a province-specific 2016–2026 trend. Comparable provincial microdata are needed for robust temporal inference.

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Poster

Development of Machine Learning-Based Predictive Model for Obesity Risk Using Dietary Gut Microbiome Index: A Special Focus on Waist Circumference and Central Obesity

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ABSTRACT

Background: Obesity and central adiposity are influenced by complex interactions between dietary habits, gut microbiome composition, and host–microbiome interactions. This study aimed to develop an explainable machine learning model for obesity risk prediction using the Dietary Gut Microbiome Index (DGMI), with particular emphasis on waist circumference and central obesity.

Methods: A total of 2,950 participants, including 1,500 individuals with obesity and 1,450 healthy controls, were included in the predictive modeling framework. Demographic, anthropometric, and dietary microbiome-related variables were analyzed using Random Forest, XGBoost, Support Vector Machine, and Logistic Regression model. Model performance was evaluated using area under the curve (AUC), accuracy, sensitivity, specificity, and F1-score. Shapley additive explanations (SHAP) analysis was employed to interpret predictor importance. Waist circumference and central obesity were also evaluated.

Results: In this hypothetical performance scenario, XGBoost achieved the highest performance for obesity prediction (AUC: 0.91; 95%CI: 0.89-0.93; accuracy: 86.7%; sensitivity: 88.2%; specificity: 85.1%). Random Forest, Support Vector Machine, and Logistic Regression achieved AUCs of 0.89, 0.86, and 0.81, respectively. For central obesity, XGBoost achieved an AUC of 0.88 (95%CI: 0.85-0.91). Waist circumference, DGMI, dietary fiber intake, and selected dietary components were important predictors. SHAP interpretation suggested an additional contribution of dietary microbiome-related characteristics to obesity risk stratification.

Conclusion: Integrating DGMI with explainable machine learning may improve obesity and central adiposity risk prediction. This approach highlights the potential of precision nutrition and microbiome-informed analytics for early obesity identification and prevention.

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Poster

Association between Maternal Obesity and Pregnancy Outcomes Following in vitro Fertilization (IVF): A Retrospective Cohort Study

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ARTICLE INFO

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ABSTRACT

Background: Excess body weight is an important public health concern in Iran, but provincial patterns may differ from national estimates. We synthesized published findings from Iranian STEP wise approach to NCD risk factor surveillance (STEPS) surveys to characterize overweight and obesity among adults in Ardabil Province and assess whether available reports support comparisons over time.

Methods: We conducted a targeted descriptive synthesis of STEPS 2016 and 2021 publications and related epidemiological studies. Provincial estimates were extracted from original tables, including sex-specific body mass index (BMI) categories, obesity classes, and reported 95% confidence intervals (95%CIs). We did not access participant-level data or perform new inferential analyses. We retained published definitions and uncertainty estimates rather than reconstructing missing aggregate measures.

Results: A published analysis of STEPS 2016 reported a preobesity prevalence of 40.7% in Ardabil. In STEPS 2021, mean BMI was 27.33 kg/m² (95%CI: 26.76-27.91) among women and 27.08 kg/m² (95% CI: 26.45-27.72) among men. Obesity prevalence was 29.78% (95%CI: 24.71-34.86) in women and 23.12% (95%CI: 18.12-28.13) in men, whereas overweight prevalence was 33.04% (95%CI: 27.38-38.70) and 38.56% (95%CI: 32.46-44.66), respectively. Class I obesity represented the most common obesity class in both sexes. The 2016 and 2021 provincial reports did not provide directly comparable pooled prevalence estimates, and no verified 2026 Ardabil estimate was identified.

Conclusion: Published STEPS findings highlight a considerable burden of excess weight and sex-specific differences in Ardabil. However, these data cannot establish a reliable provincial trend from 2016 to 2026. Harmonized provincial microdata are needed for robust temporal comparisons.

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POSTER

Association of Serum and Dietary Magnesium with Insulin Resistance in Adults with Obesity: A Case-Control Study

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ABSTRACT

Background: Magnesium has a significant role in glucose metabolism and insulin signaling. However, available evidence regarding its association with insulin resistance among individuals with obesity is still inconclusive. The present study aimed to examine the relationship between circulating and dietary magnesium and insulin resistance in Iranian adults with obesity.

Methods: This case-control study involved 218 adults aged 18-65 years with obesity. Participants were divided into two groups based on the presence or absence of insulin resistance, as determined by the homeostasis model assessment of insulin resistance (HOMA-IR). Serum magnesium concentrations were determined, and dietary magnesium intake was evaluated using a validated food frequency questionnaire (FFQ). Multivariable logistic regression analysis was conducted to investigate the association between magnesium status and insulin resistance.

Results: In the adjusted model, higher serum magnesium levels were inversely related to the odds of insulin resistance (OR: 0.91, 95%CI: 0.85-0.97, p=0.006). Similarly, greater dietary magnesium intake was associated with reduced odds of insulin resistance (OR: 0.94, 95%CI: 0.89-0.99, p=0.028). Body mass index (BMI) was positively associated with insulin resistance (OR: 1.08, 95%CI: 1.02-1.15, p=0.012).

Conclusion: Higher serum magnesium level and dietary magnesium intake may be linked to reduced odds of insulin resistance among Iranian adults with obesity. Additional prospective studies are required to confirm these findings.

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POSTER

From Glucagon-Like Peptide-1 Receptor Agonism to Triple Agonism: Retatrutide and the Future of Personalized Obesity Treatment: A Review

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ARTICLE INFO

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Retatrutide
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ABSTRACT

Obesity is a complex, chronic, and multifactorial disease that requires effective and individualized therapeutic strategies. The development of glucagon-like peptide-1 (GLP-1) receptor agonists has significantly advanced pharmacological obesity management by improving appetite regulation, reducing energy intake, and promoting weight loss. More recently, dual incretin receptor agonists targeting glucose-dependent insulinotropic polypeptide (GIP) and GLP-1 have further expanded treatment possibilities. Retatrutide, an investigational triple hormone receptor agonist targeting GIP, GLP-1, and glucagon receptors, represents a further development in this therapeutic approach. By simultaneously influencing appetite regulation, glucose metabolism, and energy expenditure, retatrutide may offer a promising strategy for managing obesity and associated metabolic complications. Clinical trial findings have demonstrated substantial reductions in body weight; however, further investigation is needed to establish its long-term efficacy, safety, and appropriate clinical positioning. This narrative review discusses the evolution of incretin-based obesity therapies, the pharmacological mechanisms of retatrutide, emerging clinical evidence, safety considerations, and its potential role in personalized obesity treatment. Particular attention is given to patient-specific metabolic characteristics, comorbidities, treatment response, and tolerability when selecting therapeutic strategies. These developments may contribute to a transition from standardized obesity management toward more individualized and precision-based treatment.

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POSTER

Amylin Analogs and CagriSema: Does a New Pathway for Appetite Control Surpass GLP-1 Agonists? A Review

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ABSTRACT

Obesity remains a major global health challenge, driving the development of novel pharmacotherapies that target central appetite regulation. Glucagon-like peptide-1 (GLP-1) receptor agonists, particularly semaglutide, have demonstrated substantial efficacy in weight reduction; however, a significant proportion of patients experience incomplete responses or gastrointestinal intolerance. Amylin, a pancreatic hormone co-secreted with insulin, acts synergistically with GLP-1 on distinct hypothalamic and brainstem pathways to enhance satiety, delay gastric emptying, and suppress food intake. Long-acting amylin analogs such as cagrilintide have shown promising monotherapy results. The fixed-dose combination CagriSema (cagrilintide plus semaglutide) has emerged as a next-generation approach. Phase 2 clinical trials reported superior weight loss with CagriSema compared with either agent alone or higher-dose semaglutide, accompanied by favorable effects on cardiometabolic parameters. Mechanistically, dual targeting of the amylin and GLP-1 receptors appears to produce complementary and potentially additive anorectic effects while possibly mitigating some side effects through lower individual doses. This narrative review examined the physiological basis of amylin signaling, summarized current clinical evidence for amylin analogs and CagriSema, and discussed whether this dual-pathway strategy may offer meaningful advantages over pure GLP-1 receptor agonism in the long-term management of obesity and related metabolic disorders.

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POSTER

Dual GLP-1/Glucagon Receptor Agonists: A Review on the Role of Survodutide in Reducing Hepatic Fat and Managing Clinical Obesity

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ABSTRACT

The rising prevalence of clinical obesity and its associated metabolic complications, particularly metabolic dysfunction-associated steatotic liver disease (MASLD), has intensified the search for more effective pharmacological therapies. While Glucagon-like peptide-1 (GLP-1) receptor agonists have established efficacy in weight reduction, dual agonists that concurrently activate the glucagon receptor offer additional metabolic benefits, including enhanced energy expenditure and direct hepatic effects. Survodutide, a novel dual GLP-1/glucagon receptor agonist, has demonstrated robust efficacy in clinical trials. Beyond substantial body weight loss, survodutide significantly reduces liver fat content, improves markers of hepatic inflammation and fibrosis, and favorably affects cardiometabolic risk factors. The glucagon component contributes to increased lipid oxidation and reduced hepatic steatosis, while the GLP-1 component supports appetite suppression and glycemic control. These complementary mechanisms position survodutide as a promising candidate for patients with obesity and concurrent hepatic fat accumulation. This narrative review summarizes the pharmacological rationale for dual GLP-1/glucagon agonism, reviews current clinical evidence on survodutide, and discusses its potential role in the integrated management of clinical obesity and related liver disease.

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Poster

The Effect of Nitrate Supplementation on Vascular Endothelial Function in Adults with Overweight or Obesity: A Systematic Review of Randomized Controlled Trials

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ABSTRACT

Background: Obesity is associated with reduced nitric oxide bioavailability and impaired endothelial function. Dietary nitrate may improve vascular function through the nitrate-nitrite-nitric oxide pathway, yet the evidence in adults with overweight or obesity remains inconclusive. This review examined the effects of dietary nitrate supplementation on endothelial function in this population.

Methods: PubMed, Scopus, and Web of Science were searched up to 7 October 2026 for randomized controlled trials (RCTs) comparing beetroot juice, beetroot powder, or potassium nitrate with a control and reporting at least one endothelial function measure. Given the heterogeneity of interventions and outcome measures, findings were synthesized narratively.

Results: Seven RCTs (five crossover, two parallel-group; 182 participants) were included. Three reported vascular improvements. In one acute trial, beetroot juice attenuated the postprandial decline in flow-mediated dilation (FMD) (p=0.030). In a 13-week trial, microvascular perfusion increased from baseline at low and moderate nitrate doses, but not at the high dose. In a 14-day trial, adding beetroot juice to caloric restriction produced a greater change in average microvascular flux than caloric restriction alone (p=0.03). The remaining four trials showed no significant changes in FMD, reactive hyperemia index, or laser Doppler measures. In some trials, circulating nitrate and nitrite increased without detectable endothelial changes.

Conclusion: Evidence that dietary nitrate improves endothelial function in adults with overweight or obesity is limited and inconsistent. The two longer-term trials reporting improvements were small pilot studies. Further adequately powered trials using standardized methods to assess endothelial function are needed.

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POSTER

The Effect Modifying Role of Gender on the Association between Birth Weight and the Odds of Childhood Obesity: A Case-Control Study

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ABSTRACT

Background: Childhood obesity is a complex public health challenge rooted in the interplay of environmental, genetic, and intrauterine factors. This study aimed to evaluate the association between birth weight and the odds of childhood obesity, and to determine the effect-modifying role of sex in this association.

Methods: In this case-control study, 508 first-grade elementary school students were selected via multistage cluster sampling. Overweight and obesity were diagnosed using Body Mass Index-for-age (BMI-for-age) Z-scores based on World Health Organization (WHO) growth standards. Students were divided into two groups: 170 overweight/obese cases (Z-score > 1) and 338 normal-weight controls (Z-score between -2 and 1). Demographic data, birth weight, physical activity, and dietary recall information were collected. To investigate effect modification, a sex-stratified analysis was performed, and Adjusted Odds Ratios (AOR) with 95% Confidence Intervals (95%CI) were calculated using multivariable logistic regression.

Results: The overall association between birth weight and childhood overweight/obesity was not statistically significant. However, sex acted as an effect modifier in this pathway. After adjusting for mode of delivery, family history of obesity, regular meal consumption, and eating speed, girls with a birth weight >3500 g had significantly higher odds of obesity compared to those <3500 g (AOR=2.16, 95%CI: 1.53-4.08). Conversely, among boys, the adjusted association lacked statistical significance (AOR=0.866, 95%CI: 0.485-1.54).

Conclusion: High birth weight is an independent factor increasing the odds of childhood obesity exclusively in girls, confirming that sex acts as an effect modifier in the relationship between birth weight and obesity.

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POSTER

Combined Amylin and Tirzepatide Therapy: The Next Generation of Appetite Control and Weight Loss beyond Monotherapy

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ABSTRACT

Despite the remarkable success of dual glucose-dependent insulinotropic polypeptide (GIP)/Glucagon-like peptide-1 (GLP-1) receptor agonists such as tirzepatide in achieving substantial weight loss, a proportion of individuals with clinical obesity still experience incomplete responses or weight plateau. Concurrently, long-acting amylin analogs have demonstrated independent anorectic effects through distinct central and peripheral pathways involving the area postrema, nucleus tractus solitarius, and hypothalamic nuclei. Combining amylin receptor agonism with tirzepatide represents a rational next-generation strategy that targets complementary mechanisms of appetite regulation and energy balance. Preclinical and early clinical data suggest that dual or sequential engagement of amylin, GIP, and GLP-1 pathways may produce additive or synergistic reductions in caloric intake, greater improvements in satiety, and potentially enhanced metabolic benefits compared with either agent alone. This multi-agonist approach could also allow for lower individual doses, thereby improving gastrointestinal tolerability. This narrative review examines the physiological rationale for combining amylin analogs with tirzepatide, summarizes emerging evidence, and discusses the potential of this combination to advance obesity pharmacotherapy beyond current monotherapy or dual-agonist regimens.

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Poster

Efficacy of Chrono-Nutrition Patterns on Weight Loss, Glycemic Control, and Cardiometabolic Markers in Adults with Overweight and Obesity: A Systematic Review and Meta-Analysis of Randomized Controlled Trials

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ARTICLE INFO

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Chrono-nutrition
Obesity
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Weight

ABSTRACT

Background: Circadian rhythms play a critical role in metabolic homeostasis. We conducted a systematic review and meta-analysis of randomized controlled trials (RCTs) to quantify pooled effects of chrono-nutrition interventions (early time-restricted eating [eTRE] vs. caloric front-loading) on anthropometric and cardiometabolic factors in overweight or obese adults.

Methods: PubMed, Scopus, Web of Science, and Embase were searched up to 2026. Eligible studies included RCTs (minimum duration: 8-weeks) evaluating effects of chronobiologically aligned dietary regimens against isocaloric controls or conventional meal patterns in adults with BMI≥25 kg/m². Random-effects meta-analyses (DerSimonian–Laird method) calculated weighted mean differences (WMD) and 95% confidence intervals (95%CI). Heterogeneity was quantified using I^2 statistic. Subgroup and meta-regression analyses were based on intervention subtype and duration. Risk of bias and evidence certainty was evaluated by Cochrane Risk of Bias 2 (RoB 2) tool and grading of recommendations, assessment, development, and evaluations (GRADE) framework.

Results: Twenty-three RCTs involving 1,842 participants met inclusion criteria. Chrono-nutrition interventions resulted in significant reduction in body weight (WMD: –2.34 kg; 95%CI: –3.12-–1.56; $p<0.001$; $I^2=54\%$) and fat mass (WMD: –1.78 kg; 95%CI: –2.45-–1.11; $p<0.001$). Fasting glucose (WMD: –4.18 mg/dL; 95%CI: –6.32-–2.04; $p<0.001$) and homeostasis model assessment of insulin resistance (HOMA-IR) (WMD: –0.42; 95%CI: –0.61-–0.23; $p<0.001$; $I^2=61\%$) revealed significant improvements. Subgroup analysis revealed early time-restricted eating (eTRE; eating window ending prior to 15:00) to improve glycemic variability and insulin sensitivity.

Conclusion: Aligning caloric intake with circadian rhythms yielded significant benefits in weight reduction and insulin sensitivity. Chrono-nutrition represents an effective, non-pharmacological adjunct strategy in obesity management.

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POSTER

Nutritional and Exercise Strategies for Preserving Lean Body Mass During GLP-1-Based Obesity Pharmacotherapy: A Systematic Review

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Glucagon-like peptide-1 receptor agonists
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ABSTRACT

Background: Glucagon-like peptide-1 (GLP-1) receptor agonist-induced weight loss often involves substantial loss of lean body mass (LBM), raising concerns regarding muscle preservation and metabolic health. This systematic review evaluated the efficacy of nutritional and exercise-based strategies in preserving LBM during GLP-1-based pharmacotherapy in adults with overweight or obesity.

Methods: PubMed, Scopus, Web of Science, and Embase were searched for clinical trials and observational studies investigating nutritional interventions (protein optimization, supplementation) and exercise modalities (especially resistance training) alongside GLP-1 or dual incretin therapies. Key outcomes included LBM, skeletal muscle mass, strength, and physical function.

Results: Evidence indicates that LBM constitutes a considerable portion of incretin-induced weight loss. Adequate, high-quality dietary protein supports muscle protein synthesis during energy deficits, while structured resistance exercise provides a vital mechanical stimulus to preserve muscle mass, strength, and functional capacity. Combining optimized protein intake with progressive resistance training yields synergistic effects, minimizing sarcopenic risks; while enhancing fat loss. However, dedicated randomized trials examining combined dietary-exercise regimens directly concurrent with incretin therapy remain limited.

Conclusion: Preserving muscle mass is crucial for high-quality weight loss during GLP-1 therapy. Integrating individualized dietary protein optimization with progressive resistance exercise represents an indispensable strategy to mitigate muscle loss, protect metabolic health, and maintain physical function.

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POSTER

Gut Microbiota-Derived Metabolites and Obesity: A Systematic Review on Implications for Appetite Regulation and Metabolic Health

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ABSTRACT

Background: Gut microbiota-derived metabolites play a critical role in energy homeostasis and metabolic health. We systematically reviewed the impact of key microbial metabolites—specifically short-chain fatty acids (SCFAs), bile acids, and tryptophan derivatives—on appetite regulation, energy metabolism, and obesity-related metabolic outcomes.

Methods: PubMed, Scopus, Web of Science, and Embase were searched according to preferred reporting items for systematic reviews and meta-analyses (PRISMA) guidelines for human observational and clinical trials evaluating associations between microbial metabolites and obesity parameters [body weight, body mass index (BMI)], appetite-related hormones [GLP-1, PYY, ghrelin], insulin sensitivity, and inflammatory markers). Methodological quality was evaluated using standard risk-of-bias tools.

Results: Evidence indicates that gut metabolites regulate key neuroendocrine and metabolic pathways. SCFAs (acetate, propionate, butyrate) enhance satiety hormone secretion (Glucagon-like peptide-1 (GLP-1) and peptide YY (PYY) and improve glucose homeostasis. Bile acids modulate energy expenditure and gut hormone release via farnesoid X receptor (FXR) and Takeda G protein-coupled receptor 5 (TGR5) signaling. Tryptophan-derived metabolites (indoles and kynurenines) support gut barrier integrity and attenuate systemic low-grade inflammation and insulin resistance. However, inter-study variability was observed, largely attributable to baseline dietary differences, microbiota composition, and host metabolic characteristics.

Conclusion: Targeting gut microbiota-derived metabolites through targeted dietary or microbiome-based interventions offers a promising therapeutic avenue for personalized obesity management. Further longitudinal RCTs are warranted to clarify causality and therapeutic efficacy.

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POSTER

Effects of Glucomannan Supplementation on Appetite and Energy Intake in Adults with Overweight or Obesity: A Systematic Review

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ARTICLE INFO

Keywords:
Glucomannan
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Energy intake
Overweight
Obesity

ABSTRACT

Background: Glucomannan (GM), a soluble fiber derived from the plant Amorphophallus konjac, is marketed as being helpful in reducing body weight. The aim of this review was to evaluate the effects of glucomannan supplementation on appetite and energy intake in adults with overweight or obesity.

Methods: PubMed, Scopus, Web of Science and Google Scholar search engine until October 15th 2026 using related keywords. Interventional studies were eligible if they included Adults with overweight and obesity, evaluated Konjac Glucomannan Dietary Supplementation, and reported at least one outcome related to appetite and energy intake. Observational studies, reviews, case reports, animal studies, and studies without relevant outcomes were excluded. The risk of bias was assessed using the Cochrane Risk of Bias 2 (RoB 2) tool. Due to the limited number of studies and differences in interventions and reported outcomes, the findings were synthesized narratively.

Results: Included studies comprised 125 adults with overweight or obesity and evaluated Glucomannan Dietary Supplementation alone or in combination with a hypocaloric diet. Supplementation duration ranged from 2 weeks to 2 months. Glucomannan Dietary supplementation did not demonstrate a consistent beneficial effect on appetite and energy intake. Tow study reported improvement in appetite-related outcomes following glucomannan supplementation combined with a hypocaloric diet.

Conclusion: The available evidence does not indicate a consistent beneficial effect of Glucomannan Dietary Supplementation on appetite and energy in adults with overweight or obesity. Further high-quality clinical trials are needed to clarify the potential effects of Glucomannan Dietary supplementation in this population.

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Poster

Associations of Macronutrient Quantity and Quality with Obesity in Adults: A PERSIAN Cohort Study in Mashhad, Iran

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ABSTRACT

Background: Although both the quantity and quality of dietary macronutrients are recognized as potential determinants of obesity, comprehensive assessments of these factors in relation to body mass index (BMI) and obesity status remain limited among Iranian adults.

Methods: Totally, 6,464 adults from PERSIAN Cohort Study in Mashhad, Iran were enrolled. Dietary intake was assessed using a validated 130-item semi-quantitative food-frequency questionnaire. Macronutrient quantity was expressed as percentage of total energy intake. Quality indices included glycemic index (GI), glycemic load (GL), and Carbohydrate Quality Index (CQI) for carbohydrates; amino-acid composition specifically the aromatic-to-branched-chain amino acid (AAA/BCAA) ratio and plant-to-animal protein ratio (PAR) for proteins; and monounsaturated (MUFA)/polyunsaturated fatty acids (PUFA), saturated fatty acids (SFA)/PUFA, and PUFA/SFA ratios for fats. Obesity was defined as BMI≥30 kg/m². Multivariable logistic and linear regression models adjusted for age, sex, physical activity, socioeconomic status, and total energy intake were used to examine associations.

Results: A higher AAA/BCAA ratio was significantly associated with lower odds of obesity after full adjustment (lowest vs. highest tertile: OR=1.34, 95%CI: 1.13-1.59). Associations of GI, GL, CQI, PAR, and all fat-quality ratios with obesity were weak or non-significant after multivariable adjustment. Regarding quantity, higher energy intake and certain food-group patterns were observed across higher tertiles of several quality indices, but independent effects of macronutrient quantity percentages on obesity risk were limited after adjustment.

Conclusion: Dietary amino-acid composition (AAA/BCAA ratio) showed the most consistent inverse association with obesity. These findings underscore the potential relevance of protein amino-acid profile in obesity risk assessment.

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Poster

Insulin Resistance and Lower Insulin Sensitivity: A Cross-Sectional Study of Significant Contributors to Weight Regain in Non-Menopausal Iranian Women

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ABSTRACT

Background: Weight regain after dietary-induced weight loss is a common challenge in weight management. This study investigated the associations of serum insulin, insulin resistance, and fasting blood sugar (FBS) with weight regain among non-menopausal Iranian women.

Methods: This cross-sectional study was conducted in 2019-2020 among women who had completed a one-year dietary treatment program. Participants were assessed one year after the intervention and classified into weight regain and weight maintenance groups. Totally, 146 women were included (73 per group). Serum insulin and FBS were measured, while insulin resistance and insulin sensitivity were assessed using homeostasis model assessment of insulin resistance (HOMA-IR) and quantitative insulin sensitivity check index (QUICKI), respectively.

Results: Serum insulin, FBS, and HOMA-IR were significantly higher in the weight regain group than in the weight maintenance group (p=0.02, p=0.04, and p=0.01, respectively), whereas QUICKI was significantly lower (p<0.001). Body mass index (BMI) one year after treatment was positively correlated with insulin (r=0.33), FBS (r=0.24), and HOMA-IR (r=0.36), and inversely correlated with QUICKI (r=−0.36); all correlations had p<0.001. Associations of HOMA-IR and QUICKI with the odds of weight regain were not statistically significant after adjustment for potential confounders.

Conclusion: Women who experienced weight regain one year after dietary intervention had higher FBS, serum insulin, and insulin resistance, and lower insulin sensitivity than women who maintained their weight loss. Further prospective studies with baseline and longitudinal assessments are needed to clarify causal relationships.

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Poster

The Effect of Body Weight Regain on Leptin Level: A Systematic Review and Meta-Analysis

Najme Rostami Rayeni[1], Hadi Abdollahzad[2], Pooya Alibakhshi[3], Mojgan Morvaridzadeh[4], Hafez Heydari[5], Afsaneh Dehnad[6], Masoud Khorshidi[1,7], Azimeh Izadi[8,9], Farzad Shidfar[1*], M Dulce Estevão[10], Amirhosein Omidi[4], Javad Heshmati[4]

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ABSTRACT

Background: Weight regain after weight loss is common, but its association with hormonal changes, including leptin level, remains unclear. This systematic review and meta-analysis aimed to assess the relationship between weight regain and leptin concentration.

Methods: Medline, Scopus, Web of Science, and the Cochrane Library were searched for interventional studies published from January 1, 1980, to June 30, 2020. Randomized clinical trials with parallel or crossover designs that assessed leptin concentration at baseline and study endpoint were eligible. Two independent reviewers extracted study and participant characteristics. Effect sizes were pooled using random-effects models.

Results: Four trials published between 2004 and 2016 were included. Three were conducted in the United States and one in the Netherlands. Sample sizes ranged from 25 to 148 participants, follow-up periods from 13 to 48 weeks, and participant ages from 34 to 44 years. Weight regain was associated with a reduction in leptin level, but the effect was not statistically significant (SMD: −0.15; 95%CI: −0.36-0.07; I^2=0%).

Conclusion: Weight regain may induce a non-significant reduction in leptin level. However, the small number of included studies and the limitations arising from the available evidence indicate the need for well-designed studies with larger populations to clarify this relationship.

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Poster

Losing Weight, Losing Muscle and Sarcopenic Obesity in the Era of Pharmacological and Surgical Weight Loss: A Narrative Review

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ABSTRACT

While incretin-based therapies and metabolic surgery today result in the removal of 1/5 or more of body weight, some of it is lean tissue, which could turn a metabolic win into a functional loss in elderly patients and those with sarcopenic obesity. This narrative review of 159 articles from PubMed, Web of Science, and Google Scholar from October 2018 through November 2026 addressesd which markers should be used to identify sarcopenic obesity before and during weight-loss interventions, how much lean mass these treatments remove, and what preserves it. There are already two consensus algorithms for identifying the condition, although its prevalence varies twofold or more depending on the algorithm used: 30.2% vs. 16.4% among 1,559 older Spaniards and 9.6% vs. 0.3% among 1,416 older Australians. Neither body mass index nor nutrition assessment filled the gap. In patients undergoing Dual Energy X-Ray Absorptiometry (DXA) substudies, the reduction in lean mass with administration of tirzepatide and semaglutide (2.4 mg) was 5.6 and 5.3 kg, respectively, accounting for about 1/4 and 2/5 of the total reduction. There was a significant decrease in lean mass within the first three months following bariatric surgery, along with a reduction in absolute strength; while the relative strength and physical performance improved. Resistance training helps increase the strength and performance of a patient; but does not influence muscle mass, and additional protein has very little effect if the dietary intake is insufficient. In the treatment of sarcopenic obesity, weight loss treatment should be considered as a body composition treatment.

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Poster

Acne and Hair Loss across Polycystic Ovary Syndrome Phenotypes and Their Associations with the Triglyceride–Glucose Index in Infertile Women: A Cross-Sectional Study

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ABSTRACT

Background: Polycystic ovary syndrome (PCOS) is characterized by diverse clinical and metabolic features. Acne and hair loss may vary across PCOS phenotypes, but their relationships with metabolic markers remain unclear. This study compared acne and hair loss prevalence across PCOS phenotypes and examined their associations with the triglyceride–glucose (TyG) index in infertile women.

Methods: This cross-sectional study included 91 infertile women with PCOS, classified into phenotypes A, B, C, and D according to Rotterdam criteria. Acne and hair loss prevalence were compared across phenotypes. TyG index values were compared between women with and without each manifestation. Analyses addressed phenotype-specific clinical presentation and potential differences in TyG values according to the presence of these manifestations.

Results: Hair loss prevalence differed significantly across phenotypes ($p<0.001$), highest in phenotype A (40.6%) and lowest in phenotype D (2.8%). Acne prevalence did not differ significantly ($p=0.707$), ranging from 23.1% in phenotype C to 40.0% in phenotype B. TyG index values did not differ significantly between women with and without acne (8.58±0.49 vs. 8.46±0.50; $p=0.315$) or hair loss (8.57±0.52 vs. 8.47±0.49; $p=0.467$).

Conclusion: Hair loss prevalence varied significantly across PCOS phenotypes, whereas acne prevalence did not. Neither manifestation was significantly associated with the TyG index. These findings suggest that clinical manifestation distribution across PCOS phenotypes may not directly reflect differences in TyG index values in infertile women with PCOS.

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POSTER

Abdominal Fat Distribution in Infertile Women with Polycystic Ovary Syndrome: A Case-Control Study

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ABSTRACT

Background: Polycystic ovary syndrome (PCOS) is associated with metabolic abnormalities potentially influenced by body fat distribution. Abdominal adiposity may provide information beyond body mass index (BMI) and total body fat. This study compared abdominal fat and body composition between infertile women with PCOS and healthy controls

Methods: This case-control study included 240 women: 80 infertile women with PCOS from Milad Infertility Center and 160 healthy, fertile controls from Seyedi Subspecialty Clinic, Mashhad, Iran (February 2023-April 2024). PCOS was diagnosed using Rotterdam criteria. Body composition was assessed by TANITA bioelectrical impedance analysis (BIA). BMI was calculated as weight (kg) divided by height (m) squared. Quantitative variables were compared using the independent-samples t-test or Mann–Whitney U test.

Results: Mean BMI was comparable between women with PCOS and controls (27.12±5.00 vs. 27.17±5.48 kg/m²; p=0.888). Total body fat mass (24.49±9.30 vs. 23.54±8.71 kg; p=0.383) and total body fat percentage (33.39±6.72% vs. 32.44±6.50%; p=0.195) did not differ significantly. However, abdominal fat mass (12.50±5.13 vs. 10.90±4.37 kg; p<0.001) and abdominal fat percentage (31.25±8.29% vs. 28.01±7.89%; p<0.001) were significantly higher in women with PCOS.

Conclusion: Infertile women with PCOS had greater abdominal adiposity than controls despite comparable BMI and total body fat. These findings support assessing abdominal fat distribution alongside conventional measures.

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Poster

Dietary Protein Intake for Preserving Lean Mass in Users of Glucagon-Like Peptide-1 Receptor Agonists: A Narrative Review

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ABSTRACT

Background: Glucagon-like peptide-1 receptor agonists (GLP-1 RAs) cause weight loss in adults with overweight or obesity, but may reduce energy intake by 16-39%. Inadequate protein may contribute to lean mass loss and raises concerns about muscle health and function. Adequate protein is therefore a priority during GLP-1 RA-assisted weight loss. This narrative review summarized evidence on protein amount and meal distribution for preserving lean mass in adults receiving GLP-1 RA therapy.

Methods: PubMed was searched in October 2026 for articles published from January 2025 on GLP-1 RAs, protein, and lean mass. Of 35 records, 17 were excluded for population/context mismatch, lack of nutritional focus, or being opinion pieces; and 18 were included.

Results: Lean mass represented approximately 10-60% of weight lost across studies. Protein intake appeared low: one observational study reported daily intake of 753 kcal and 33.4 g protein, with fewer than 10% meeting recommendations. A joint advisory proposed 1.2-1.6 g/kg/day during active weight loss; a preliminary 12-week randomized trial found that 1.3 g/kg/day preserved fat-free mass and strength versus an isocaloric diet. Evidence from healthy adults suggested evenly distributing protein across meals may better stimulate muscle protein synthesis. During weight loss, higher protein more consistently attenuated muscle loss than improved strength or function.

Conclusion: Protein may preserve lean mass during GLP-1 RA treatment, but targets and meal-distribution evidence are largely extrapolated from other populations.

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Poster

The Circulatory Progranulin in Obese and Normal Weight Menopausal Women: The Role of Oxidative Stress Markers, Dietary Insulin Load Index and Lipid Profile: A Case-Control Study

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ABSTRACT

Background: Progranulin (PGRN), a novel recognized adipokine, has attracted more interest due to its potential role in metabolic dysregulation, but its role in postmenopausal women remains unclear. This study aimed to compare circulating levels of PGRN between obese and normal-weight postmenopausal women and explored its relationship with oxidative stress biomarkers, dietary insulin load, and lipid profile.

Methods: In this analytical case-control study, 92 postmenopausal women (49 obese and 43 normal-weight) were enrolled. Anthropometric measurements were measured in the standard method. A food frequency questionnaire was used to determine dietary insulin load. In fasting status, 5 mL of blood sample was collected to determine serum level of case-control study, lipid profile, malondialdehyde (MDA), and high-sensitivity C-reactive protein (hs-CRP).

Results: Serum PGRN level was significantly higher in obese participants (p=0.049). There was a significant difference in MDA and hs-CRP levels between groups (p<0.001 and p=0.017, respectively). No significant difference was observed in other metabolic parameters. Higher serum levels of PGRN and MDA were significantly associated with increased odds of obesity among postmenopausal women (MDA: OR=7.12; 95%CI: 2.49–20.36; p<0.001, PGRN: OR=1.010; 95%CI: 1.001–1.020; p=0.028). As well, PGRN and MDA showed a significant correlation (p<0.05), and hs-CRP was near-significant.

Conclusion: Higher PGRN level in obese postmenopausal women may reflect enhanced oxidative stress and the accompanied complications.

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Poster

Effects of the Mediterranean Diet on Liver Enzymes and Hepatic Biomarkers in Adults with Non-Alcoholic Fatty Liver Disease: A Systematic Review and Meta-Analysis of Randomized Controlled Trials

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ABSTRACT

Background: The Mediterranean diet (MD) has been proposed as a beneficial dietary approach for managing non-alcoholic fatty liver disease (NAFLD). This systematic review and meta-analysis aimed to evaluate the effect of MD intervention on liver enzymes and other hepatic biomarkers in adults with NAFLD.

Methods: PubMed, Scopus, and Web of Science were searched from inception to February 27, 2026. Randomized controlled trials investigating traditional, modified, or energy-restricted MD intervention in adults with NAFLD were included. Weighted mean differences (WMDs) and 95% confidence intervals (95%CIs) were calculated using random-effects models. Statistical heterogeneity was assessed using the I^2 statistic.

Results: Fifteen randomized controlled trials involving 858 participants were included. MD interventions significantly reduced alanine aminotransferase (ALT) level (WMD: −3.86; 95%CI: −6.19-−1.53; p=0.001). However, no significant overall effect was observed for aspartate aminotransferase (AST) (WMD: −2.09; 95%CI: −4.79-0.61; p=0.128), alkaline phosphatase (ALP) (WMD: −1.80; 95%CI: −4.80-1.19; p=0.239), gamma-glutamyl transferase (GGT) (WMD: −2.46; 95%CI: −5.93-1.01; p=0.165), or bilirubin (WMD: −0.039; 95%CI: −0.147-0.069; p=0.482). Subgroup analysis indicated a significant reduction in AST in studies incorporating caloric restriction (WMD: −4.16; 95%CI: −7.35-−0.97; p=0.011). Substantial heterogeneity was observed for AST (I^2=81.4%) and ALP (I^2=80.2%).

Conclusion: The findings suggest that MD intervention may improve ALT level in adults with NAFLD, whereas their overall effects on other hepatic biomarkers remain inconclusive.

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POSTER

Preserving Muscle Mass and Physical Function During Glucagon-Like Peptide-1 Receptor Agonists-Based Obesity Treatment: A Systematic Review of Nutritional and Exercise Interventions

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ABSTRACT

Background: Glucagon-like peptide-1 receptor agonists (GLP-1 RAs) have substantially improved pharmacological obesity management. However, weight reduction may be accompanied by losses in lean body mass, raising concerns about skeletal muscle preservation and physical function. This review aimed to evaluate changes in lean mass during GLP-1-based treatment and examine the potential contribution of nutritional and exercise interventions to muscle preservation.

Methods: Published systematic review and meta-analysis evidence was examined. Randomized controlled trials involving adults with obesity receiving GLP-1 RAs at obesity-management doses were evaluated. PubMed, Embase, and LILACS were searched in March 2025. Outcomes included absolute and relative changes in lean mass and its proportion of total weight loss. Evidence concerning protein intake and resistance exercise was additionally assessed.

Results: Seven randomized controlled trials involving 821 participants were included in the published meta-analysis. GLP-1 RA treatment was associated with a mean absolute lean mass reduction of 1.74 kg (95%CI: −3.04-−0.45; I^2=98%). However, lean mass as a proportion of total weight increased by 1.81 percentage points (95%CI: 1.10-2.52; I^2=7%). Semaglutide was associated with a 5.44 kg reduction in absolute lean mass in the relevant pooled analysis. A separate 2026 randomized trial protocol proposed evaluating resistance exercise and protein supplementation in 232 participants.

Conclusion: Preserving skeletal muscle should be an integral component of obesity treatment. Adequate protein intake, resistance exercise, and body composition monitoring represent promising complementary strategies requiring further clinical evaluation.

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POSTER

Preserving Muscle Mass during Pharmacological Weight Loss: The Role of Resistance Training and Nutritional Support in Improving Obesity Treatment Quality: Systematic Reviews and Meta-Analyses

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ABSTRACT

Background: Weight reduction is not the only determinant of successful obesity treatment; preservation of lean mass and physical function is also essential. Pharmacological weight loss may be accompanied by reductions in lean mass. This review aimed to evaluate evidence regarding the role of resistance training and nutritional support in preserving muscle-related outcomes during obesity treatment.

Methods: An umbrella review of published systematic reviews and meta-analyses was conducted, focusing on incretin-based pharmacotherapy, lifestyle interventions, resistance training, and nutritional strategies. Outcomes included lean mass, handgrip strength, and fat mass.

Results: A meta-analysis of 20 randomized controlled trials involving 15,782 participants reported that lean mass accounted for 35.2% of total weight loss with semaglutide (95%CI: 31.5-38.9) and 25.4% with tirzepatide (95%CI: 22.8-28.0). Lifestyle interventions combined with resistance training demonstrated a lower proportion of lean mass loss (17.5%; 95%CI: 14.2-20.8). Additionally, a network meta-analysis of 24 trials involving 1,298 older adults with sarcopenic obesity found that resistance training improved handgrip strength (MD: 3.96; 95%CI: 2.15-5.77) and reduced fat mass (MD: −2.30; 95%CI: −3.63-−0.98).

Conclusion: Resistance training and individualized nutritional support should be considered important components of comprehensive obesity management. Monitoring body composition and physical function may help improve the quality and safety of weight-loss interventions.

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POSTER

Nurse-Led Nutritional and Functional Support during Weight Management in Adults with Obesity: Evidence on Nutritional Behaviors, Body Composition, and Muscle Preservation: A Systematic Review

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ARTICLE INFO

Keywords:
Obesity
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ABSTRACT

Background: Weight management in adults with obesity requires attention not only to weight reduction but also to nutritional adequacy, body composition, and preservation of physical function. This review aimed to explore nursing-led nutritional and functional support strategies and evaluate their reported effects on body composition, dietary behaviors, and muscle preservation.

Methods: A focused evidence mapping approach was used to examine published nursing-focused scoping reviews and clinical studies. Relevant evidence was identified through PubMed and peer-reviewed publications. Data concerning nursing interventions, dietary behaviors, body composition, muscle mass, waist circumference, and follow-up outcomes were examined descriptively.

Results: A previous scoping review of adult obesity management in primary healthcare screened 1,142 documents and included 15 publications, identifying six major nursing roles: patient-centered care, assessment, therapeutic interventions, care management, patient education, and professional development. In the PREDIPHONE randomized trial, 206 participants were allocated to intervention and control groups, with 174 included in the secondary body-composition analysis. The nurse-led telephone intervention produced significant short-term reductions in visceral adipose tissue (β=−0.57; 95%CI: −1.02-−0.12; p=0.013), fat mass (β=−0.96 kg; 95%CI: −1.76-−0.15; p=0.02), and waist circumference (β=−1.97 cm; 95%CI: −3.38-−0.56; p<0.01) at four months. However, no significant between-group differences in muscle mass were observed at follow-up.

Conclusion: Nurse-led nutritional and lifestyle support may improve selected dietary and body-composition outcomes during weight management. Nevertheless, the absence of significant muscle-mass improvements highlights the need for more comprehensive nursing strategies incorporating nutritional assessment, structured resistance exercise support, and long-term functional monitoring.

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POSTER

Parents' Perceptions of Cultural, Social, and Family Barriers to Healthy Eating and Physical Activity among Children with Overweight and Obesity: A Qualitative Content Analysis Study

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ABSTRACT

Background: Understanding parents' perceptions of barriers to healthy eating and physical activity is essential for developing effective childhood obesity management strategies. This study explored parents' perceptions of cultural, social, and family-related barriers to healthy eating and physical activity among children with overweight or obesity.

Methods: This qualitative study used conventional content analysis and was conducted in the second half of 1404 (Iranian calendar) at comprehensive health service centers affiliated with Mashhad University of Medical Sciences, Iran. Nineteen parents of children aged 6-12 years with overweight or obesity were recruited purposively. Data were collected through in-depth semi-structured interviews and analyzed using the Graneheim and Lundman method. Trustworthiness was assessed using Lincoln and Guba's criteria.

Results: Analysis generated five main themes, 11 categories, 31 subcategories, and 59 sub-subcategories. (i) conflict between cultural norms and health recommendations; (ii) restricted healthy choices within social and economic contexts; (iii) the gap between parental decisions and actual practices; (iv) parental efforts undermined by children's resistance; and (v) the gap between health recommendations and everyday feasibility.

Conclusion: Parents perceived healthy eating and physical activity as shaped by interconnected cultural, social, economic, and family barriers, rather than individual knowledge or motivation alone. Family-centered, culturally sensitive interventions should promote caregiver coordination, improve access to healthy foods and safe physical activity, and provide practical, family-tailored guidance and follow-up.

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Poster

Associations of Dietary Protein Quality Indices with Obesity and Novel Anthropometric Indices in Iranian Adults: A PERSIAN Cohort Study in Mashhad, Iran

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ABSTRACT

Background: The independent contributions of dietary amino-acid composition specifically the aromatic-to-branched-chain amino acid (AAA/BCAA) ratio and the plant-to-animal protein ratio (PAR) to obesity and novel anthropometric indices remain insufficiently investigated that was the aim of this study.

Methods: This cross-sectional PERSIAN Cohort Study at Mashhad, Iran (n=6,464 adults) assessed dietary intake with a validated 130-item semi-quantitative food-frequency questionnaire. The AAA/BCAA ratio and PAR were calculated as indices of protein quality. Outcomes included obesity (BMI≥30 kg/m²) and high levels of Body Roundness Index (BRI), Abdominal Volume Index (AVI), A Body Shape Index (ABSI), and Visceral Adiposity Index (VAI). Multivariable logistic regression models adjusted for age, sex, physical activity, socioeconomic status, total energy intake, and protein quantity were applied.

Results: A higher AAA/BCAA ratio was consistently associated with lower odds of obesity and high BRI and high AVI. Compared with the highest AAA/BCAA tertile, participants in the lowest tertile had significantly elevated odds of obesity (Model 3: OR=1.34, 95%CI: 1.13-1.59), high BRI (OR=1.26, 95%CI: 1.10-1.46), and high AVI (OR=1.27, 95%CI: 1.11-1.46) after full adjustment. The PAR showed no statistically significant associations with obesity or any of the novel anthropometric indices after multivariable adjustment.

Conclusion: Among the examined protein quality indices, a higher dietary AAA/BCAA ratio was inversely associated with obesity and selected novel anthropometric indices (BRI and AVI) in Iranian adults, whereas the PAR ratio was not. These findings suggest that amino-acid composition may be more relevant than the plant-versus-animal protein source for adiposity outcomes and merit further investigation in longitudinal studies.

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Poster

The Role of Parental Occupational Factors in Childhood Obesity: A Narrative Review of Shift Work, Long Working Hours, Occupational Stress, and Work–Life Balance

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ABSTRACT

Childhood obesity is multifactorial, and parents' working conditions may influence children's weight through time availability, fatigue, family food patterns, sleep, and physical activity. This narrative review, based on a structured search, examined the evidence linking parental shift work, long working hours, occupational stress, and work–life balance to overweight and obesity in children and adolescents. Studies published from 2000 to 2026 in English and Persian were identified through targeted web-based searches, PubMed, PubMed Central, publishers' pages, and citation tracking, and 32 international articles and 6 Iranian studies were synthesized narratively. The most consistent direct evidence concerned maternal working hours: a meta-analysis of 22 observational studies reported a pooled odds ratio (OR) of 1.09 (95% confidence interval [95%CI]: 1.04-1.15) per 10 additional weekly hours, and the UK Millennium Cohort Study reported an adjusted OR of 1.10 (95%CI: 1.04-1.17), significant only in higher-income households. Evidence on shift work was heterogeneous and depended on the parent's sex and household income. No study directly linked occupational stress to child weight, and evidence on work–life balance was mainly mechanistic. None of the 6 Iranian studies measured shift work, working hours, or job stress directly, and their findings on parental employment were inconsistent. Long maternal working hours appear modestly associated with child overweight, but causality is uncertain. Occupational stress and work–life balance remain research gaps. Longitudinal studies that measure occupational exposures directly, include both parents, and are conducted in Iran are needed.

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Poster

Ultra-Processed Foods, Early-Life Gut Dysbiosis, and Pediatric Metabolic Dysfunction-Associated Steatotic Liver Disease (MASLD): A Narrative Review

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ABSTRACT

Metabolic dysfunction-associated steatotic liver disease (MASLD) is the most common chronic liver disorder in children and adolescents, paralleling the global rise in childhood obesity. High early-life intake of ultra-processed foods (UPFs), which are rich in emulsifiers, fructose, and refined oils, may disrupt the developing gut microbiota. This narrative review summarized the evidence linking UPF consumption, gut dysbiosis, gut-liver axis impairment, and pediatric MASLD, and highlighted potential dietary interventions. PubMed, Scopus, and Web of Science were searched up to 2026 for pediatric trials, cohort studies, and mechanistic studies on early nutrition and steatotic liver disease. Mechanistic data, largely from experimental models and adult studies, suggest that UPF-rich diets may reduce intestinal tight junction proteins (ZO-1, occludin), increasing intestinal permeability and endotoxemia. Translocated lipopolysaccharide may activate hepatic Kupffer cells through Toll Like Receptor 4 (TLR4) signalling, promoting inflammation and fibrosis. Shifting toward minimally processed, fiber-rich diets may increase short-chain fatty acid (SCFA) production and reduce hepatic fat and aminotransferase levels; however, pediatric intervention evidence is limited and heterogeneous, and direct causal evidence linking UPF-induced dysbiosis to pediatric MASLD is lacking. In conclusion, UPF-related gut dysbiosis is a plausible contributor to pediatric MASLD. Dietary patterns emphasizing whole foods and prebiotic fiber, within medical nutrition therapy and weight management, are reasonable strategies for reducing liver fat, but well-designed pediatric trials are needed.

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Poster

Liraglutide for Pediatric Obesity: Efficacy and Treatment Response across Clinical Populations: A Narrative Review

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ABSTRACT

This narrative review evaluated liraglutide efficacy in children and adolescents with obesity, focusing on body mass index (BMI), treatment response, and differences across pediatric populations. PubMed, Web of Science, and Scopus were searched through November 2026. Eight articles were enrolled including six randomized controlled trials and two post hoc analyses. Liraglutide's effects varied across age groups and clinical populations. In children aged 6 to less than 12 years, 46% achieved a BMI reduction of at least 5%, versus 9% with placebo. Among adolescents, 43.3% and 26.1% achieved reductions of at least 5% and 10%, respectively, versus 18.7% and 8.1% with placebo. Baseline characteristics did not significantly predict adolescent treatment response, whereas early BMI and weight changes were associated with greater reductions at week 56. In children aged 7-11 years, liraglutide reduced BMI z-score significantly, but not body weight versus placebo. In Prader–Willi syndrome, BMI-related differences were non-significant at weeks 16 and 52, although hyperphagia scores changed. In the post hoc analysis, BMI- and weight-related differences were non-significant at week 26, while selected BMI measures differed significantly at week 52. Another 5-week type 2 diabetes trial found stable body weight in both groups. A separate adolescent trial assessed pharmacokinetics, tolerability, and safety. Gastrointestinal adverse events were frequently reported. Liraglutide may improve BMI-related outcomes, but responses vary across populations. Evidence in Prader-Willi syndrome and type 2 diabetes remains limited.

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POSTER

Immunometabolic Interactions in Adipose Tissue: The Role of Macrophages in Obesity-Associated Inflammation and Metabolic Dysfunction: A Narrative Review

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ABSTRACT

Adipose tissue is an active immunometabolic organ that plays an essential role in energy homeostasis. Crosstalk between adipocytes and immune cells, particularly macrophages, is a key regulator of adipose tissue function. In obesity, alterations in these interactions contribute to chronic low-grade inflammation, insulin resistance, and metabolic dysfunction. This narrative review covered studies published between January 2018 and November 6, 2026. Relevant literature was searched using related keywords. English-language Original research articles addressing immunometabolic mechanisms underlying adipose tissue inflammation, particularly macrophage function and macrophage–adipocyte interactions, were considered. Review, duplicate records, and publications unrelated to the objectives of the review were excluded. The reviewed evidence highlighted macrophage heterogeneity, functional polarization, and metabolic reprogramming as important contributors to obesity-associated adipose tissue dysfunction. Inflammatory signaling pathways, including NLR family pyrin domain containing 3 (NLRP3) inflammasome activation and the release of cytokines such as interleukin-1 β (IL-1β), IL-6, and Tumor necrosis factor-alpha (TNF-α), are implicated in chronic inflammation and impaired insulin sensitivity. Mitochondrial dysfunction, endoplasmic reticulum stress, cellular senescence, and trained immunity may further contribute to metabolic disturbances. Weight reduction and modulation of immune cell activity may help restore adipose tissue homeostasis. In conclusion, macrophage-adipocyte interactions are important determinants of adipose tissue immunometabolism and represent potential therapeutic targets for obesity-associated metabolic disorders.

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Poster

Nutritional Adequacy During Glucagon-Like Peptide-1 Therapy: A Narrative Review on Reduced Energy Intake and Translation into Better Diet Quality

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ABSTRACT

Glucagon-like peptide-1 (GLP-1)-based treatments were shown to reduce appetite and energy intake, but less energy intake does not necessarily lead to better nutritional quality. The aim of this review article was to discuss whether the reduction of energy intake that occurs with these treatments led to improved dietary quality and sufficient nutrient intake. Preliminary evidence suggested a change in dietary quality to be more consistently documented than a change in energy intake. Decreased food intake may be associated with poor macronutrient and micronutrient intake, even when dietary preferences or nutrient density improved. Several studies showed that the intake of protein was far below the Recommended Dietary Allowance (RDA). Furthermore, some studies demonstrated that vitamin D and calcium were often deficient, which increased the risk of low bone mineral density during active weight loss. B vitamins (especially B12 and folate) are vulnerable due to lower intake and possible changes in gastric acid production/emptying. Vitamins A, C, E, and K are the most likely to be consumed in amounts below the Dietary Reference Intakes (DRIs). Heterogeneity in diet assessment, inconsistent reporting of baseline intake and variability in nutritional counseling and duration of treatment can limit interpretation. Overall, the existing evidence does not show that the treatment-related decrease in caloric intake is consistently associated with a nutritionally adequate dietary pattern. Future research should include standardized measures of diet quality, absolute and energy-adjusted nutrient intake, and nutritional biomarkers to determine if patients are eating better or just less.

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POSTER

From Early Metabolic Risk Detection to Lifestyle Intervention: Addressing Childhood Obesity through Family -Based Prevention in Iranian Children: A Cross-Sectional Study

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ABSTRACT

Background: Childhood obesity increases the risk of early metabolic and cardiovascular complications. This study aimed to assess metabolic syndrome (MetS) prevalence among children with obesity and evaluate a subsequent family-based lifestyle intervention in Tehran, Iran.

Methods: Two complementary studies were conducted in Tehran, Iran. First, a cross-sectional study assessed MetS in 150 children aged 7 years with obesity (BMI ≥95th percentile), using modified pediatric Adult Treatment Panel III (ATP III) criteria. Second, a controlled family-based lifestyle intervention compared intervention and control groups. The intervention included parental education, nutritional counseling, physical activity promotion, and sedentary behavior reduction. Anthropometric, biochemical, and dietary indicators were assessed before and after intervention.

Results: MetS prevalence was 13.4%. Abdominal obesity was the most prevalent component (79%), followed by elevated triglycerides and diastolic blood pressure (74% each). Low birth weight (≤2500 g) was associated with higher odds of MetS (OR=4.3, 95%CI: 1.1–9.7). The intervention improved waist and hip circumferences, dietary patterns, and sedentary behaviors. Household consumption of fats, oils, sugar, and confectionery decreased, while selected healthier food groups increased. Serum triglyceride and total cholesterol levels also decreased significantly in the intervention group. However, overall anthropometric and metabolic improvements were limited.

Conclusion: Early metabolic screening and comprehensive lifestyle management are essential for children with obesity. Family-based education and behavioral modifications can improve selected cardiometabolic indicators; however, sustained benefits require integrated prevention strategies involving families, schools, and communities.

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Poster

Ketosis-Prone Type 2 Phenotype in Adults with Obesity Presenting with First-Episode DKA: A Narrative Review on Predictors of Insulin Independence and Diagnostic Challenges in the Era of Dual Agonists and SGLT2 Inhibitors

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ABSTRACT

Adults with obesity presenting with first-episode diabetic ketoacidosis (DKA) may have ketosis-prone type 2 diabetes rather than autoimmune diabetes. This narrative review examined predictors of insulin independence and diagnostic challenges associated with dual incretin agonists and sodium–glucose cotransporter 2 (SGLT2) inhibitors. A meta-analysis estimated that ketosis-prone type 2 diabetes accounts for 35% of adult presentations with ketosis or DKA at diabetes onset, although this estimate is not specific to obesity. The A−β+ phenotype combines absent islet autoantibodies with preserved β-cell reserve, supporting assessment using autoantibodies and C-peptide after metabolic stabilization. Unprovoked DKA predicts more favorable β-cell recovery and insulin independence than provoked presentations. In a prospective A−β+ cohort, insulin discontinuation at 12 months occurred in 44.6% of unprovoked versus 23.4% of provoked cases. Nevertheless, impaired insulin secretion and glucagon suppression can persist during insulin-free remission. Acute-phase C-peptide and metabolite-based classification offer promising diagnostic approaches, but proposed classification models require external validation. Medication exposure complicates interpretation. SGLT2-associated ketosis commonly accompanies reduced intake, surgery, or acute illness, while case reports describe euglycemic DKA during tirzepatide treatment with and without concurrent SGLT2 inhibitors. These reports did not establish an underlying A−β+ phenotype or predict subsequent insulin independence. Distinguishing diabetes phenotype from potential pharmacological precipitants therefore requires medication review, evaluation of ketosis and acidosis irrespective of marked hyperglycemia, and longitudinal assessment of β-cell function and glycemic control.

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POSTER

Different Types of Beverages and General Obesity: A Network Meta-Analysis

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ABSTRACT

Background: Beverage selection may influence energy intake and body weight; however, the relative benefits of different beverage options for weight management remain insufficiently established. This study aimed to evaluate the effects of different beverage types on general obesity in adults using evidence from randomized controlled trials.

Methods: PubMed, Scopus, and Web of Science were searched through January 2023 to identify eligible randomized controlled trials involving adults. Studies comparing two or more beverage interventions, or evaluating a beverage against water or no intervention, were included. A Bayesian random-effects network meta-analysis was conducted to integrate direct and indirect comparisons. Treatment effects were reported as mean differences (MDs) with 95% credible intervals (CrIs).

Results: In the main analysis incorporating all trials, none of the interventions, including low- or no-calorie sweetened beverages (LNCSB), kefir, water, milk, fruit juice, soy milk, sugar-sweetened beverages (SSB), and rice beverages, demonstrated a significant reduction in body mass index (BMI) compared with either no intervention or other beverages. The certainty of evidence ranged from very low to low.

Conclusion: Substituting low- or no-calorie sweetened beverages for alternative beverages may not result in reductions in BMI. However, the low certainty of available evidence and inconsistent findings in sensitivity analyses limit the strength of these conclusions.

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Poster

The Role of Nutrition and Physical Activity in Reducing Postpartum Weight Retention Among Women with Obesity: A Narrative Review

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ABSTRACT

Postpartum weight retention (PPWR) contributes to persistent maternal obesity and may increase long-term cardiometabolic risk. This narrative review examined the effects of nutritional interventions, physical activity, and combined lifestyle approaches on PPWR, body mass index (BMI), and body composition among women with obesity. Relevant original research articles published up to November 2026 were identified through searches of PubMed/Medline, Embase, and the Cochrane database. Eligible studies included randomized controlled trials, clinical trials, and prospective cohort studies investigating dietary patterns, physical activity, or lifestyle interventions in postpartum women with overweight or obesity (BMI ≥25 kg/m²), with priority given to women with obesity (BMI ≥30 kg/m²). Systematic reviews, meta-analyses, and other non-original publications were excluded. Fourteen eligible primary studies were included. Dietary interventions involving moderate energy restriction were associated with postpartum weight loss and reductions in fat mass. Exercise-only interventions showed less consistent effects on PPWR, whereas combined dietary and physical activity approaches generally produced more favorable weight outcomes. Increased postpartum energy intake and fat accumulation were identified as important contributors to weight retention. Regular walking and improvements in dietary quality were also associated with more favorable postpartum weight outcomes. Nutritional management combined with regular physical activity may help reduce PPWR and prevent long-term obesity progression. Early, individualized lifestyle interventions should be considered to support maternal weight management and cardiometabolic health.

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Poster

Spatial Transcriptomics of Adipose and Liver Tissue in Metabolic Obesity: A Narrative Review on Identification of Fibro-Inflammatory Subpopulations and Potential Therapeutic Targets

Hediye Karvand, Sahar Jafari Kargar*

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ARTICLE INFO

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Spatial transcriptomics
Obesity
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Fibrosis

ABSTRACT

Metabolic obesity drives fibro-inflammatory remodeling of both adipose tissue and liver. This narrative review synthesized mainly 2019–2026 studies that applied spatial transcriptomics, alone or with single-cell and single-nucleus data, to adipose tissue and liver in obesity and metabolic dysfunction-associated steatotic liver disease (MASLD). In adipose tissue, an integrated human atlas of ten studies resolved more than 60 subpopulations, and spatial mapping defined 18 cell classes, including three mature adipocyte types of which only one was insulin responsive. Lipid-associated macrophages clustered in discrete niches of human subcutaneous tissue, and in obese mice their precursors localized to early crown-like structures. Profiling of 247,406 human nuclei from 489 individuals identified a hypoxia-associated adipocyte population that forms niches with macrophages through a proposed axis. Fibro-inflammatory progenitors, described in mouse visceral fat, lack adipogenic capacity and show profibrogenic phenotypes, but the human atlas identified no clear equivalent. In liver, Visium profiling of 33 biopsies from 32 patients separated fibro-inflammatory from parenchymal regions and revealed a senescence signature in late fibrosis, while in a small cohort tracked fibrosis severity and therapeutic targets were presented with mainly preclinical support. Paired liver–adipose studies in the same patients (e.g., 167 liver and 79 matched visceral adipose samples) used bulk or single-nucleus sequencing, and spatial data from both organs in the same individuals are lacking among the reviewed studies. Paired spatial adipose–liver human cohorts are needed to validate niche-specific targets.

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Poster

Remodeling of Oncogenic and Inflammatory Molecular Networks After Bariatric Surgery: A Narrative Review on Integrated Transcriptomic–Proteomic–Metabolomic Analysis

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ARTICLE INFO

Keywords:
Bariatric surgery
Inflammation
Neoplasms
Proteomics
Metabolomics

ABSTRACT

Metabolic bariatric surgery (MBS) is associated with lower incidence of several obesity-related cancers, but the molecular mechanisms remain unclear. This narrative review synthesized human studies, mainly published between 2015 and 2026, that compared transcriptomic, proteomic, metabolomic or epigenomic profiles before and after sleeve gastrectomy or Rouxen-Y gastric bypass, with emphasis on inflammatory and cancer-related networks. In adipose tissue, studies consistently reported reduced immune and inflammatory gene expression after surgery, including lower macrophage-related signatures and downregulation of CC Motif Ligand 2 (CCL2) and S100 calcium-binding protein A8 (S100A8). A recent integrated analysis of public datasets across the three omics layers predicted inhibition of cancer-related canonical pathways in adipose and gastrointestinal tissues, but also activation of the Programmed cell death protein 1/death ligand 1 (PD-1/PDL1) pathway and of MYCN proto-oncogene, bHLH transcription factor (MYC/MYCN) regulators in plasma and stomach proteomes. Plasma proteomic studies showed lower inflammatory and acute-phase proteins and higher sex hormone-binding globulin, whereas metabolomic studies showed lower branched-chain amino acids and altered lipid and bile acid profiles. Findings did not uniformly indicate reduced oncogenic signaling of blood methylation, while DNA damage response and pro-survival markers increased in circulating cells, and the excluded stomach after bypass showed proliferation- and carcinogenesis-related gene expression. Evidence is limited by small cohorts, heterogeneous tissues and follow-up times, nominal significance thresholds, absent non-surgical weight-loss comparators, and lack of cancer outcomes.

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Poster

Effect of Adding Myostatin Inhibitors on Lean Mass during Incretin Therapy: Randomized Controlled Trials Review

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Sarcopenic obesity
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ABSTRACT

Background: Incretin-based drugs cause substantial weight loss, but about 30% of it is lean mass, raising concern about sarcopenic obesity. Myostatin/activin-targeting drugs are being tested as add-ons. We reviewed whether they improve the composition of incretin-induced weight loss.

Methods: We searched PubMed and Google Scholar up to 2026 for randomized controlled trials, published as peer-reviewed articles, comparing an incretin drug plus a lean mass–preserving agent with the incretin drug alone in adults with overweight or obesity. Body composition had to be measured by dual-energy X-ray absorptiometry.

Results: Two trials with 609 adults were included. Adding bimagrumab to semaglutide markedly reduced lean mass loss and increased fat loss, though total weight loss was greater only with the high-dose combination. Apitegromab added to tirzepatide also preserved lean mass, with similar total weight loss. In both trials, a smaller share of the weight lost came from lean mass. Apitegromab was tolerated as well as tirzepatide alone, whereas bimagrumab was linked to muscle spasms, diarrhea and acne. Neither trial consistently improved grip strength or physical function compared with the incretin drug alone.

Conclusion: Adding a muscle-preserving drug to incretin therapy shifted weight loss toward fat. The broader-acting bimagrumab also boosted weight loss in its high-dose combination but caused more muscle spasms and acne, while the more selective apitegromab left total weight loss unchanged. With only two short phase 2 trials available, protein intake and resistance training remain the mainstay for preserving muscle.

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Poster

Visceral Adiposity beyond Body Mass Index in Children and Adolescents: A Narrative Review on the Value of Waist-To-Height Ratio, Visceral Adiposity Index and Emerging Indices in Identifying Cardiometabolic Risk

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ARTICLE INFO

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Waist-to-height ratio
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ABSTRACT

Body mass index (BMI) is widely used to assess obesity in children and adolescents; however, it does not adequately reflect body fat distribution or distinguish visceral from subcutaneous adiposity. Since visceral fat accumulation is associated with insulin resistance and cardiometabolic abnormalities, alternative anthropometric and metabolic indices may improve early risk identification. This narrative review examined relevant studies published between 2000 and 2026 investigating the association between visceral adiposity indices and cardiometabolic risk in children and adolescents. Evidence concerning waist-to-height ratio (WHtR), visceral adiposity index (VAI), pediatric VAI adaptations, triglyceride-glucose (TyG) index, and emerging anthropometric indices was reviewed, with emphasis on their predictive performance and clinical applicability. The reviewed evidence indicated that central adiposity measures, particularly WHtR, provided a practical approach to identifying cardiometabolic risk beyond BMI. Studies demonstrated associations between WHtR and metabolic syndrome, insulin resistance, hypertension, and other cardiovascular risk factors. VAI and its pediatric adaptations have also shown potential in identifying unfavorable metabolic profiles, although their performance varied across populations. Furthermore, indices such as TyG and combined lipid-adiposity measures may offer additional information regarding metabolic dysfunction. Nevertheless, differences related to age, sex, pubertal development, and ethnicity remain important considerations. BMI alone may underestimate cardiometabolic risk in children with central fat accumulation. Incorporating WHtR and appropriately validated adiposity indices into pediatric obesity assessment may improve early risk stratification. However, further longitudinal studies are needed to establish age- and sex-specific cutoffs and determine their clinical utility.

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POSTER

Adherence to Mediterranean Diet and Cardiometabolic Risk Factors in Morbid Obese Patients Candidate for Bariatric Surgery: A Cross-Sectional Study

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Mediterranean diet
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ABSTRACT

Background: Morbid obesity significantly increases the risk of cardiometabolic disorders, complicating bariatric surgery outcomes. This study assessed the association between adherence to the Mediterranean diet (MD) and cardiometabolic risk factors among morbidly obese individuals undergoing bariatric surgery evaluation.

Methods: A cross-sectional study was conducted with 369 morbidly obese patients (BMI≥40 kg/m² or BMI≥35 kg/m² with comorbidities) referred to Hazrat Rasul Akram Hospital Obesity Clinic between September 2023 and September 2024. Dietary adherence was evaluated using the Mediterranean Diet Score (MDS). Cardiometabolic risk factors, including blood pressure, fasting blood sugar (FBS), triglycerides (TG), high density lipoprotein (HDL) cholesterol, and anthropometric measurements, were assessed according to Adult Treatment Panel III (ATP III) criteria. Participants were categorized into quartiles based on MDS adherence.

Results: Participants in the highest quartile of MDS adherence exhibited significantly lower odds of elevated blood pressure (OR=0.34, 95%CI: 0.16-0.70, p-trend=0.01), low HDL cholesterol levels (OR=0.34, 95%CI: 0.16–0.70, p-trend=0.03), and elevated fasting blood sugar (OR=0.42, 95%CI: 0.20–0.87, p-trend=0.03). No significant associations were found for TG level.

Conclusion: Higher adherence to the MD is inversely associated with key cardiometabolic risk factors among morbidly obese patients preparing for bariatric surgery. These results support integrating MD-based dietary interventions into preoperative nutritional counseling to improve cardiometabolic outcomes and surgical success.

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Poster

Beneficial Effects of Spirulina and Its Bioactive Constituent C-Phycocyanin in Polycystic Ovary Syndrome: A Narrative Review of Preclinical Evidence and Mechanistic Insights

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Polycystic ovary syndrome
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ABSTRACT

Spirulina, a microalga rich in bioactive compounds such as C-phycocyanin (C-PC), has attracted more interest as a complementary therapy for different diseases because of its potential antioxidant, anti-inflammatory, reproductive, and metabolic effects. This narrative review summarized current evidence on the effects of Spirulina and C-PC on sex hormones, steroidogenesis, ovarian function, insulin resistance, and glucose metabolism in polycystic ovary syndrome (PCOS), as well as potential mechanisms of action. PubMed, Scopus, Web of Science, and Google Scholar were searched from database inception to September 2026 using correlated keywords. We considered relevant English-language studies, including clinical and observational studies, animal and cellular experiments, systematic reviews, and meta-analyses. The search did not identify any human randomized controlled trial examining Spirulina supplementation in women with PCOS. Most PCOS-specific evidence was derived from preclinical models. Whole Spirulina was associated with improvements in testosterone, luteinizing hormone (LH), follicular stimulating hormone (FSH), estradiol, aromatase activity, steroidogenic signaling, estrous cyclicity, and ovarian morphology. C-PC was also associated with reduced oxidative stress and cellular injury. Moreover, studies in non-PCOS populations and meta-analyses suggested potential improvements in fasting insulin and homeostasis model assessment of insulin resistance (HOMA-IR). Spirulina may influence several biological processes relevant to PCOS, including sex hormone imbalance, ovarian dysfunction, insulin resistance, and glucose metabolism. However, evidence remains heterogeneous and predominantly preclinical. Future well-designed clinical trials evaluating Spirulina supplementation in women with PCOS using clinically relevant endocrine, metabolic, and patient-centered outcomes are needed.

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POSTER

Comparative Effectiveness of Low-Carbohydrate and Low-Fat Diets in Management of Obesity and Type 2 Diabetes: A Narrative Review on Glycemic, Anthropometric, and Metabolic Outcomes

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ABSTRACT

Obesity and type 2 diabetes mellitus (T2DM) coexist, making diet central to management. This narrative review compared the glycemic, anthropometric, and metabolic effects of low-carbohydrate and low-fat diets. Studies from 2016–2026 were identified through PubMed, Scopus, and Google Scholar searches using terms for diet, obesity, T2DM, glycemic control. Randomized and comparative studies were prioritized; reviews and meta-analyses were excluded. Findings were assessed by design, comparator, duration, and outcomes. Low-carbohydrate diets reduced HbA1c, body weight, and waist circumference short term; some studies reported lower triglycerides, improved glucose variability, and reduced liver fat. However, findings were inconsistent: some comparisons favored low-carbohydrate diets short term, while a two-year trial found similar weight and HbA1c changes between diets. Some interventions showed less favorable low density lipoprotein (LDL)-cholesterol responses, and benefits were not always sustained. A digitally supported program found no significant between-group HbA1c differences at 3 or 12 months. Interpretation is limited by variation in dietary targets, energy intake, macronutrient composition, follow-up, and comparators; several studies did not compare low-carbohydrate with low-fat diets. Low-carbohydrate diets may improve short-term outcomes, but sustained superiority remains unproven. Dietary choices should consider nutritional quality, lipid responses, and long-term adherence.

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POSTER

Incretin-Based Therapies in Obesity-Related Heart Failure with Preserved Ejection Fraction (HFpEF): A Narrative Review on Cardiometabolic Mechanisms, Functional Outcomes, and Clinical Implications

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ABSTRACT

Obesity-related heart failure with preserved ejection fraction (HFpEF) is an important cardiometabolic phenotype associated with substantial morbidity. Incretin-based therapies, including Glucagon-like peptide-1 (GLP-1) and dual glucose-dependent insulinotropic polypeptide (GIP)/GLP-1 receptor agonists, have emerged as promising therapeutic options. This review explored their cardiometabolic effects and potential clinical benefits. This narrative review covered studies published between 2018 and November 2026. Relevant literature was searched in PubMed/Medline, Scopus, and Web of Science using related keywords. English-language original research investigating incretin-based therapies in patients with obesity-related HFpEF was considered. Studies unrelated to the review objectives, duplicate records, and non-English publications were excluded. Following screening and deduplication, 13 original research articles were included in the final review. Clinical trials demonstrated that semaglutide and tirzepatide improved heart failure symptoms, exercise capacity, and quality of life in patients with obesity-related HFpEF. These improvements were associated with weight reduction. Clinical and imaging studies also reported changes in cardiac function and epicardial adipose tissue. Preclinical studies suggested additional effects on cardiac remodeling, atrial structure, and myocardial fibrosis, potentially involving mechanisms beyond weight loss. Incretin-based therapies showed promising effects on functional and cardiometabolic outcomes in obesity-related HFpEF.

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Poster

Baseline Insulin and Glycemic Markers as Modifiers of Dietary Response in Adults with Overweight or Obesity: A Systematic Review of Randomized Controlled Trials

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ABSTRACT

Background: Adults with overweight or obesity respond heterogeneously to dietary interventions. We systematically reviewed randomized controlled trials (RCTs) testing whether baseline insulin or glycemic markers modify dietary responses.

Methods: Following Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) 2020, PubMed, Scopus, and Web of Science were searched until 25 September 2026 for adult randomized clinical trials (RCTs) reporting correlated keywords. Risk of bias was assessed with Cochrane Risk of Bias 2 (RoB 2).

Results: Eleven RCTs were included; nine had some concerns and two were at high risk of bias. In one pooled secondary analysis, fasting glucose-defined status modified weight responses for high- versus low-glycemic-load diets in DiOGenes (4.39 kg; 95%CI, 1.76-7.02), Nordic versus control diets in Dietary Intervention with Shop Model (SHOPUS) (3.84 kg; 1.62-6.06), and high-fat/low-carbohydrate versus low-fat/high-carbohydrate diets in Nutrient-Gene Interactions in Human Obesity (NUGENOB) (2.47 kg; 0.20-4.75). In Preventing Overweight Using Novel Dietary Strategies (POUNDS LOST) trial, high- versus average-protein high-fat diets produced 3.6 kg greater weight loss with homeostasis model assessment of insulin resistance (HOMA-IR) ≥4 but not <4 (95%CI, 0.2-7.1). Diet Intervention Examining Factors Interacting with Treatment Success (DIETFITS) showed no diet by insulin secretion interaction. In CardioMEMS Heart Sensor Allows Monitoring of Pressures to Improve Outcomes in NYHA Functional Class III Heart Failure Patients (CHAMPION), African American women with low insulin sensitivity lost more fat mass on low-carbohydrate than low-fat diets (4.9 vs. 2.1 kg; p=0.04).

Conclusion: Baseline insulin and glycemic markers may modify responses to dietary interventions; however, findings are heterogeneous.

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Poster

Effect of Magnesium Supplementation on Anthropometric Measures and C-Reactive Protein in Individuals with Diabetes or at Risk: A Systematic Review of Randomized Controlled Trials

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Diabetes
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ABSTRACT

Background: Type 2 diabetes mellitus (T2DM) is considered as an endocrine disorder. This systematic review aimed to evaluate the effects of oral magnesium supplementation on anthropometric measures and C-reactive protein (CRP) concentrations among individuals with type 2 diabetes and prediabetes.

Methods: A systematic search was conducted in PubMed, Scopus, and Web of Science from January 1990 to June 2025 according to Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. Randomized controlled trials evaluating oral magnesium supplementation and reporting anthropometric outcomes or CRP concentrations were included. Study quality was assessed using the Cochrane Risk of Bias tool.

Results: Fourteen randomized controlled trials met the eligibility criteria. Intervention duration ranged 2-16 weeks and magnesium doses varied 250-450 mg/day across studies. Most trials reported no significant effects of magnesium supplementation on the outcomes three trials reported significant reductions in waist circumference, one of which also reported significant reductions in body weight and body mass index (BMI), while one trial reported significant reductions in CRP. Furthermore, several studies were limited by unclear allocation concealment, incomplete outcome reporting, and potential reporting bias, which may affect the certainty of the available evidence.

Conclusion: Current evidence indicates that magnesium supplementation may not have a consistent effect on reducing CRP concentration and body compositions in individuals with diabetes. However, evidence supporting improvements is limited and inconsistent. Larger, long-term randomized controlled trials are needed to clarify the role of magnesium supplementation in metabolic health and anthropometric outcomes.

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POSTER

Effects of Glucagon-Like Peptide-1 (GLP-1) Receptor Agonists and Dual glucose-dependent insulinotropic polypeptide (GIP)/GLP-1 Receptor Agonists on C-Reactive Protein in Adults with Obesity with or without Type 2 Diabetes: A Systematic Review of Recent Evidence

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ARTICLE INFO

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Glucagon-like peptide-1 receptor agonists
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ABSTRACT

Background: Obesity involves chronic low-grade inflammation, commonly assessed using C-reactive protein (CRP). Glucagon-like peptide-1 receptor agonists (GLP-1RAs) and tirzepatide, a dual glucose-dependent insulinotropic polypeptide (GIP)/GLP-1 receptor agonist, may reduce inflammation. This systematic review evaluated their effects on CRP in adults with obesity, with or without type 2 diabetes (T2D).

Methods: Following Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) 2020, we searched PubMed, Scopus, and Web of Science, supplemented by Google Scholar, through October 2026. Eligible publications included meta-analyses of randomized controlled trials, randomized trials, and pre-specified analyses reporting CRP or high-sensitivity CRP (hs-CRP). Conference abstracts and unpublished reports were excluded. Results were synthesized narratively because effect measures varied.

Results: Five meta-analyses in T2D reported reductions in CRP/hs-CRP with GLP-1 receptor agonists (standardized mean difference −0.37-−0.63). Among adults without diabetes, semaglutide reduced CRP versus placebo by 40.9% (95%CI −46.4-−35.4; nine trials, 6,239 participants). In Semaglutide Treatment Effect in People with Obesity (STEP) 1–3, treatment differences were −44%, −39%, and −48%, respectively. In Semaglutide Effects on Heart Disease and Stroke in Patients with Overweight or Obesity (SELECT), involving 17,604 adults, hs-CRP decreased by 37.8% at 104 weeks, including among participants without weight loss. A tirzepatide meta-analysis reported reductions in hs-CRP of 32.9% (95%CI −33.6-−32.2) and interleukin-6 of 17.8% (95%CI −24.3-−11.3).

Conclusion: GLP-1 receptor agonists lower CRP in adults with obesity, with or without T2D. Semaglutide has the largest evidence base; tirzepatide also reduces hs-CRP, although findings in T2D are mixed. Effects may be partly independent of weight loss.

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Poster

Investigating the Effects of Web-Based Nutrition Education Intervention on Nutritional Knowledge, Energy Intake, and Body Composition of Non-Professional Female Athletes with Overweight: A Randomized Clinical Trial

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ABSTRACT

Background: Non-professional female athletes often lack adequate nutritional knowledge, contributing to overweight status and suboptimal athletic performance. This study evaluated the effects of an 8-week web-based nutrition education intervention on nutritional knowledge, energy intake, and body composition parameters in overweight non-professional female athletes.

Methods: In this randomized controlled clinical trial (IRCT20220208053971N6, Ethics Code: IR.TUMS.MEDICINE.REC.1403.632), 60 non-professional overweight female athletes (aged 18-45 years, training 6-10 hours/week) were randomly assigned (1:1) into intervention (n=30) and control (n=30) groups. The intervention group received an 8-week structured web-based nutrition education program delivered through online platforms and messaging applications, while the control group received no training. Nutritional knowledge (Abridged Nutrition for Sport Knowledge Questionnaire (ANSKQ) questionnaire), daily energy intake (3-day dietary recalls), and body composition measures [weight, body mass index (BMI), body fat percentage, fat mass, and waist circumference via Tanita BC-418 BIA] were evaluated at baseline and week 8. Data were analyzed using paired t-tests and ANCOVA in SPSS version 26.

Results: After 8 weeks, nutritional knowledge significantly improved in the intervention group compared to control ($p<0.001$). Significant reductions were observed in daily energy intake, body weight, BMI, body fat percentage, fat mass, and waist circumference in the intervention group ($p<0.05$), whereas control showed no significant changes.

Conclusion: Web-based nutrition education represents an accessible, feasible, and effective strategy for improving nutritional knowledge, optimizing energy intake, and facilitating favorable body composition modifications in overweight non-professional female athletes.

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POSTER

Very Low Calorie Ketogenic Diet Effectiveness for Weight Gain and Stop Weight Loss in Post Bariatric Surgery

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Very low calorie ketogenic diet
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ABSTRACT

Background: Long term after bariatric surgery stop weight loss (WL); weight regain (WR) may happen. Very low-calorie ketogenic diet (VLCKD) is an effective method for them.

Methods: We investigated 89 patients. Forty patients did not have surgery (all patients were women). Forty-nine patients had surgery (30 bypasses, 19 sleeves). Ten men and 39 women were in this group. All patients followed for one month with VLCKD in 3 phases.

Results: Average initial body weight (BW) before VLCKD was 102±5 kg; while average BW after VLCKD was 90±5kg. Mean average weight loss was 5-10±6 kg. Their size decreased in both groups significantly .The adherence of VLCKD in surgery group was significantly more than the other group.

Conclusion: VLCKD is an effective diet for long term post bariatric surgery.

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POSTER

Targeting Adipose Tissue Senescence and Mitochondrial Uncoupling in Severe Obesity: A Systematic Review and Meta-Analysis of Clinical Thermogenic Energy Expenditure Biomarkers

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ARTICLE INFO

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Adipose tissue senescence
Mitochondrial uncoupling
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ABSTRACT

Background: Severe obesity features progressive adipose tissue dysfunction, cellular senescence, and suppressed mitochondrial uncoupling. This systematic review and meta-analysis quantified clinical evidence regarding the association between adipose tissue senescence markers, uncoupling protein-1 (UCP-1) expression, and resting energy expenditure (REE) in severe obesity.

Methods: Adhering to Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines, a comprehensive search across PubMed, Embase, and Scopus up to October 2026 identified eligible clinical studies reporting quantitative adipose tissue senescence (p16INK4a, p21, SASP factors), UCP-1 level, and indirect calorimetry-measured REE in adults with class III obesity [body mass index (BMI)≥40 kg/m²]. Random-effects meta-analyses could pool weighted mean differences and correlation coefficients (r).

Results: Analysis of 14 clinical cohorts (1,842 participants) demonstrated that advanced adipose tissue senescence was strongly and inversely correlated with UCP-1 expression in visceral fat (r=−0.62, p<0.001). Patients with class III obesity exhibited suppressed thermogenic capacity, where a 2-fold increase in local p16INK4a expression corresponded to a 14.3% reduction (95%CI: −18.2%-−10.4%) in adjusted REE per kilogram of fat-free mass. Furthermore, senescence mitigation strategies were associated with metabolic restoration, increasing measured REE by an average of 168.4±24.1 kcal/day (p<0.01). Between-trial heterogeneity was moderate (I2=48.2%).

Conclusion: Adipose tissue cellular senescence significantly impairs mitochondrial uncoupling and suppresses thermogenic energy expenditure in severe obesity. Combining senolytic clearance with metabolic activation offers a promising therapeutic paradigm for restoring energy homeostasis.

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POSTER

Cardiometabolic Effects of Ketogenic, Paleolithic, and Low-Glycemic-Index Diets in Obesity: A Critical Appraisal of Randomized-Trial Evidence

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ARTICLE INFO

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Cardiometabolic risks
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Paleolithic diet
Glycemic index

ABSTRACT

Background: Dietary interventions are central to obesity management, yet their comparative cardiometabolic effects remain challenging to interpret due to differing trial populations, comparator diets, and durations. This review critically appraised randomized-trial evidence regarding ketogenic, Paleolithic, and low-glycemic-index or low-glycemic-load diets, focusing on their applicability to severe obesity.

Methods: Four published evidence syntheses of randomized trials were examined. Reported estimates for body weight, triglycerides, low-density lipoprotein cholesterol (LDL-C), and metabolic markers were evaluated alongside eligibility criteria and comparator designs, without conducting new pooled analyses or indirect comparisons.

Results: A meta-analysis comparing ketogenic versus control diets reported a mean body weight difference of −2.59 kg (95%CI: −3.90-−1.28; I2=87.4%); a network meta-analysis found higher LDL-C with ketogenic diets versus low-fat, moderate-carbohydrate diets (mean difference: 0.44 mmol/L; 95%CI: 0.13-0.74). For Paleolithic diets, a meta-analysis in metabolic disorders reported reduced triglycerides versus controls (WMD: −0.29 mmol/L; 95%CI: −0.42-−0.16). A Cochrane review found little to no weight difference between low-glycemic-index/load and higher-glycemic-index/load diets (mean difference: −0.82 kg; 95%CI: −1.92-0.28). These heterogeneous estimates preclude ranking the diets for class III obesity adults.

Conclusion: Available syntheses indicated distinct metabolic benefits and trade-offs. Direct comparative evidence specific to class III obesity is insufficient to establish a superior dietary pattern, highlighting the need for standardized future trials assessing sustained cardiometabolic outcomes.

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POSTER

Preserving Skeletal Muscle Mass and Visceral Adipose Mobilization during Incretin-Induced Rapid Weight Loss: A Systematic Review of High-Intensity Interval Training versus Progressive Resistance Protocols

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Body composition
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ABSTRACT

Background: Potent incretin mimetics (Glucagon-like peptide-1 (GLP-1) and dual Gastric inhibitory polypeptide (GIP) receptor agonists) induce substantial weight reduction, yet 25% to 40% of this decrement comprises fat-free mass (FFM), precipitating sarcopenia and metabolic decline. Exercise co-interventions serve as vital countermeasures. This systematic review evaluated the distinct impacts of progressive resistance training (PRT) versus high-intensity interval training (HIIT) on preserving skeletal muscle and mobilizing visceral adipose tissue (VAT) during incretin-mediated weight loss.

Methods: Adhering to Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) 2020 guidelines, databases (PubMed, Scopus, Web of Science, Cochrane CENTRAL) were searched through October 2026. Eligible randomized controlled trials (RCTs) evaluated adults undergoing GLP-1 therapy or rapid weight loss combined with structured PRT, HIIT, or non-exercise controls over ≥12 weeks. Primary endpoints were changes in lean tissue (Dual Energy X-Ray Absorptiometry (DXA)/magntic resonance imaging (MRI)) and VAT volume, pooled using random-effects models.

Results: Seventeen RCTs (1,842 participants) met criteria. Compared to inactivity, PRT superiorly mitigated FFM depletion, preserving +1.84 kg (95%CI: 1.21 to 2.47 kg; $p<0.001$) of appendicular muscle and reducing relative lean loss from 31.4%-12.8%. Conversely, HIIT drove robust central adiposity reduction, decreasing VAT volume by −24.6% (95%CI: −28.9%-−20.3%; $p<0.001$) versus −16.2% with PRT and −11.5% in controls. HIIT significantly increased VO2 peak (+3.42 mL/kg/min; $p<0.01$), whereas PRT uniquely sustained isometric muscle strength (SMD: 0.78; $p<0.001$).

Conclusion: PRT and HIIT confer complementary benefits during incretin-induced weight loss. PRT prevents sarcopenic catabolism, while HIIT accelerates visceral lipid mobilization, supporting combined concurrent exercise prescriptions in obesity management.

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POSTER

Resolution of Metabolic Dysfunction-Associated Steatohepatitis (MASH) and Hepatic Fibrosis Progression in Obese Patients: A Systematic Review of Thyroid Hormone Receptor-β Agonists versus Incretin Co-Agonists

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Fibrosis
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Metabolic dysfunction-associated steatohepatitis
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ABSTRACT

Background: Metabolic dysfunction-associated steatohepatitis (MASH) features severe hepatic inflammation. While weight reduction ameliorates steatosis, reversing established fibrosis remains challenging. Therapies target liver pathways via thyroid hormone receptor-beta (THR-β) activation or multi-incretin orchestration. This review evaluated selective THR-β agonist resmetirom versus dual/triple incretin co-agonists (tirzepatide, retatrutide) on MASH resolution and fibrosis.

Methods: Adhering to PRISMA guidelines, databases (PubMed, Scopus, Web of Science, CENTRAL) were searched through late 2026 for randomized trials evaluating adults with biopsy-proven MASH (F1–F3) or severe steatosis. Primary endpoints were MASH resolution without worsening fibrosis and fibrosis improvement (ge1 stage).

Results: Ten trials (4,218 participants) were synthesized. Resmetirom (80-100 mg) achieved histological MASH resolution in 25.9-29.9% versus 9.7% for placebo ($p<0.001$), with fibrosis improvement in 24.2-25.9% versus 14.2% ($p<0.001$), and reduced LDL-C (−16.3%). Conversely, tirzepatide achieved MASH resolution in up to 73.3% (RR: 5.48; 95%CI: 3.12-9.64) alongside profound weight loss (−15.7%-−20.9%) and steatosis reduction (−64.5%). Fibrosis regression occurred in 51.0-54.9% of tirzepatide groups versus 29.7% for placebo. Retatrutide yielded liver fat reductions up to −82.4%.

Conclusion: Both classes showed robust efficacy. Resmetirom conferred direct anti-fibrotic actions independent of weight loss, whereas incretin co-agonists drive pan-metabolic clearance and steatosis depletion. Combining THR-β agonism with incretin orchestration presents a compelling MASH therapy.

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POSTER

Evaluating Correlation of Body Composition Parameters with Metabolic Syndrome Variables: A Cohort Study

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ABSTRACT

Background: Metabolic syndrome (MetS, visceral obesity, dyslipidemia, hyperglycemia hypertension) is the most important public health challenges worldwide. This study was conducted with the aim of understanding relationship between body composition parameters and MetS variables in different genders to improve educational plans related to these patients.

Methods: A population-based study of 1201 subjects aged 24 to 65 years including men (49.2%), women (50.8%) who participated in the cohort study of Shiraz medical staff was employed. The body fat mass, trunk and arm and leg fat mass, visceral fat area, fat-free mass, total body water, skeletal muscle mass, soft lean mass, body cell mass, circumstance of hip and phase angle were measured.

Results: Abnormal triglyceride in women showed an increasing trend with increasing body mass index and fat mass of the whole body, pelvic, abdominal circumference, regarding in fasting blood sugar with an increase in upper body fat including arms and abdomen an increasing morbidly trend was observed. Also high-density lipoprotein showed a disproportionate effect with lean mass and body cell mass that indicated a protective effect. In addition, the abdominal circumference, blood pressure showed positive effects and a direct relationship with body fat mass in both men and women and odds ratios of body fat mass, arm fat mass, were related to high triglyceride, fasting glucose, and waist circumference.

Conclusion: Our results showed that there might be a potential association between body composition parameters and odds of MetS components.

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POSTER

Prevalence of Metabolic Syndrome and Its Association with Sociodemographic Characteristics among Employees of Qazvin University of Medical Sciences: A Cross-Sectional Study

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ABSTRACT

Background: Metabolic syndrome (MetS) is a major public health concern associated with increased risks of cardiovascular diseases and type 2 diabetes. This study aimed to determine the prevalence of MetS and its associations with sociodemographic characteristics among employees of Qazvin University of Medical Sciences, Iran.

Methods: This cross-sectional study used baseline data from the Qazvin University of Medical Sciences Employee Health Cohort, including 1,097 employees. MetS was defined according to criteria validated for the Iranian population, requiring at least three of five components including waist circumference ≥95 cm in both sexes, elevated triglycerides (≥150 mg/dL) or relevant medication use, elevated blood pressure (≥130/85 mmHg) or antihypertensive medication use, fasting blood glucose ≥100 mg/dL or glucose-lowering medication use, and low HDL-C (<40 mg/dL in men and <50 mg/dL in women) or relevant medication use. Independent-samples t-test and chi-square test were used for statistical analyses.

Results: The prevalence of MetS was 34.0% (n=373). Abdominal obesity was the most prevalent component (60.4%), followed by low high density lipoprotein choletrol (HDL-C) (57.0%), hypertriglyceridemia (36.2%), elevated fasting blood glucose (33.0%), and elevated blood pressure (11.5%). Participants with MetS were older than those without MetS (42.16±7.83 vs. 39.51±7.84 years, $p<0.001$). MetS prevalence was significantly higher in men than women (41.2% vs. 24.4%, $p<0.001$) and among individuals with lower educational attainment ($p<0.001$).

Conclusion: MetS affected approximately one-third of employees. Older age, male sex, and lower educational attainment were significantly associated with higher prevalence. Workplace-based screening and targeted preventive interventions are recommended, particularly for socioeconomically vulnerable employee groups.

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Poster

Association between Dietary Phytochemical Index and Metabolic Syndrome among Employees of Qazvin University of Medical Sciences: A Cross-Sectional Study

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ABSTRACT

Background: Dietary phytochemicals are bioactive plant-derived compounds that may improve metabolic health through antioxidant and anti-inflammatory effects. However, evidence regarding their association with metabolic syndrome (MetS) remains limited. This study aimed to investigate the association between the dietary phytochemical index (DPI) and MetS among employees of Qazvin University of Medical Sciences, Iran.

Methods: This cross-sectional study used baseline data from the Qazvin University of Medical Sciences Employee Health Cohort, including 1,097 employees. Dietary phytochemical intake was assessed using DPI, and participants were categorized into tertiles. MetS was defined as the presence of at least three of five components including abdominal obesity, elevated triglycerides, elevated blood pressure, elevated fasting blood glucose, and low high-density lipoprotein cholesterol. Logistic regression was performed using three models of unadjusted, adjusted for total energy intake, and fully adjusted for energy intake, age, sex, educational level, and physical activity.

Results: In the fully adjusted model, participants in the second DPI tertile had 34% lower odds of MetS than those in the highest tertile (OR: 0.66, 95%CI: 0.48-0.92, p=0.01). A similar association was observed after adjustment for energy intake alone (OR: 0.67, 95%CI: 0.49-0.92, p=0.01). However, the lowest tertile was not significantly associated with MetS (OR: 0.77, 95%CI: 0.56-1.07, p=0.13). These findings suggest a non-linear association.

Conclusion: Moderate DPI level was associated with lower odds of MetS compared with the highest levels.

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POSTER

Effects of Melatonin Supplementation on Biomarkers of Exercise-Induced Muscle Damage: A Systematic Review and Meta-Analysis of Randomized Controlled Trials

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ARTICLE INFO

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Melatonin
Athletes
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Lactate dehydrogenase

ABSTRACT

Background: Intense exercise causes muscle damage and elevates circulating biochemical biomarkers. Melatonin possesses potent antioxidant and anti-inflammatory properties that may attenuate cellular stress and promote post-exercise recovery. This systematic review and meta-analysis evaluated the effects of melatonin supplementation on post-exercise muscle damage biomarkers in healthy individuals.

Methods: Comprehensive searches were conducted across PubMed, Scopus, and Web of Science up to February 2025 for randomized controlled trials evaluating melatonin supplementation versus control on muscle damage biomarkers (PROSPERO: CRD420251022730). Eleven RCTs (324 participants) met inclusion criteria. Random-effects models in Stata version 17 determined weighted mean differences (WMDs) and 95% confidence intervals (95%CIs) for creatine kinase (CK), lactate dehydrogenase (LDH), and blood lactate.

Results: Melatonin supplementation significantly reduced post-exercise CK (WMD=−58.32 IU/L, 95%CI: −97.73-−22.91; p=0.001) and LDH levels (WMD=-22.76 U/L, 95%CI: −29.27-−16.24; p<0.001). Subgroup analysis demonstrated greater CK reductions in trained athletes (WMD=−82.05, p<0.001), intervention durations ≥6 days, and doses >5 mg/day. Conversely, melatonin exerted no significant effect on post-exercise blood lactate levels (WMD=−0.12, p=0.166).

Conclusion: Melatonin supplementation effectively mitigates post-exercise muscle damage biomarkers (CK and LDH) in healthy trained individuals, particularly during multi-day administration and higher dosages, without modulating post-exercise blood lactate level.

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POSTER

A Different Perspective on Childhood Obesity: An Educational Animation of the Illustrated Book and the Fast-Food Court

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ARTICLE INFO

Keywords:
Childhood obesity
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ABSTRACT

Background: Childhood obesity education can begin with familiar food choices and eating habits, without judging children by their weight or appearance. This project presents two educational materials designed to encourage discussion of food choices, portion size, beverages, and frequency of consumption.

Methods: Two complementary materials were prepared including the illustrated storybook and the Fast-Food Court, authored by Seyed Moayed Alavian, and an educational animation produced by Afshin Aalishah. The story used humorous detective and courtroom scenes to help children examine the components of a meal and reflect on eating habits. The animation used moving images, sound, and narration to introduce similar topics. Both materials were intended for use in homes, schools, and health-education settings.

Results: The illustrated book and educational animation have been completed. They provided story-based and audiovisual formats, respectively, with prompts that can support discussion among children, parents, and educators.

Conclusion: These materials offered complementary ways to start child-centered conversations about food choices and eating habits. Their educational effectiveness has not yet been evaluated; pilot use and feedback from children, parents, and educators are proposed.

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POSTER

Weight Loss and Long-Term Outcomes of Sleeve Gastrectomy Compared with Incretin-Based Treatments: A Systematic Review

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ARTICLE INFO

Keywords:
Sleeve gastrectomy
Incretin
Semaglutide
Tirzepatide
Weight

ABSTRACT

Background: Sleeve gastrectomy (SG) and incretin-based treatments, including liraglutide, semaglutide, and tirzepatide, are key obesity therapies. This review compared their weight-loss efficacy and durability.

Methods: PubMed was searched for studies published from 2015 to 2026. Randomized trials, meta-analyses, and long-term cohort studies comparing SG or other metabolic/bariatric surgeries with incretin-based treatments in adults with obesity were included. Outcomes were percentage total body weight loss (%TWL), weight regain after discontinuation, and cardiometabolic changes over 12-72 months. Estimates were pooled using random-effects network meta-analysis.

Results: A network meta-analysis of 30 randomized controlled trials of 20,015 participants found greater total body weight loss with metabolic/bariatric surgery than Glucagon-like peptide-1 (GLP-1) receptor agonists during the first 104 weeks (difference: −10.3%). Surgery also produced greater reductions in body mass index (BMI) (−4.5 kg/m²), waist circumference (−12.6 cm), and HbA1c (−0.5%); this difference persisted after 104 weeks (−9.1%). At 12 months, SG produced 25-30% total body weight loss. Weight loss was 8% with liraglutide, 15% with semaglutide, and 21% with tirzepatide at 72 weeks. After tirzepatide discontinuation, participants regained 14.0% of weight within 52 weeks, whereas continued treatment produced further loss (−19.4%; 95%CI: −21.2-−17.7). Semaglutide maintained 10% weight loss and reduced major cardiovascular events by 20% over four years. Post-surgical weight loss was maintained for 5-10 years.

Conclusion: SG appears to produce greater and more durable weight loss than incretin-based treatments. Medications are less invasive and discontinuable, but weight regain may occur after cessation. Treatment should be individualized; sequential surgery and pharmacotherapy may be considered.

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Poster

Association of Glycemic Index, Glycemic Load, and Carbohydrate Quality Index with Obesity and Novel Anthropometric Indices: Findings from a Cohort Study

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ABSTRACT

Background: Obesity remains a major public health issue in Iran, with adult prevalence of obesity ~17-22%, driven by dietary transitions toward energy-dense, low-quality foods. Carbohydrate quality, assessed by glycemic index (GI), glycemic load (GL), and Carbohydrate Quality Index (CQI), has been linked to adiposity, yet evidence in Iranian populations using novel anthropometric indices is limited.

Methods: Baseline data from the PERSIAN Cohort Study at Mashhad University of Medical Sciences, Iran (n=6,464) were analyzed. Dietary GI, GL, and CQI were derived from a validated 130-item food frequency questionnaire (FFQ). Outcomes were obesity [body mass index (BMI)≥30 kg/m²] and high levels of BRI, AVI, A Body Shape Index (ABSI), and VAI. Logistic regression models adjusted for age, sex, physical activity, socioeconomic status, energy intake, and carbohydrate quantity were used.

Results: Associations of GI and GL with adiposity outcomes were inconsistent and largely attenuated after multivariable adjustment. GL showed associations with high BRI and obesity only in unadjusted or partially adjusted models. GI was associated with high ABSI in one adjusted model and with obesity in the fully adjusted model. CQI was associated with high Body Roundness Index (BRI) only in the crude model. Continuous analyses revealed positive associations between GI and both ABSI and VAI.

Conclusion: In this cross-sectional study of Iranian adults, associations of GI, GL, and CQI with obesity and novel anthropometric indices were generally weak and sensitive to covariate adjustment. Longitudinal research is needed to clarify the role of carbohydrate quality in adiposity.

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Poster

The effect of Soy vs. Chicken-Egg High-Protein Meals and Postprandial Blood Pressure in Overweight Men: A Crossover Trial

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ABSTRACT

Background: Evidence on how protein source affects postprandial blood pressure (BP) is inconsistent. We compared a soy-based and a chicken-, egg- and yogurt-based high-protein breakfast in overweight and obese men.

Methods: : In this randomized crossover trial (IRCT20211230053570N1), 48 overweight/obese men (age 33.5±8.4 years; BMI 29.2±2.3 kg/m²) consumed two energy-, macronutrient- and fiber-matched breakfasts (textured soy vs. Olivier-style chicken, egg and yogurt salad) separated by a 7-10-day washout. Brachial and central systolic/diastolic BP [b-systolic blood pressure (bSBP), b-diasolic blood pressure (bDBP), cSBP, cDBP] were measured by SphygmoCor XCEL at fasting and 30, 90, 210 and 330 min postprandially. Generalized estimating equations were used to test the protein source×time interaction, adjusting for baseline values.

Results: No carry-over effect was found. The postprandial bDBP pattern differed between meals (interaction p=0.02). After the animal-protein meal, bDBP fell to 70.9 mmHg at 30 min and then rose above baseline by 330 min, whereas it remained stable after the soy meal. At 30 min, bSBP was higher after the animal-protein meal (122.5 vs. 120.4 mmHg, p=0.02). At 330 min, bDBP (74.4 vs. 72.7 mmHg) and cDBP (74.9 vs. 73.2 mmHg) were higher after the animal-protein meal (both p=0.01). Patterns of bSBP (p=0.20), cSBP (p=0.96) and cDBP (p=0.07) did not differ.

Conclusion: The two meals produced statistically different; but small postprandial BP patterns, mainly in brachial diastolic BP, unlikely to be clinically meaningful.

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