

Obesity and its Relationship with Dietary Inflammatory Index (DII): A Systematic Review

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Abstract

Abstract

Background: The Dietary Inflammatory Index (DII) estimates the inflammatory potential of habitual diet; higher scores indicate a more pro-inflammatory pattern. Obesity is associated with chronic low-grade inflammation, and diet-related inflammation may influence body weight, fat distribution, and cardiometabolic risk.

Objectives: To systematically review the association between DII (or energy-adjusted DII) and obesity-related outcomes like body mass index (BMI), overweight/obesity, waist circumference, body fat percentage, visceral adiposity, obesity phenotypes, and obesity-related metabolic and inflammatory markers — among adults and adolescents.

Methods: This review followed a PRISMA 2020-informed structure. Eligible studies included human participants and reported DII or E-DII in relation to anthropometric, body-composition, obesity-phenotype, metabolic, or inflammatory outcomes. Twenty studies meeting these criteria were retained after removing duplicate, incomplete, and non-primary entries from an earlier draft. Data were synthesised narratively owing to substantial heterogeneity in population, dietary assessment method, DII calculation, and outcome definition; a study-selection flow diagram is presented, and formal risk-of-bias tools (Newcastle-Ottawa Scale for cohort/case-control studies, AXIS for cross-sectional studies) are proposed for completion.

Results: The 20 included studies were cross-sectional, cohort, secondary-survey, or clinical designs from Europe, Asia, North America, Latin America, and the Middle East. Most studies reported that higher DII was associated with higher BMI, waist circumference, body fat, central obesity, obesity phenotypes, metabolic syndrome, or inflammatory biomarkers (CRP, IL-6, TNF- α , leptin). Two studies reported null findings for BMI or body fat, and one clinical (pre-surgical) sample showed an inverse DII–BMI association.

Conclusions: A more pro-inflammatory dietary pattern is consistently associated with adverse obesity-related anthropometric and metabolic outcomes, but the predominantly cross-sectional evidence base does not establish causation. Prospective cohort studies and randomised dietary interventions using standardised DII and obesity definitions are needed.

Keywords: Dietary Inflammatory Index; obesity; body mass index; central obesity; inflammation; systematic review.

Introduction

Obesity has emerged as one of the most significant public health challenges of the twenty-first century. It is a chronic, multifactorial disease characterized by excessive accumulation of body fat that adversely affects health and increases the risk of numerous non-communicable diseases (NCDs), including type 2 diabetes mellitus, cardiovascular disease, hypertension, dyslipidaemia, non-alcoholic fatty liver disease, and several cancers. The World Health Organization estimates that more than one billion people worldwide are living with obesity, and its prevalence continues to increase across both developed and developing countries, making obesity a major contributor to premature mortality and healthcare expenditure.

The increasing prevalence of obesity cannot be explained solely by excessive energy intake and reduced physical activity. Recent evidence has demonstrated that obesity is accompanied by chronic low-grade systemic inflammation, which plays a pivotal role in the development of insulin resistance, endothelial dysfunction, metabolic syndrome, and cardiovascular complications. Adipose tissue, particularly visceral adipose tissue, functions as an active endocrine organ that secretes numerous pro-inflammatory cytokines, including tumour necrosis factor-alpha (TNF- α), interleukin-6 (IL-6), and C-reactive protein (CRP). Persistent elevation of these inflammatory mediators contributes to adipocyte dysfunction, altered glucose metabolism, and progressive weight gain.

Diet is one of the most important modifiable determinants of systemic inflammation. Habitual consumption of refined carbohydrates, processed foods, sugar-sweetened beverages, and foods rich in saturated and trans fats promotes oxidative stress and inflammatory responses, whereas diets rich in fruits, vegetables, whole grains, legumes, nuts, and omega-3 fatty acids exert anti-inflammatory effects. Dietary patterns therefore influence obesity not only through energy balance but also through inflammatory pathways involving immune activation, oxidative stress, gut microbiota, and adipose tissue metabolism.

To quantify the inflammatory potential of habitual dietary intake, Shivappa and colleagues developed the Dietary Inflammatory Index (DII), a literature-derived scoring system based on evidence linking 45 dietary components with established inflammatory biomarkers. Positive DII scores indicate a pro-inflammatory diet, whereas negative scores reflect an anti-inflammatory dietary pattern. Since its development, the DII has been extensively applied in nutritional epidemiology to investigate the association between dietary inflammation and chronic diseases, including obesity, cardiovascular disease, diabetes, cancer, and metabolic syndrome. The energy-adjusted Dietary Inflammatory Index (E-DII) further improves comparability across populations by accounting for total energy intake.

Over the past decade, numerous epidemiological studies have examined the relationship between the DII and obesity-related outcomes. Most studies have demonstrated that individuals consuming more pro-inflammatory diets tend to have higher body mass index (BMI), greater waist circumference, increased body fat percentage, central obesity, and an elevated risk of metabolically unhealthy obesity. Higher DII scores have also been associated with increased circulating concentrations of inflammatory biomarkers such as CRP, IL-6, TNF- α , and leptin, supporting the biological plausibility of a diet–inflammation–obesity pathway. However, some studies have reported inconsistent or null findings, which may reflect differences in study design, population characteristics, dietary assessment methods, obesity definitions, and adjustment for confounding variables.

Although substantial evidence exists from Europe, North America, Latin America, and the Middle East, evidence from India remains limited. Indian populations possess unique dietary habits, cultural food

practices, and the Asian Indian phenotype, characterised by greater visceral adiposity and higher cardiometabolic risk at lower BMI values than Western populations. Consequently, obesity in India is assessed using lower BMI cut-offs than those recommended internationally. Despite the growing burden of obesity and rapid nutritional transition in India, relatively few studies have evaluated dietary inflammatory potential using the DII, and evidence from Eastern India, particularly West Bengal, is scarce.

Therefore, a comprehensive synthesis of the available evidence is necessary to understand the relationship between dietary inflammatory potential and obesity-related outcomes. This systematic review aims to critically evaluate the existing literature examining the association between the Dietary Inflammatory Index and obesity, including body mass index, central obesity, body fat percentage, obesity phenotypes, and obesity-related inflammatory and metabolic markers. The findings of this review provide the scientific foundation for the present study investigating the relationship between the Dietary Inflammatory Index and obesity among adults residing in a selected urban community of Kolkata.

Methodology

This systematic review was conducted in accordance with the **Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) 2020** guidelines to synthesize evidence on the association between the **Dietary Inflammatory Index (DII)** or **Energy-adjusted Dietary Inflammatory Index (E-DII)** and obesity-related outcomes.

A comprehensive literature search was performed in **PubMed/MEDLINE, Scopus, Web of Science, ScienceDirect, and Google Scholar** for studies published between **2015 and 2025**. Additional relevant studies were identified through manual screening of reference lists. The search strategy combined MeSH terms and free-text keywords related to *Dietary Inflammatory Index, DII, E-DII, obesity, body mass index, waist circumference, body fat, adiposity, and metabolic syndrome* using Boolean operators.

Eligible studies included peer-reviewed observational studies involving human participants that evaluated DII or E-DII in relation to obesity-related outcomes, including BMI, overweight/obesity, waist circumference, body fat percentage, central obesity, obesity phenotypes, or inflammatory and metabolic biomarkers. Reviews, editorials, conference abstracts, animal studies, duplicate publications, and studies without full text or sufficient methodological information were excluded.

Records were screened according to the **PRISMA 2020** framework. After removal of duplicates, titles and abstracts were screened, followed by full-text assessment for eligibility. A total of **20 primary studies** met the inclusion criteria and were included in the final review.

Data were extracted using a standardized form that captured the author, publication year, country, study design, sample size, study population, dietary assessment method, type of DII, obesity-related outcomes, and key findings. Methodological quality was assessed using the **Newcastle–Ottawa Scale (NOS)** for cohort and case-control studies and the **Appraisal Tool for Cross-Sectional Studies (AXIS)** for cross-sectional studies.

Owing to heterogeneity in study design, participant characteristics, dietary assessment methods, and outcome measures, a **narrative synthesis** was undertaken. Findings were synthesized under five themes:

1. DII and general obesity (BMI),
2. central obesity and body composition,
3. obesity phenotypes,

4. inflammatory and cardiometabolic biomarkers, and
5. studies reporting inconsistent findings.

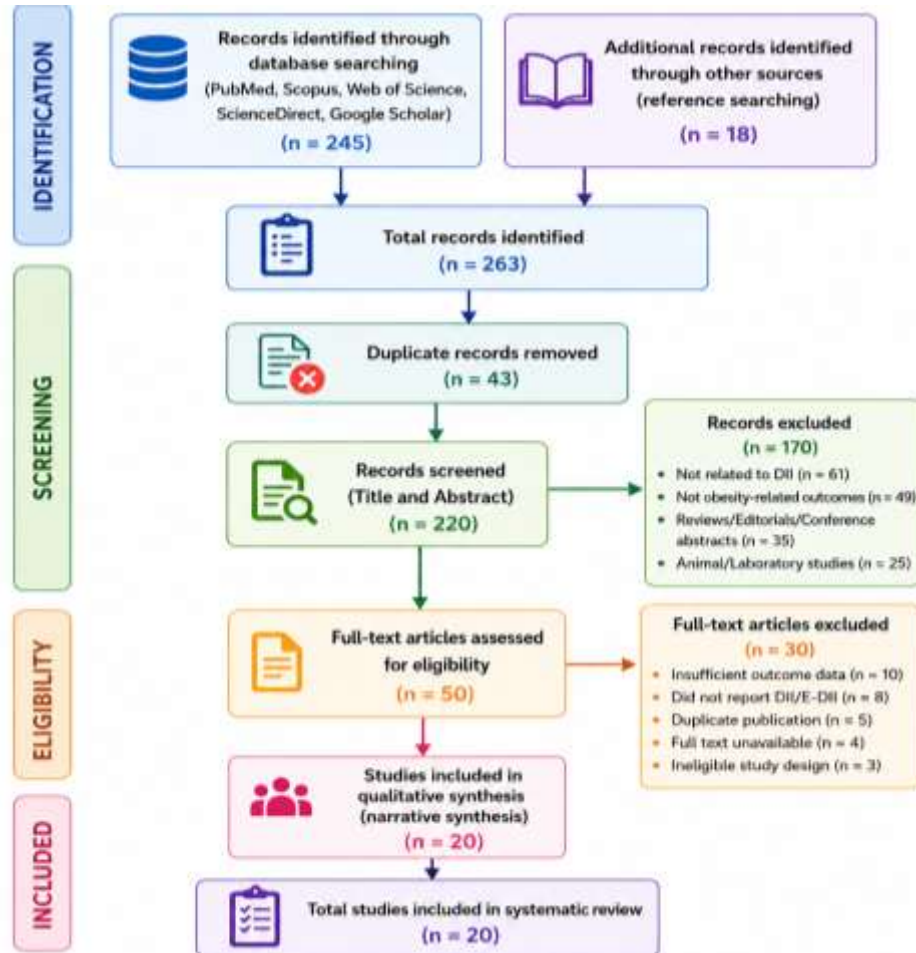


Fig. 1 PRISMA flow diagram

Figure 1. PRISMA 2020 flow diagram illustrating the process of identification, screening, eligibility assessment, and inclusion of studies in the present systematic review. A total of 245 records were identified through database searching and manual reference screening. After removal of duplicates and screening of titles and abstracts, 50 full-text articles were assessed for eligibility. Following application of the predefined inclusion and exclusion criteria, 20 studies were included in the final qualitative (narrative) synthesis. No meta-analysis was performed because of substantial heterogeneity in study design, participant characteristics, dietary assessment methods, DII calculation procedures, and obesity outcome measures.

Association of Dietary Indices with Obesity

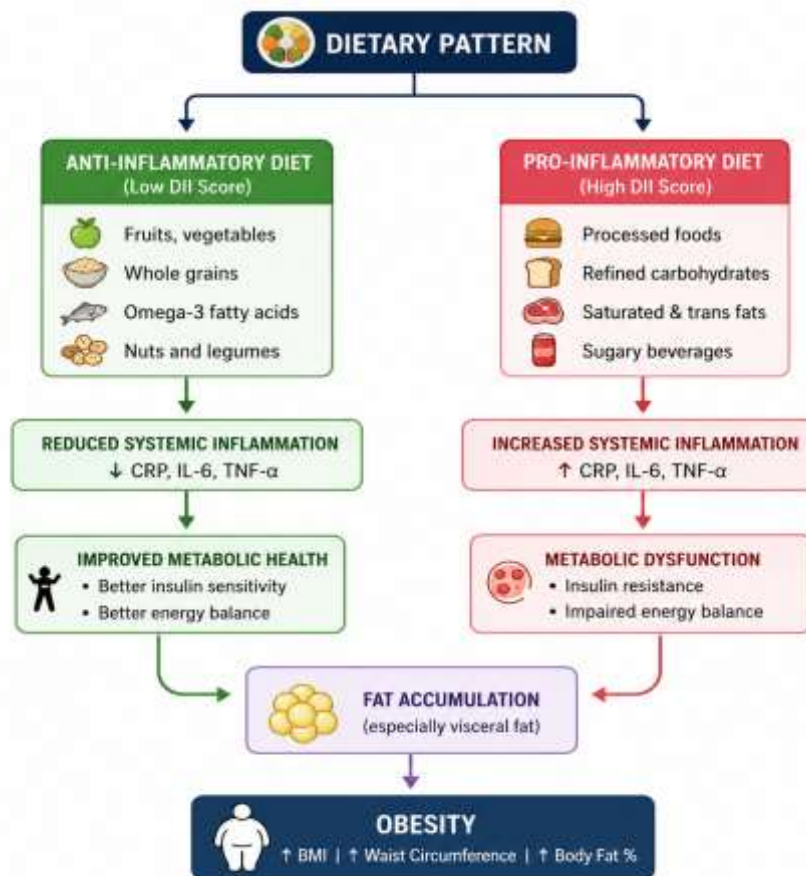


Fig. 2 Association of dietary indices with obesity

The review findings showed a significant association between dietary inflammatory indices and obesity-related outcomes. Higher Dietary Inflammatory Index (DII) scores, indicating pro-inflammatory dietary patterns, were associated with increased body mass index (BMI), waist circumference, body fat percentage, and central obesity. Diets rich in processed foods, refined carbohydrates, saturated fats, and sugary beverages contributed to increased systemic inflammation and metabolic dysfunction. In contrast, anti-inflammatory diets rich in fruits, vegetables, whole grains, legumes, nuts, and omega-3 fatty acids were linked with lower inflammation and better weight management outcomes. These findings suggest that dietary inflammatory potential plays an important role in the development and prevention of obesity.

Results

The study selection process was conducted according to the PRISMA 2020 guidelines. A comprehensive search of electronic databases identified potentially relevant studies investigating the association between the Dietary Inflammatory Index (DII) and obesity-related outcomes. After removal of duplicate records, titles and abstracts were screened for eligibility. Full-text articles meeting the inclusion criteria were further assessed. Following the screening and eligibility assessment, 20 primary studies were included in the final qualitative (narrative) synthesis. The study selection process is illustrated in the PRISMA flow diagram (Figure 1).

A total of 20 studies published between 2015 and 2024 were included in this systematic review. The studies represented diverse geographical regions, including Europe, Asia, North America, Latin

America, and the Middle East. Study designs comprised predominantly cross-sectional studies, together with cohort studies, national health survey analyses, and clinical observational studies. Sample sizes ranged from 73 to 10,723 participants.

Most studies assessed dietary intake using validated Food Frequency Questionnaires (FFQs), while several employed 24-hour dietary recalls. The Dietary Inflammatory Index (DII) or Energy-adjusted Dietary Inflammatory Index (E-DII) was calculated to estimate the inflammatory potential of habitual dietary intake. Obesity-related outcomes included body mass index (BMI), overweight and obesity prevalence, waist circumference, waist-to-height ratio, body fat percentage, visceral adiposity, obesity phenotypes, metabolic syndrome, and inflammatory biomarkers such as C-reactive protein (CRP), interleukin-6 (IL-6), tumour necrosis factor-alpha (TNF- α), and leptin. Overall, most studies demonstrated a positive association between higher DII scores and adverse obesity-related anthropometric and metabolic outcomes.

S N	Author (Year)	Country	Study Design	Sample Size	Dietary Assessment	Main Outcome	Key Findings
1	Ruiz-Canela et al. (2015)	Spain	Cross-sectional	7,236	137-item FFQ	BMI, WC, WHtR	Higher DII associated with higher BMI, WC and WHtR
2	Camargo-Ramos et al. (2017)	Colombia	Observational	90	24-hour recall	Body composition	Lower DII associated with better cardiometabolic profile
3	Park et al. (2018)	South Korea	Cross-sectional	1,344	24-hour recall	Osteopenic obesity	Higher DII increased risk of osteopenic obesity
4	Kim et al. (2018)	South Korea	National survey	9,291	24-hour recall	Metabolic syndrome	Higher DII associated with central obesity and metabolic syndrome
5	Phillips et al. (2018)	Ireland	Cross-sectional	1,992	FFQ	Inflammatory markers	Higher E-DII associated with CRP, IL-6, TNF- α and MetS
6	Muhamad et al. (2019)	Indonesia	Cross-sectional	503	FFQ	BMI, WC	No significant association with BMI; higher leptin observed
7	Oliveira et al. (2020)	Brazil	cross-sectional	3,151	FFQ	Overweight /Obesity	Higher DII associated with greater obesity

S N	Author (Year)	Country	Study Design	Sample Size	Dietary Assessment	Main Outcome	Key Findings
							prevalence
8	Saghafi-Asl et al. (2021)	Iran	Cross-sectional	151	168-item FFQ	BMI, Fat mass	Western diet associated with higher DII and obesity
9	Jurado-Fasoli et al. (2020)	Spain	Cross-sectional	73	FFQ	BMI, S-Klotho	Association disappeared after BMI adjustment
10	Haß et al. (2022)	Germany	Cross-sectional	138	24-hour recall	Fat mass	Higher DII associated with greater fat mass and WHtR
11	Gholamalizadeh et al. (2022)	Iran	Cross-sectional	535	FFQ	Body fat %	Higher DII increased body fat percentage
12	Zhang et al. (2022)	USA	NHANES	8,180	Dietary recall	Metabolic syndrome	Higher DII associated with BMI, WC and MetS
13	Shi et al. (2023)	USA	NHANES	10,723	Dietary recall	Overweight /Obesity	Higher DII increased odds of overweight and obesity
14	Rahimlou et al. (2024)	Iran	Cross-sectional	2,045	FFQ	BMI, WC	Positive association with BMI, WC, WHtR and TyG index
15	Pasdar et al. (2024)	Iran	Cross-sectional	5,956	FFQ	Obesity phenotypes	Higher DII associated with metabolically healthy and unhealthy obesity
16	Farhangi & Najafi (2018)	Iran	Clinical observational	454	FFQ	BMI, CV risk	Higher inflammatory risk despite lower BMI
17	Denova-Gutiérrez et al.	Mexico	Cross-sectional	1,174	FFQ	Type 2 diabetes	Higher DII associated with obesity-related

S N	Author (Year)	Country	Study Design	Sample Size	Dietary Assessment	Main Outcome	Key Findings
	(2018)						metabolic risk
18	Shin et al. (2017)	USA	Cross-sectional	631	24-hour recall	Pre-pregnancy BMI	Higher DII associated with obesity and elevated CRP
19	Corley et al. (2019)	Scotland	Cohort	928	FFQ	CRP, IL-6	Higher E-DII associated with inflammatory biomarkers
20	Kotemori et al. (2021)	Japan	Cross-sectional	6,474	FFQ	CRP	Higher E-DII associated with increased inflammation

Association between DII and General Obesity

Among the included studies, the majority reported that a higher Dietary Inflammatory Index was significantly associated with increased body mass index (BMI), overweight, and obesity. Large population-based studies from Spain, Brazil, the United States, and Iran consistently demonstrated that individuals consuming more pro-inflammatory diets had greater BMI values and higher odds of being overweight or obese. The strongest evidence was provided by the PREDIMED study and NHANES analyses, both of which observed a graded increase in obesity risk across higher DII categories. However, one Indonesian study did not identify a significant association between DII and BMI after adjustment for confounding variables, suggesting that the relationship may vary according to population characteristics and dietary patterns.

Association between DII and Central Obesity and Body Composition

Evidence relating DII to central obesity was more consistent than that for BMI alone. Higher DII scores were associated with increased waist circumference, waist-to-height ratio, body fat percentage, and fat mass across several studies. National surveys from South Korea and cohort studies from Iran demonstrated significant associations between pro-inflammatory diets and measures of abdominal adiposity. Studies involving adolescents and older adults also reported higher body fat percentage and reduced skeletal muscle mass among participants with higher DII scores, indicating that dietary inflammatory potential may influence body composition as well as overall body weight.

Association between DII and Obesity Phenotypes

Recent evidence suggests that dietary inflammation is associated not only with obesity but also with different obesity phenotypes. The RaNCD cohort study demonstrated that higher DII scores were associated with both metabolically healthy obesity and metabolically unhealthy obesity, with stronger associations observed for the metabolically unhealthy phenotype. Similarly, studies among postmenopausal women reported increased odds of osteopenic obesity and osteosarcopenic obesity

among individuals consuming pro-inflammatory diets. These findings indicate that DII may influence the metabolic characteristics of obesity in addition to adiposity itself.

Association between DII and Inflammatory and Cardiometabolic Markers

Several studies supported the biological plausibility of the DII–obesity relationship by demonstrating positive associations between higher DII scores and inflammatory biomarkers, including CRP, IL-6, TNF- α , leptin, and adverse lipid profiles. Higher DII was also associated with metabolic syndrome, elevated triglycerides, hypertension, insulin resistance, and reduced HDL cholesterol. These findings support the hypothesis that pro-inflammatory dietary patterns contribute to chronic systemic inflammation, which may promote adipose tissue dysfunction and increase cardiometabolic risk.

Studies Reporting Null or Inconsistent Findings

Although the overall direction of evidence supported a positive association between DII and obesity-related outcomes, a small number of studies reported inconsistent findings. One Indonesian study found no significant association between DII and BMI, waist circumference, or body fat percentage, while a clinical study among patients awaiting coronary artery bypass graft surgery observed higher inflammatory risk despite lower BMI. Another study reported that the association between DII and S-Klotho disappeared after adjustment for BMI, suggesting that adiposity itself may mediate the relationship between dietary inflammation and certain biomarkers. These inconsistencies may be explained by differences in study design, participant characteristics, dietary assessment methods, and residual confounding.

Discussion

This systematic review synthesized evidence from 20 primary studies investigating the relationship between the Dietary Inflammatory Index (DII) and obesity-related outcomes among adults and adolescents. Overall, the findings consistently demonstrated that a more pro-inflammatory diet, reflected by higher DII scores, was associated with increased body mass index (BMI), central obesity, body fat percentage, metabolically unhealthy obesity, metabolic syndrome, and elevated inflammatory biomarkers. Although a few studies reported null or inconsistent findings, the overall direction of evidence strongly supports an association between dietary inflammatory potential and obesity-related health outcomes.

The association was observed across diverse populations from Europe, Asia, North America, Latin America, and the Middle East, suggesting that the relationship between dietary inflammation and obesity is consistent despite differences in dietary habits, cultural practices, and socioeconomic conditions. This geographical consistency strengthens the external validity of the available evidence and supports the role of dietary inflammation as an important modifiable risk factor for obesity.

Interpretation of Findings

The present review indicates that diets characterized by higher intakes of processed foods, refined cereals, red and processed meats, sugar-sweetened beverages, and saturated fats generally produce higher DII scores and are associated with adverse obesity-related outcomes. Conversely, dietary patterns rich in fruits, vegetables, legumes, whole grains, fish, nuts, and antioxidant-rich foods are associated with lower DII scores and more favourable anthropometric and metabolic profiles. These findings

suggest that the inflammatory quality of the diet, in addition to total caloric intake, plays an important role in obesity development.

Among the anthropometric measures evaluated, central obesity appeared to show the strongest and most consistent association with dietary inflammatory potential. Measures such as waist circumference, waist-to-height ratio, and body fat percentage demonstrated stronger relationships with DII than BMI alone. This observation is biologically plausible because visceral adipose tissue is metabolically more active than subcutaneous fat and produces higher concentrations of pro-inflammatory cytokines, thereby promoting chronic low-grade systemic inflammation. Consequently, dietary patterns that increase systemic inflammation may contribute more directly to abdominal fat accumulation than to overall body weight.

Several included studies also demonstrated significant associations between higher DII scores and elevated inflammatory biomarkers, including C-reactive protein (CRP), interleukin-6 (IL-6), tumour necrosis factor-alpha (TNF- α), and leptin. These findings provide biological support for the proposed diet–inflammation–obesity pathway. Persistent consumption of pro-inflammatory diets may increase oxidative stress, impair insulin signalling, alter adipokine secretion, and promote chronic inflammation, thereby contributing to obesity and related metabolic disorders.

Comparison with Previous Literature

The findings of the present review are consistent with previous systematic reviews and observational studies that have reported positive associations between higher DII scores and obesity-related outcomes. Most included studies demonstrated that individuals consuming more pro-inflammatory diets had greater odds of overweight or obesity, increased waist circumference, higher body fat percentage, and greater prevalence of metabolic syndrome.

However, the review also identified several studies reporting weak or non-significant associations. These inconsistencies may be attributed to differences in study populations, sample size, dietary assessment methods, DII calculation procedures, obesity definitions, adjustment for confounding variables, and study design. Studies involving younger adults, clinical populations, or relatively homogeneous samples generally reported weaker associations than large community-based investigations.

The predominance of cross-sectional studies also limits the ability to establish temporal relationships between dietary inflammation and obesity. Although higher DII scores were consistently associated with obesity-related outcomes, reverse causation remains possible because individuals with obesity may modify their dietary habits after diagnosis. Therefore, prospective cohort studies and randomized dietary intervention trials are required to establish causal relationships.

Relevance to the Indian Context

Although the association between DII and obesity has been widely investigated internationally, evidence from India remains limited. The available Indian studies suggest that pro-inflammatory dietary patterns are associated with greater adiposity and cardiometabolic risk; however, most have been conducted in specific regions or occupational groups. There remains a lack of community-based evidence from Eastern India.

This limitation is particularly important because Indian populations exhibit the Asian Indian phenotype, characterised by higher body fat percentage and greater visceral adiposity at comparatively lower BMI values than Western populations. Consequently, central obesity may represent a more sensitive indicator

of dietary inflammatory effects among Indian adults. The findings of this review therefore provide a strong scientific rationale for investigating the relationship between Dietary Inflammatory Index and obesity among adults residing in an urban community of Kolkata, where region-specific dietary practices may influence inflammatory dietary exposure.

Strengths of the Review

The present systematic review has several strengths.

- It synthesized evidence from studies conducted across multiple continents, enhancing the generalisability of the findings.
- Only primary research studies were included, reducing duplication of evidence.
- The review examined multiple obesity-related outcomes, including BMI, central obesity, body fat percentage, obesity phenotypes, metabolic syndrome, and inflammatory biomarkers.
- The findings were synthesised using a thematic approach, allowing comparison of evidence across diverse populations and study designs.
- The review followed the PRISMA 2020 reporting framework, improving transparency and methodological rigour.

Limitations

Several limitations should be considered while interpreting the findings.

- Most included studies were cross-sectional, limiting causal inference.
- Dietary intake was predominantly assessed using self-reported food frequency questionnaires or 24-hour dietary recalls, making recall and reporting bias possible.
- The number of dietary components used to calculate DII varied across studies.
- Different obesity definitions and BMI cut-offs reduced comparability between studies.
- Residual confounding due to physical activity, socioeconomic status, smoking, alcohol consumption, sleep, and medication use cannot be excluded.
- Some studies primarily investigated metabolic or inflammatory outcomes rather than obesity itself.
- Because of methodological heterogeneity, quantitative meta-analysis was not feasible.

Implications for Practice and Research

The findings of this review suggest that reducing the inflammatory potential of habitual diets may represent an important strategy for obesity prevention and management. Public health interventions promoting increased consumption of fruits, vegetables, legumes, whole grains, nuts, and fish, together with reduced intake of ultra-processed foods and sugar-sweetened beverages, may contribute to lowering dietary inflammation and improving metabolic health.

Future research should prioritise well-designed prospective cohort studies and randomized controlled trials using standardized DII methodology and Asian-specific obesity criteria. Further community-based studies from different regions of India, particularly Eastern India, are also required to generate context-specific evidence that can inform nutritional policies and obesity prevention programmes.

Conclusion

This systematic review synthesized evidence from 20 primary studies examining the association between

the Dietary Inflammatory Index (DII) and obesity-related outcomes. Overall, higher DII scores, indicative of a pro-inflammatory diet, were consistently associated with increased BMI, central obesity, body fat percentage, metabolically unhealthy obesity, metabolic syndrome, and elevated inflammatory biomarkers, including CRP, IL-6, TNF- α , and leptin.

The association was stronger for central obesity and body fat distribution than for BMI alone, highlighting the potential role of dietary inflammation in visceral adiposity and metabolic dysfunction. However, most included studies were cross-sectional, limiting causal inference, and methodological heterogeneity in dietary assessment and obesity definitions warrants cautious interpretation.

The findings support the promotion of anti-inflammatory dietary patterns, emphasizing fruits, vegetables, whole grains, legumes, nuts, and other nutrient-rich foods, as part of obesity prevention and management strategies. Although international evidence is substantial, research from India, particularly Eastern India, remains limited. Future well-designed prospective cohort studies and randomized controlled trials using standardized DII methodology and Asian-specific obesity criteria are needed to strengthen the evidence base and inform culturally appropriate nutritional interventions.

Recommendations

1. Public health initiatives should encourage the adoption of anti-inflammatory dietary patterns rich in fruits, vegetables, whole grains, legumes, nuts, seeds, and omega-3 fatty acids to support obesity prevention and overall metabolic health.
2. Healthcare professionals and nutritionists should consider incorporating the Dietary Inflammatory Index (DII) into dietary assessment and obesity management strategies in both clinical and community settings.
3. Further longitudinal studies and randomized controlled trials are recommended to establish stronger causal relationships between dietary inflammatory potential and obesity-related outcomes.
4. Nutrition education and awareness programs should be developed to improve public understanding of the relationship between inflammatory dietary patterns and obesity.
5. Standardized approaches for DII calculation and obesity assessment should be encouraged to improve consistency and comparability across future studies.
6. Future research should explore the association between DII and obesity among diverse population groups, including adolescents, older adults, and different ethnic populations.

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