

# INPLASY

## Impact of Fast Food Consumption on Obesity and Overweight among individuals aged 10 years and above: A Systematic Review and Meta-Analysis

INPLASY202460022

doi: 10.37766/inplasy2024.6.0022

Received: 07 June 2024

Published: 07 June 2024

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### ADMINISTRATIVE INFORMATION

**Support -** No.

**Review Stage at time of this submission -** Data analysis.

**Conflicts of interest -** None declared.

**INPLASY registration number:** INPLASY202460022

**Amendments -** This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 07 June 2024 and was last updated on 07 June 2024.

### INTRODUCTION

**Review question / Objective** To systematically review the evidence examining the impact of fast food consumption on obesity and overweight among individuals aged 10 years and above.

**Rationale** In recent years, the global prevalence of obesity and overweight has surged, posing a significant public health challenge due to its multifaceted nature involving genetic, environmental, socio-economic, and behavioral factors (Huang and Hu 2015). Among these factors, dietary habits, especially the consumption of fast food, have been highlighted as a major concern to weight status (Huang and Hu 2015). Fast food, known for its convenience, affordability, and widespread availability, has become a common element in modern diets (Bhatt and Lakshmi 2022).

The prevalence of fast food consumption varies widely across countries and population groups but has generally been on the rise globally. In the United States, for example, fast food has become a ubiquitous part of the diet, with more than one-third of adults consuming fast food on any given day (Fryar, Hughes et al. 2018, Codjia and Saghaian 2022, Popkin 2022). Similarly, countries such as the Kingdom of Saudi Arabia (AlTamimi, Alshwaiyat et al. 2022), India (Patel, Shahulhameed et al. 2017), and Greece (Doupis, Festas et al. 2020) have also witnessed significant increases in fast food consumption over the years.

The globalization of fast food chains and the expansion of urbanization have contributed to the proliferation of fast food outlets in both developed and developing countries. This expansion has been driven by factors such as changes in lifestyle, increased disposable income, marketing strategies targeting children and adolescents, and the

growing demand for convenience foods (Fox, Feng et al. 2019). Furthermore, the availability of fast-food outlets in neighborhoods has been linked to inequalities in diet and obesity (Laxy, Malecki et al. 2015, Patel, Shahulhameed et al. 2017).

The rise in fast food consumption has been accompanied by a growing recognition of its adverse health implications (Popkin 2022). Fast food is typically high in calories, saturated fat, sodium, and added sugars, and low in essential nutrients such as fiber, vitamins, and minerals (Amith, Onye et al. 2021, Mackay, Gontijo de Castro et al. 2021). Regular consumption of fast food has been linked to an increased risk of obesity, overweight, abdominal fat gain, impaired glucose homeostasis, lipid disorders, systemic inflammation, oxidative stress, and various chronic diseases (Bahadoran, Mirmiran et al. 2015, Zhao, Wang et al. 2017). Studies have shown that fast food consumption is prevalent among different populations across all age groups, including children (Zhao, Wang et al. 2017), middle-aged men from diverse ethnic backgrounds (AlTamimi, Alshwaiyat et al. 2022), and young adults (Rajini, Kannan et al. 2021, Priyanath and Dasanayaka 2022). Adolescents and young adults are among the heaviest consumers (Al-Otaibi and Basuny 2015, Shori, Albaik et al. 2017, Yoon, Fogleman et al. 2020, Tareq, Mahmud et al. 2022). Men tend to consume fast food more frequently than women, and individuals with lower socio-economic status are more likely to rely on fast food due to its affordability and accessibility (Ufholz and Werner 2023). Despite mounting evidence implicating fast food in poor dietary quality and adverse health outcomes, its consumption remains pervasive, contributing to the escalating rates of obesity and overweight worldwide. Numerous studies have investigated this association, and the findings have been heterogeneous, with some studies reporting significant positive correlations between fast food intake and obesity, while others have found inconclusive or contradictory results.

**Condition being studied** To address this inconsistency and provide a comprehensive synthesis of existing evidence, this systematic review and meta-analysis aim to examine the impact of fast food consumption on adult obesity and overweight.

## METHODS

**Search strategy** Electronic search terms/strategies:

Fast Food Consumption

#1 (Fast Food [mesh terms]) OR (Convenience Foods) OR (Convenience Food) OR (Ready-

Prepared Foods) OR (Ready Prepared Foods) OR (Ready-Prepared Food) OR (Ready-To-Eat Meals) OR (Ready To Eat Meals)  
Overweight and Obesity  
#2 (Obesity [mesh terms]) OR (Overweight) OR (Body Mass Index) OR (Adiposity) OR (Metabolic Syndrome) OR (Weight Gain).

**Participant or population** Individuals aged 10 and above will be considered. Obesity/overweight will be defined in this systematic review and meta-analysis as a status with body weight that is grossly above the recommended standards, usually due to accumulation of excess fats in the body with BMI greater than 30.0 kg/m<sup>2</sup> will be considered obese.

**Intervention** Individuals who maintain their regular fast food consumption or those who follow a standard diet without specific restrictions on fast food intake.

**Comparator** No.

**Study designs to be included** Observational studies.

**Eligibility criteria** Inclusion Criteria

- Peer-reviewed observational studies (cross-sectional and cohort) and published in English for 10 years from 2014 and
- Studies focusing on individuals aged 12 and above and
- Research examining fast food consumption as an exposure using validated methods or dietary assessment tools and
- Studies reporting outcomes related to obesity such as BMI, waist circumference, or obesity prevalence and
- Studies with accessible full-text articles or available data for meta-analysis.

Exclusion criteria

- Reviews, opinion articles, editorials, conference abstracts, and non-peer-reviewed articles.
- Studies focused on special populations (e.g., pregnant women, individuals with specific medical conditions)
- Studies that do not specifically investigate Fast Food consumption or do not provide precise methods for assessing fast food intake.
- Studies with insufficient data quality, incomplete information, or inadequate methodology.
- Duplicate studies or studies with overlapping datasets.

**Information sources** Studies for potential inclusion will be found by searching the following

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electronic databases: PubMed, Scopus, Web of Science, Science Direct and DOAJ.

### **Main outcome(s)**

Primary Outcome Measures:

- Body Mass Index (BMI)
- Weight recorded in kilograms or pounds
- Prevalence of Obesity and Overweight.

### **Additional outcome(s)**

Secondary Outcome Measures:

- Waist Circumference
- Dietary Intake assessed using food frequency questionnaires, 24-hour dietary recalls, or food diaries.

**Quality assessment / Risk of bias analysis** All included papers will be subject to an assessment of risk of bias. All review co-authors will be provided materials that standardize reporting of specific domains to identify potential areas of bias as part of their evaluation of study quality. JBI will be used to rate the included study into low, medium and high quality.

**Strategy of data synthesis** Two reviewers independently will select the studies to be considered in the review, and all selected articles will be retrieved for closer examination. To assess agreement between primary reviewers, we will randomly select at least 10 studies that were selected for inclusion. To ensure accuracy of data extraction or if additional information is needed, reviewers will contact authors of original papers selected for inclusion into the systematic review and/or the meta-analysis. Differences in data extraction will be resolved by reference to original articles and discussion to establish consensus.

**Subgroup analysis** Subgroup analyses will be conducted based on factors such as sample size to explore potential sources of heterogeneity and evaluate the differential effects of the consumption of Fast Food on the prevalence of Obesity.

**Sensitivity analysis** The sensitivity analysis of the meta-analysis on the impact of fast food consumption on obesity and overweight will be performed by examining the sample size, using effect models (fixed vs random), and removing a high-risk bias study.

**Language restriction** English only.

**Country(ies) involved** Tanzania.

**Keywords** fast food, ultra processed food, Ready to Eat Meals, Ready Prepared Foods, Obesity, Overweight, Body Mass Index, BMI.

**Dissemination plans** This review will be published on peer-reviewed journals.

### **Contributions of each author**

Author 1 - Seif Khalfan - Drafted protocol, conducted literature search, synthesized articles, analyzed data in collaboration with other authors and drafting manuscript.

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Author 2 - Dennis Lyakurwa - conducted a literature search, synthesized articles and assist in data analysis.

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Author 3 - Jeremie Minani - The author contributed to the development of the selection criteria, and selecting articles to include in the analysis.

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Author 4 - Bo Zhang - The author read, provide feedback and will approve the final manuscript.