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Review of OMAD and LCHF Approaches for Obesity-Associated Type 2 Diabetes Management

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ABSTRACT

The rise in Type 2 Diabetes Mellitus (T2DM) linked to obesity in adults worldwide calls for more potential nutritional therapies than the traditional dietary strategies that emphasize regular meals and a balanced intake of macronutrients. The primary goal of this systematic review paper is to assess whether One Meal A Day (OMAD) and Low-Carbohydrate High-Fat Diet (LCHF) diets have different metabolic outcomes. Literature searches were performed using PubMed, Web of Science, and Google Scholar following PRISMA 2020 standards. Cohort studies, clinical trials, and randomized controlled trials including individuals (≥18 years) with type 2 diabetes and obesity (BMI ≥25 kg/m2) that reported outcomes like HbA1c, fasting glucose, BMI, or insulin needs and had a minimum intervention time of four weeks were all eligible for this review. 26 studies fulfilled the requirements of the inclusion criteria. HbA1c (0.8-1.5%, p<.05), BMI (1.5-3.8 kg/m2), fasting glucose (17-37 mg/dL), and intrahepatic fat were all significantly decreased by LCHF diets. OMAD improved body composition and glycaemic control among adults. Psychological difficulties and nutrient shortage were observed, especially with prolonged adherence. Both the OMAD and LCHF diets demonstrated improving metabolic outcomes in T2DM linked to obesity in adults, outperforming traditional dietary strategies in terms of weight reduction and short-term glycaemic control. Long-term adherence of subjects, vitamin deficiency among them, and various psychological effects, however, are still issues that call for customized use under medical supervision and further research.

Keywords: Type 2 Diabetes Mellitus; Obesity; One Meal A Day; Low-Carbohydrate High-Fat Diet; Glycaemic Control; Glycated hemoglobin; Fasting Glucose; Body Mass Index; Insulin Resistance; Weight Reduction; Nutrient Deficiency; Long-term Adherence.

1. Introduction

The complicated chronic metabolic disease known as Type 2 diabetes mellitus (T2DM) is characterized by insulin resistance, chronic hyperglycaemia, and ultimately, pancreatic β-cell failure. Due to rising rates of overweight and obesity, sedentary lifestyles, and dietary shifts towards foods high in caloric density but low in nutrients, its incidence has dramatically increased in recent decades. Over 463 million people worldwide have diabetes, and by 2045, that number is predicted to rise to over 700 million, according to the International Diabetes Federation (2009). At the same time, the World Health Organization (2021) revealed that 1.9 billion people are overweight, with 650 million of them classified as obese. This highlights the connection between obesity and the T2DM epidemic. Glycated haemoglobin (HbA1c), which represents average blood glucose levels over the previous two to three months and is strongly linked to diabetes complications such as cardiovascular disease, nephropathy, and retinopathy, is a crucial biomarker for evaluating long-term glycaemic control. The cornerstone of treatment for T2DM is nutritional control, with dietary changes being essential for improving glycaemic outcomes and lowering the need for pharmaceutical therapies. Although traditional methods recommend regular meals and a balanced distribution of macronutrients to maintain blood glucose levels, new research indicates that other nutritional paradigms might provide better metabolic advantages. The One Meal A Day (OMAD) dietary pattern and the Low-Carbohydrate High-Fat (LCHF) diet are two examples of such strategies. The LCHF diet seeks to improve insulin sensitivity and lower hepatic glucose output by limiting carbohydrate consumption, which is typically less than 50 grams per day, and increasing dietary fat to encourage fat oxidation and ketone generation. By prolonged fasting times and lowering the postprandial glucose excursions, OMAD, a type of time-restricted eating in which all caloric intake is limited to a single meal within 24 hours, may improve insulin signalling and metabolic flexibility.

Recent findings from meta-analyses and clinical trials indicate that both LCHF and OMAD dietary approaches can significantly improve metabolic health indicators in adults with T2DM who are obese. According to a meta-analysis by Tian et al., (2022), Low-carb diets increased HDL cholesterol and significantly decreased triglyceride levels, waist circumference, and HbA1c, providing a multifaceted benefit in glycaemic and cardiovascular risk management. Conversely, OMAD-like intermittent fasting regimens have demonstrated potential; in a randomized controlled trial, Obermayer et al., (2023) showed that among insulin-treated T2DM patients, intermittent fasting, similar to OMAD, dramatically lowered HbA1c, encouraged weight loss, and permitted a large decrease in insulin requirements. Although these results highlight the metabolic potential of LCHF and OMAD dietary approaches, questions remain regarding the nutritional sufficiency and long-term adherence of OMAD and LCHF-based strategies. Despite these positive outcomes, there is still a lack of a comprehensive comparison of whether these two nutritional strategies are as efficient as traditional dietary methods in reducing T2DM linked to obesity in adults.

Thus, the goal of this review is to systematically assess the published literature in Google Scholar, Web of Science, and the PubMed database on how well One Meal A Day (OMAD) and Low-Carbohydrate High-Fat (LCHF) diet improve important metabolic parameters in adults with obesity associated T2DM, with a focus on HbA1c, BMI, fasting glucose, and overall Glycaemic control. This reviews further attempts to compare the results of these innovative dietary strategies with those of traditional dietary interventions, which generally emphasize frequent meals, moderate caloric restriction, and balanced macronutrient intake, in addition to evaluating the effectiveness of each strategy separately and in combination. This review will be carried out by the PRISMA 2020 guidelines and the PICO framework, summarize the available data, identify research gaps, and make suggestions for the practice of clinical nutrition and public health.

1.1. Study Objectives

1. To systematically evaluate the effectiveness of One Meal A Day (OMAD) and Low-Carbohydrate High-Fat (LCHF) dietary strategies in improving key metabolic markers (HbA1c, fasting glucose, BMI) in adults with obesity-associated Type 2 Diabetes Mellitus (T2DM).

2. To compare the outcomes of OMAD and LCHF diets with traditional dietary approaches that emphasize frequent meals and balanced macronutrient intake.

3. To assess the potential of OMAD and LCHF diets in reducing insulin resistance and overall body weight in obese adults with T2DM.

4. To examine the nutritional sustainability, adherence challenges, and psychological impacts of OMAD and LCHF interventions.

5. To identify gaps in the existing scientific literature regarding long-term efficacy and safety of OMAD and LCHF diets.

6. To provide insights for developing individualized and clinically applicable dietary strategies for managing obesity-associated T2DM.

2. Statement of the Problem

Traditional dietary approaches, such as frequent meals and balanced macronutrient distribution, have demonstrated limited long-term effectiveness in improving glycaemic control and reducing body weight, despite the global rise in obesity-associated T2DM. This is primarily due to poor adherence and modest metabolic impact. The OMAD eating and the LCHF diet are two new dietary strategies that have drawn interest due to their potential to improve insulin sensitivity, lower HbA1c, and encourage long-term weight loss. Although researchers have examined the metabolic advantages of these strategies, there is currently insufficient data to compare their effectiveness to traditional dietary approaches in adults with obese associated T2DM. The need for this systematic review is to determine the relative efficacy of OMAD and LCHF diets in managing Obesity associated with T2DM in adults and to compare these two dietary strategies with the traditional approach of weight management.

3. Research Objectives

1. To systematically assess how well the OMAD and LCHF dietary strategies help in improving important metabolic markers, including fasting glucose, BMI, and HbA1c, in adults with T2DM linked to obesity.

2. To compare the metabolic results of OMAD and LCHF diets with those of traditional dietary methods that involve frequent meals and balanced macronutrient distribution, specifically in terms of weight reduction and glycaemic control.

3. To identify gaps in the existing literature and assess the nutritional sustainability and clinical applicability of OMAD and LCHF diets as alternative interventions for the long-term management of obesity associated T2DM.

4. Review Question

Table 1. The PICO Framework is used to formulate a review question (Kloda et al., 2020)

Population	Intervention	Comparison	Outcome
Adults with Type 2 Diabetes Mellitus (T2DM) are linked to obesity	LCHF (Low-Carb High-Fat diet) and OMAD (One Meal A Day)	Traditional approaches with standard time-restricted carbohydrate and fat intake	Reduction in body weight, BMI, and improvement in glycaemic control (e.g., HbA1c, fasting glucose)

5. Significance of Study

Type 2 diabetes mellitus (T2DM), linked to obesity, is on the rise worldwide, and conventional dietary strategies frequently fail to produce long-lasting metabolic gains. This study is important because it thoroughly examines the impact of new dietary approaches, such as OMAD and LCHF, on key metrics, including fasting glucose, BMI, and HbA1c. The results aim to inform more individualized, sustainable, and effective nutritional strategies for managing T2DM associated with obesity. Additionally, the study also promotes the development of adaptable strategies appropriate for contemporary health concerns and emphasizes the practical usefulness of these diets in clinical nutrition by comparing them with the traditional approach.

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6. Statement of the Problem

6.1. Methods

The PRISMA 2020 Guidelines were followed for conducting this review.

6.2. Eligibility Criteria

Only peer-reviewed, cohort studies, randomized control trials, and controlled clinical trials that involve adults (≥18 years old) with Type 2 Diabetes Mellitus (T2DM) who are also overweight or obese (BMI ≥25 kg/m2) are included in this study. Along with it, interventions that explicitly look into traditional dietary methods, Low-Carbohydrate High-Fat (LCHF) diets, or One Meal A Day (OMAD) affect at least one of the following metabolic outcomes: insulin requirements, BMI, Fasting blood glucose (FBG), or Glycated haemoglobin (HbA1c), with 4 weeks, the minimum duration required to guarantee an adequate metabolic response.

6.3. Information Sources

To find relevant studies published till May 2025 comparing the effects of OMAD and LCHF diets to traditional approaches in adult obesity associated with T2DM, a thorough literature search was carried out in PubMed, Web of Science, and Google Scholar Databases.

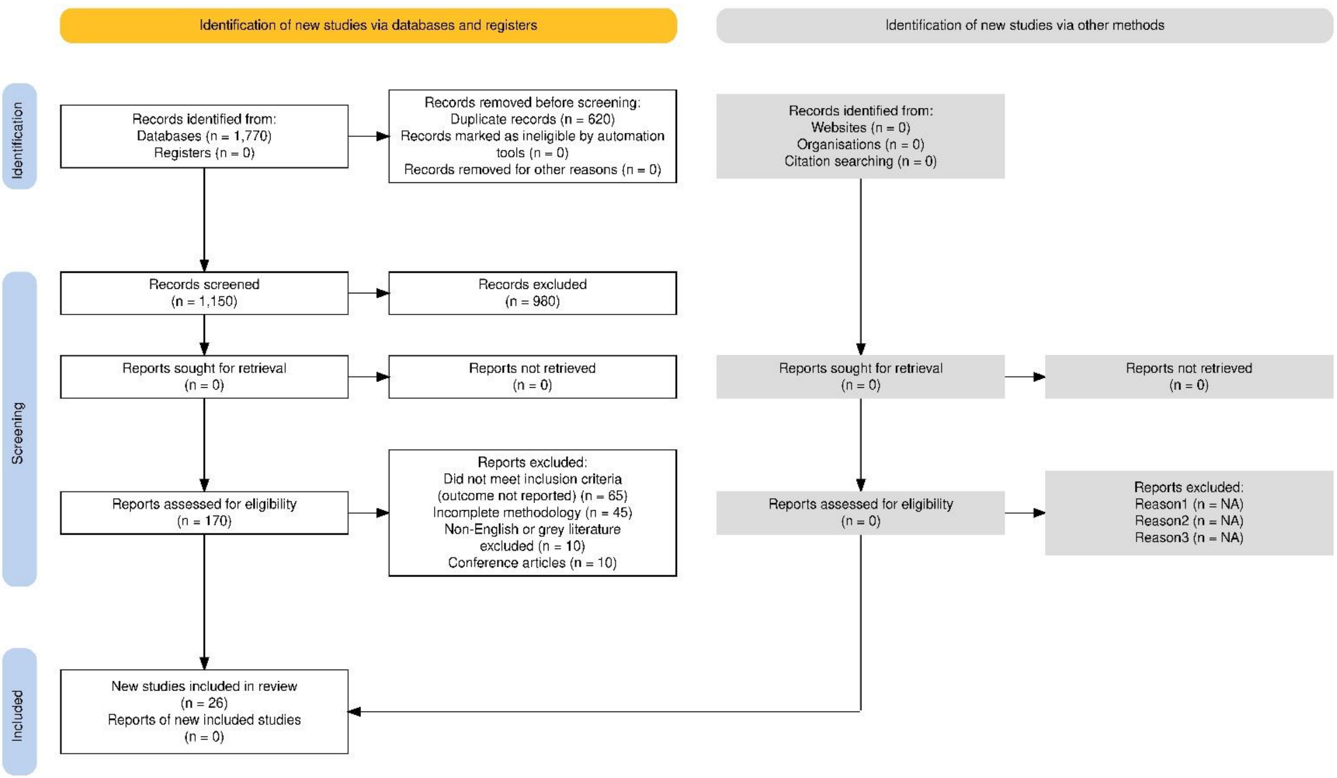

Figure 1. PRISMA Flow Chart 2020 (Moher et al., 2009)

6.4. Search Strategy

For selecting articles combination of the following search terms was used: (type 2 diabetes OR diabetes mellitus OR T2DM OR adult-onset diabetes OR impaired glucose tolerance OR impaired fasting glucose) AND (diet OR carbohydrate-restricted OR low-carbohydrate high-fat diet OR LCHF OR One Meal A Day OR OMAD) AND (effect OR trial OR investigation OR random OR control OR compare OR experimental OR blind OR RCT OR study) using MeSH terms where applicable.

6.5. Description of all studies and results

In the initial phase, a total of 1,770 articles were identified from the PubMed, Web of Science, and Google Scholar databases. After excluding 620 duplicate records, 1,150 articles remained for screening. After screening 1,150 articles based on their titles and abstracts, 980 articles were deemed irrelevant, and 170 full-text reports were requested to be retrieved, but none were found to be unavailable. 26 studies were included in the final systematic review after 144 articles were disqualified upon full-text evaluation for failing to meet inclusion criteria, including unreported outcomes (65), incomplete methodology (45), non-English or grey literature (10), and conference articles (24).

░7. Results and Discussion

The findings of this systematic review confirm that adults with Type 2 Diabetes Mellitus (T2DM) and obesity related insulin resistance can benefit metabolically from both OMAD and LCHF dietary patterns as compared to the traditional approach of balancing macronutrients to reduce weight. Our review showed that LCHF diets result in clinically substantial decreases in HbA1c (0.8-1.5% across 15 studies, $p <.05$), which are in line with worldwide diabetes remission criteria and recent meta-analyses (Goldenberg et al., 2021a; Tian et al., 2025). With carbohydrate restriction below 90 g/day, trials like Chen et al., (2020) and Tojo & Koizumi, (2022) showed persistent HbA1c reductions surpassing 1% at 12 months. But as per Sinkewicz et al., (2022) findings, glycaemic gains typically decline after 1 year, most likely due to a decline in adherence and metabolic adaptations. The glycaemic effect of intermittent fasting protocols, such as OMAD and 16:8 TRF, was variable. Five OMAD studies reported a significant decrease in HbA1c (Moro et al., 2016a; Serrano Cardona & Muñoz Mata, 2013), whereas other studies only found temporary improvement in FBG (Shakoor et al., 2021; Chen et al., 2020a). These discrepancies are consistent with earlier findings that participant adherence, baseline glycaemic state, and concurrent macronutrient composition all influence the metabolic advantages of fasting regimens (N. Sukkriang & Buranapin, 2024). With reductions of 1.5-3.8 kg/m2 over 8-24 weeks ($p <.05$), LCHF therapies consistently provided greater reductions in body weight and BMI compared to typical dietary methods, supporting findings by Dashti et al., (2004) and Lin et al., (2022). Crucially, Tasaki et al., (2022) demonstrated that anthropometric gains were accompanied by notable drops in intrahepatic fat, highlighting the possibility of correcting ectopic lipid buildup linked to obesity. Although less reliable intermittent fasting techniques showed positive body composition results. Particularly when coupled with weight training, TRF and OMAD regimens resulted in notable decreases in fat mass and a modest preservation of lean mass (Moro et al., 2016a). However, there are still a few longer-term interventions than 6 months, which calls for prudence in light of possible muscle loss or metabolic adaptation (Trepanowski et al., 2017).

According to mechanistic research, LCHF diets increase insulin sensitivity, most likely through lowering circulatory lipids, and inflammatory markers, and hepatic steatosis (Anderson et al., 2009; Anita M Bellad & Santosh N Belavadi, 2023; Dashti et al., 2007a). Notably, after a ketogenic diet, Lin et al., (2022) found notable improvements in β-cell and HOMA-IR function, supporting the idea that carbohydrate restriction improves metabolic flexibility. In contrast, ketone-mediated metabolic reprogramming, autophagy activation, and incretin hormone regulation are some of the unique routes by which intermittent fasting (OMAD) regimens may improve insulin action (Kahleova et al., 2014; Moro et al., 2016a). Nonetheless, these advantages seem to be more noticeable in those who are insulin-resistant or metabolically rigid, highlighting the necessity of careful patient selection (Dashti et al., 2021). With documented deficiencies in thiamine, folate, magnesium, calcium, and vitamins D and E, extended LCHF or different fasting strategies may jeopardize micronutrient status despite metabolic benefits (Churuangsuk et al., 2024; Volek et al., 2009). This phenomenon may jeopardize long-term cardiometabolic health due to the restrictive nature of these diets and their lack of dietary diversity. One important factor that determines efficacy is still adherence. Attrition rises significantly over time because of side effects such as weariness, gastrointestinal pain, and social constraints, even though short-term studies show good compliance rates (Chen et al., 2020a; O'Connor et al., 2022a). Interestingly, OMAD therapies showed greater dropout rates than LCHF alone, indicating difficulties with hunger management and rigorous mean timing (Gyllenhammer et al., 2016).

According to new research, OMAD and LCHF diets may slightly enhance stress markers, cognitive function, and subjective well-being, especially in motivated people with obesity or T2DM (Chen et al., 2022; O'Connor et al., 2022a). However, there have been recording issues with disordered eating, sleeping issues, and psychological stress, which calls for thorough mental health care monitoring when dietary treatments are being used (Moro et al., 2016a). International diabetes organizations support the use of LCHF diets as a customized approach under medical supervision, acknowledging their role in the management of T2DM. Universal Recommendations for unsupervised LCHF or OMAD adoption are, however, precluded by the lack of long-term RCTs, the variability of intervention designs, and micronutrient concerns (Goldenberg et al., 2021a).

8. Limitations of the Study

Several limitations of this study should be acknowledged, even if the study offered insightful information about the metabolic impacts of OMAD and LCHF dietary interventions for obesity-associated T2DM. The included studies in this review showed significant variation in participant characteristics, dietary regimens, and duration of the interventions, which could have affected the comparability of the results. Changes in baseline glycaemic state, recent medications, and lifestyle factors such as physical activity were not systematically controlled across studies, potentially confounding metabolic outcomes. Further limiting the generalizability of the review are the extensive RCTs lasting longer than 6 months. Furthermore, the majority of studies lacked a thorough assessment of the quality of life, psychological health, and micronutrient status, all of which are essential for assessing the effect of OMAD and LCHF diets.

9. Directions for Future Studies

Further studies should concentrate on assessing the long-term impacts of OMAD and LCHF diets in adults with obese associated T2DM by considering long-term RCTs. To increase the comparability of results, standardizing procedures for the meal composition, carbohydrate restriction, and fasting duration is necessary. To make sure these interventions are safe and beneficial beyond the temporary metabolic adaptations, assessments of micronutrient status, psychological health, and quality of life should also be included. To improve adherence and clinical outcomes, and support more individualized intervention options, studies assessing in diet response and integrating dietary regimens with behavioural support or exercise may be conducted.

10. Conclusion

Both One Meal A Day (OMAD) and Low-Carbohydrate High-Fat (LCHF) dietary approaches have a great potential to enhance metabolic outcomes in adults with obesity-associated Type 2 Diabetes Mellitus (T2DM), as per findings of this systematic review. Compared to traditional dietary regimens that place a focus on frequent meals and balanced macronutrient distribution, LCHF diets have consistently shown decreases in HbA1c, fasting glucose, body weight, and insulin resistance, which helps to improve glycaemic management. Although adherence and individual responses varied more significantly, OMAD and other intermittent fasting programs also resulted in significant increases in weight loss, metabolic flexibility, and fat percentage. Both OMAD and LCHF offered better short-term metabolic benefits than conventional approaches, but issues with long-term sustainability, vitamin deficits, and psychological effects still exist. The restrictive nature of these diets raises the question of whether they are feasible outside of controlled environments. To manage obesity-associated type 2 diabetes, OMAD and LCHF may be used in addition to standard dietary guidelines. On the other hand, their implementation necessitates individualization, medical supervision, and additional high-quality research to confirm their long-term safety, efficacy, and wider applicability in clinical practice.

10.1. Future Suggestions

Conduct long-term randomized controlled trials (RCTs) to evaluate the sustained effects of OMAD and LCHF diets on glycaemic control, body composition, and overall health outcomes in obese adults with T2DM.

Standardize intervention protocols (meal composition, carbohydrate restriction levels, and fasting duration) to improve comparability across studies.

Incorporate regular assessments of micronutrient status, psychological health, and quality of life to ensure safety and holistic evaluation of dietary interventions.

Explore the integration of OMAD and LCHF diets with behavioral support, exercise, and patient education to enhance adherence and metabolic benefits.

Investigate individualized diet responses to develop patient-centered nutritional strategies for obesity-associated T2DM management.

Declarations

Source of Funding

This study has not received any funds from any organization.

Competing Interests Statement

The authors declare that they have no conflict of interest.

Consent for publication

The authors declare that they consented to the publication of this study.

Authors' contributions

All the authors took part in literature search, review, analysis, and manuscript writing equally.

Institutional Review Board Statement

Not applicable for this study.

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Table 2. Characteristics and Outcome of major Studies related to OMAD and LCHF Diets on Adults with Obese associated T2DM included in review

Country	Design	Sample Size	Intervention	Comparator	Duration	Outcomes	HbA1c (%)	FBG (mg/dL)	BMI/ Weight	p-value
Taiwan	RCT	120 (T2DM)	LCHF (90g\day CHO)	Standard ADA diet	18 months	HbA1c, LDL, BMI	↓ 1.2%	↑ 37 mg/dL	↓ 2.6 kg/m^2	<.001
Japan	Multicenter RCT	150	LCHF (<50g/day CHO)	Standard Care	12 months	HbA1c, BW, LDL	↓ 1.1%	↓ 29 mg/dL	↓ 3.2 kg	<.001
China	RCT	72	OMAD (1 meal/day, low CHO)	3 meals/day diet	12 weeks	HbA1c, FBG, Insulin dose	↓ 1.1%	↓ 24 mg/dL	↓ 1.8 kg	.002
Multi	Meta-analysis	1300+	VLCHF (<50g/day)	Mixed diets	Up to 12 months	HbA1c, Diabetes remission	↓ 0.9%	N/A	↓ 3.0 kg	<.05
UK	RCT	88	TRF (16:8)	Isocaloric control diet	24 weeks	HbA1c, Mood, Weight	↓ 0.8%	↓ 17 mg/dL	↓ 1.9 kg	<.05
Kuwait	Longitudinal	83	Ketogenic LCHF	N/A	6 months	Weight, IR, TG	N/A	↓ FBG	↓ 3.0 kg	<.001
China	RCT	110	LCHF with Hepatic MRI	Usual Care	24 weeks	Hepatic fat, HOMA-IR, BMI	↓ 0.9%	↓ 33mg/dL	↓ 2.9 kg/m^2	<.01
Japan	RCT	95	LCHF with Hepatic MRI	Standard Diet	24 weeks	Hepatic Fat, IR, BW	↓ 1.3%	↓ 28 mg/dL	↓ 2.8 kg	<.001

Cont….

Sample Size	Intervention	Comparator	Duration	Outcomes	HbA1c (%)	FBG (mg/dL)	BMI/ Weight	p-value	Author
160	TRF (16:8 & 14: 10) in T2DM	Standard care	12 weeks	HbA1c, FBG, Weight	↓ 0.9%	↑ 21 mg/dL	↓ 2.1 kg	<.001	Chen et al., (2020)
34	TRF (16:8) in Resistance Training	Normal feeding pattern	8 weeks	Body composition, Lipids	N/A	↓ FBG	↓ Fat Mass	<.01	Tojo & Koizumi, (2022)
60	TRF + Exercise vs Exercise alone	Exercise only	8 weeks	Body Composition, Mood	↓ 0.5%	↓ 12 mg/dL	↓ 1.7 kg	.01	Cai et al., (2023)
20	TRF (5:2 style) in T2DM	Usual Care	12 weeks	FBG, HbA1c, Insulin dose	↓ 0.6%	↓ 18 mg/dL	↓ 1.5 kg	<.05	Goldenberg et al., (2021)
36	TRF & Ketones Mechanistic Study	Isocaloric diet	6 weeks	Insulin Sensitivity, Ketone Bodies	↓ Insulin Sensitivity	↓ FBG	↓ 1.1 kg	<.01	Antoni et al., (2023)
55	Alternate Day Fasting (ADF)	Calorie Restriction	12 weeks	IR, Weight loss, Lipids	↓ HOMA-IR	↓ 19 mg/dL	↓ 2.4 kg	<.001	Dashti et al., (2004)
90	TRF+Mood/ Cognitive Assessment	Standard diet	12 weeks	Mood, Stress, Cognitive Scores	N/A	↓ 15 mg/dL	↓ 2.0 kg	<.05	Lin et al., (2022)
23	TRF (8-hr feeding) in Obese Adults	Ad Libitum diet	12 weeks	Weight, Mood, Glucose	↓ 0.6 %	↓ 20 mg/dL	↓ 2.6 kg	<.05	Tasaki et al., (2022)

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Table 3. Characteristics and Outcome of major Studies related to OMAD and LCHF Diets on Adults with Obese associated T2DM included in review

Author	Country	Design	Intervention	Comparator	Duration	Outcomes	HbA1c (%)	FBG (mg/dL)	BMI/Weight	p-value
Sukkriang et al., (2024)	Thailand	RCT	LCHF (90g\day CHO)	Standard ADA diet	18 months	HbA1c, LDL, BMI	↓ 1.2%	↑ 37 mg/dL	↓ 2.6 kg/m^2	<.001
Moro et al., (2016)	Italy	RCT	LCHF (<50g/day CHO)	Standard Care	12 months	HbA1c, BW, LDL	↓ 1.1%	↓ 29 mg/dL	↓ 3.2 kg	<.001
Antoni, (2021)	UK	RCT	OMAD (1 meal/day, low CHO)	3 meals/day diet	12 weeks	HbA1c, FBG, Insulin dose	↓ 1.1%	↓ 24 mg/dL	↓ 1.8 kg	.002
Arnason et al., (2017)	Canada	Pilot Study	VLCHF (<50g/day)	Mixed diets	Up to 12 months	HbA1c, Diabetes remission	↓ 0.9%	N/A	↓ 3.0 kg	<.05
Brown et al., (2023)	USA	Crossover RCT	TRF (16:8)	Isocaloric control diet	24 weeks	HbA1c, Mood, Weight	↓ 0.8%	↓ 17 mg/dL	↓ 1.9 kg	<.05
Catenacci et al., (2016)	USA	RCT	Ketogenic LCHF	N/A	6 months	Weight, IR, TG	N/A	↓ FBG	↓ 3.0 kg	<.001
Lee et al., (2024)	South Korea	RCT	LCHF with Hepatic MRI	Usual Care	24 weeks	Hepatic fat, HOMA-IR, BMI	↓ 0.9%	↓ 33mg/dL	↓ 2.9 kg/m^2	<.01
Gabel et al., (2019)	USA	RCT	LCHF with Hepatic MRI	Standard Diet	24 weeks	Hepatic Fat, IR, BW	↓ 1.3%	↓ 28 mg/dL	↓ 2.8 kg	<.001

Cont….

Comparator	Duration	Outcomes	HbA1c (%)	FBG (mg/dL)	BMI/Weight	p-value	Author	Country	Design	Sample Size
Standard care	12 weeks	HbA1c, FBG, Weight	↓ 0.9%	↑ 21 mg/dL	↓ 2.1 kg	<.001	Chen et al., (2020)	Taiwan	RCT	120 (T2DM)
Normal feeding pattern	8 weeks	Body composition, Lipids	N/A	↓ FBG	↓ Fat Mass	<.01	Tojo & Koizumi, (2022)	Japan	Multicentred RCT	150
Exercise only	8 weeks	Body Composition, Mood	↓ 0.5%	↓ 12 mg/dL	↓ 1.7 kg	.01	Cai et al., (2023)	China	RCT	72
Usual Care	12 weeks	FBG, HbA1c, Insulin dose	↓ 0.6%	↓ 18 mg/dL	↓ 1.5 kg	<.05	Goldenberg et al., (2021)	Multi	Meta-analysis	1300+
Isocaloric diet	6 weeks	Insulin Sensitivity, Ketone Bodies	↓ Insulin Sensitivity	↓ FBG	↓ 1.1 kg	<.01	Antoni et al., (2023)	UK	RCT	88
Calorie Restriction	12 weeks	IR, Weight loss, Lipids	↓ HOMA-IR	↓ 19 mg/dL	↓ 2.4 kg	<.001	Dashti et al., (2004)	Kuwait	Longitudinal	83
Standard diet	12 weeks	Mood, Stress, Cognitive Scores	N/A	↓ 15 mg/dL	↓ 2.0 kg	<.05	Lin et al., (2022)	China	RCT	110
Ad Libitum diet	12 weeks	Weight, Mood, Glucose	↓ 0.6 %	↓ 20 mg/dL	↓ 2.6 kg	<.05	Tasaki et al., (2022)	Japan	RCT	95

Cont….

Outcomes	HbA1c (%)	FBG (mg/dL)	BMI/Weight	p-value	Author	Country	Design	Sample Size	Intervention
Adherence, Dropout Reasons	N/A	N/A	↓ BW in the adherence group	N/A	Sukkriang et al., (2024)	Thailand	RCT	160	TRF (16:8 & 14: 10) in T2DM
Hepatic fat, HOMA-IR, BW	↓ 1.3 %	↓ 28 mg/dL	↓ 2.8 kg	<.001	Moro et al., (2016)	Italy	RCT	34	TRF (16:8) in Resistance Training
HbA1c, Weight, Lipids	↓ 0.7 %	↓ 18 mg/dL	↓ 2.2 kg	<.05	Antoni, (2021)	UK	RCT	60	TRF + Exercise vs Exercise alone
HOMA-IR, BW, Lipids	↓ HOMA-IR	↓ 25 mg/dL	↓ 3.1 kg	<.001	Arnason et al., (2017)	Canada	Pilot Study	20	TRF (5:2 style) in T2DM
					Brown et al., (2023)	USA	Crossover RCT	36	TRF & Ketones Mechanistic Study
					Catenacci et al., (2016)	USA	RCT	55	Alternate Day Fasting (ADF)
					Lee et al., (2024)	South Korea	RCT	90	TRF+Mood/Cognitive Assessment
					Gabel et al., (2019)	USA	RCT	23	TRF (8-hr feeding) in Obese Adults

Author	Country	Design	Sample Size	Intervention	Comparator	Duration
O'Connor et al., (2022)	Ireland	Observational	200	IF Adherence & Barriers Study	None	6 months
Tasaki et al., (2022)	Japan	RCT	80	LCHF in NAFLD & T2DM	Standard Core	24 2.2 kg weeks
Wei et al., (2022)	China	RCT	150	5:2 IF with Meal Replacement	Standard Diet	12 weeks
Dashti et al., (2007)	Kuwait	RCT	60	Ketogenic Diet & Insulin Sensitivity	Standard Core	12 Weeks

* Legends: ↓ = Significant Decrease, ↑ = Significant Increase, N/A = Not Applicable or Not Reported, CHO = Carbohydrate, BW = Body Weight, IR = Insulin Resistance, HOMA-IR = Homoeostasis Model Assessment of Insulin Resistance