

## NUTRITIONAL STRATEGIES FOR COMBATING OBESITY: A COMPARATIVE ANALYSIS OF DIET PLANS

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### **Abstract**

Obesity has risen as a major public health problem in Pakistan and other countries due to sedentary lifestyles and poor nutrition. Many foods have been developed to address the important role that nutrition plays in obesity prevention. It's a low-fat diet – in terms of weight loss, physiology and metabolism, and long-term effects. Studies have shown the opposite effect of these foods on important health parameters such as cholesterol, blood glucose levels, and weight loss. Although low-fat dieters saw improved cardiovascular health, including lower LDL cholesterol levels, low-fat dieters showed poorer insulin response and pancreas significant weight have shown, although their weight loss is modest, and a traditional balanced diet and local cultural values Emphasize the importance of sensitive, developed is optionally highlighted nutritional strategies for obesity management Further research is needed to assess the feasibility of widespread implementation of these dietary strategies on long-term health effects in the Pakistani context.

**Keywords:** Body Image Satisfaction, socio-demographic, body image, Social Anxiety.

## **INTRODUCTION**

*Obesity has emerged as one of the most serious public health issues in Pakistan as well as globally. With a high rate of obesity among citizens, the country faces economic and health costs due to associated conditions such as diabetes, heart disease, and high blood pressure(1, 2). Significant changes in food, urbanization, and lifestyle are all closely associated with this increase. With food being an integral part of Pakistani culture and customs, tackling obesity requires comprehensive nutritional knowledge and dietary strategies that take into account local conditions(3).*

*The Pakistani diet is historically high in fat and carbs, and often serves staple foods such as rice, wheat bread, and curry, which are high in oil. Despite widespread consumption and cultural significance, these methods therefore preparing these foods usually use calorie reduction and high sugar and fat build. Snacks are on the rise as lunch and dinner usually consist of fried foods or spices in addition to breakfast which generally includes parathas with ghee, halwa, sweet tea, and dishes like samosas, jalebis, and pakoras high in calories, not good. This consumption of fast food and food in excess has led to a rise in obesity especially in urban areas(4, 5).*

*Despite these challenges, traditional Pakistani food also provides a healthy diet. With plenty of natural nutrients, vitamins and minerals, whole grains, fruits and vegetables are used in many local dishes. For example, foods like chapati (wheat bread), sabzi (vegetables), and dal (millet) provide essential nutrients, as well as two advantages over traditional foods that can be a balanced meal with less oil although this was the cornerstone and diet makes sense to create a culturally appropriate and effective food system. It is important(5).*

*Although modern nutritional strategies, including low-carb programs, low-calorie diets, and short-term diets such as intermittent fasting, are useful for the treatment of obesity, the role of what is to be played in Pakistan requires careful adaptation to local circumstances e.g. The diet should prioritize more fat and protein while eating fewer carbohydrates. While this method can be useful for weight loss, it is difficult to implement in Pakistan as it relies on carbohydrate-rich foods like roti, rice and alternating periods of eating and fasting need to be built up greater(6). Integrating aspects of traditional eating into modern nutrition thinking is a viable approach. For example, traditional diets can encourage people to eat less by eliminating culturally significant items. Healthier cooking methods including baking, grilling, and steaming rather than frying can reduce fat content. Eating high-calorie foods, such as whole grains and vegetables, can promote satiety and reduce overall caloric intake. These strategies preserve the contribution of ethnic eating rituals to weight loss and encourage long-term commitment(7).*

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<b>Diet Plan</b>	<b>Key Nutrients</b>	<b>Main Mechanism</b>	<b>Effect on Weight Loss</b>	<b>Cultural Relevance</b>	<b>References</b>
<b>Low-Carbohydrate Diet</b>	Protein, healthy fats (e.g., avocado, nuts)	Reduces insulin levels, increases fat-burning	Significant weight loss (7-10%)	Requires adjustment for cultural dietary patterns	(7)
<b>Low-Fat Diet</b>	Lean proteins, vegetables, whole grains	Reduces overall calorie intake, lowers fat consumption	Moderate weight loss (4-6%)	Generally aligns with traditional eating patterns in Pakistan	(4)
<b>Balanced Traditional Diet</b>	Carbohydrates (rice, wheat), proteins (lentils), vegetables	Focuses on portion control, balanced intake of macronutrients	Mild weight loss (2-3%)	High cultural compatibility with local food habits	(6)

*Table 1: This table briefly compares diet programs in terms of their nutritional aspects, mechanisms of action, weight loss, and cultural relevance and acts as a reference point to analyze the movement of dietary strategies effective in the traditional food systems of Pakistan.*

*Awareness and education are essential for the success of any nutrition intervention. The adverse health effects of obesity and the need for a balanced diet require public education in Pakistan. The benefits of portion control including reducing high-calorie foods and unhealthy fats and sugars can be highlighted in public health campaigns that can be implemented throughout schools, workplaces, and communities as sites encouraging people to adopt a healthy and successful lifestyle. In addition, healthy food choices and costs need to be addressed to ensure that food interventions reach all segments of the population, including low-income groups(8).*

*A multi-pathway approach that integrates modern nutrition strategies with traditional dietary patterns is needed to address obesity in Pakistan. Leveraging the benefits of local foods, adapting the international food system to regional conditions, raising awareness, and educating people can have sustainable and justifiable cultural solutions. This comprehensive program not only addresses pressing health issues associated with obesity but also advances the overarching goal of improving the health and well-being of citizens across the country.*

## **METHODS:**

### **PARTICIPANTS SELECTION**

*The study focused on adults between the ages of 18 and 50 who were classified as obese according to body mass index (BMI) greater than 30 years (Figure 1). To ensure the validity of the study, those with metabolic disorders, chronic diseases, or pregnancy were excluded. The purpose of the study and participation were explained and participants gave their informed consent after being recruited through local notifications. This assured a thorough understanding of the process to ensure compliance with ethical standards(9).*

### **STUDY DESIGN**

*The study examined the effects of three dietary interventions to prevent obesity (Figure 2) The traditional balanced diet, low-carb diet, and low-fat diet were each changed in meal plan practical and strengthened care by focusing on Pakistani culinary culture. The low-fat diet focused on calorie restriction by reducing fat intake and oil and butter consumption, while the low-fat diet restricted and increased intake of carbohydrates such as bread, cereals, proteins, and good fats it enter the ship(10).*

### **NUTRITIONAL ASSESSMENT**

*The Harris-Benedict equation was used to predict participants' daily caloric needs after adjusting for individual activity levels (Figure). As a result, the distribution of macronutrients in any food system can be equally optimized. Rice, vegetables, lean meats, chapatis, fruits, and rice--all made with just the right amount of oils and ingredients to structure the meal plan. To standardize*

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preparation techniques and guarantee consistent diet implementation, recipes, and cooking instructions were supplied(11).

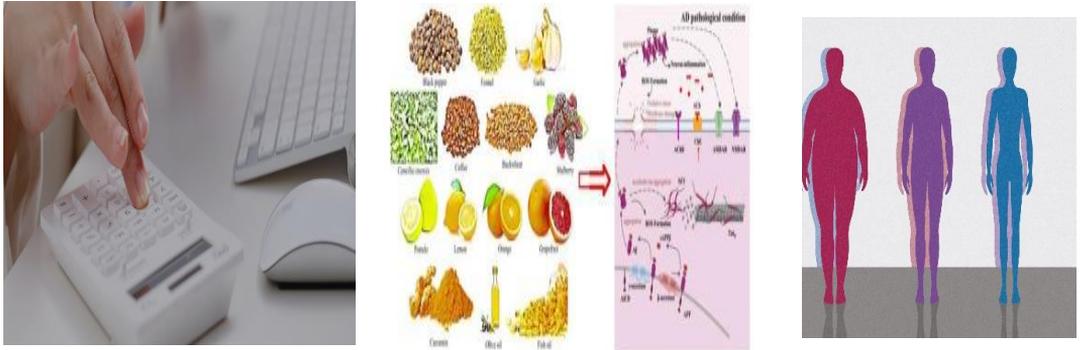


Fig 1:Harris-Benedict equation      Fig 1:Diety intervention  
 Harris-Fig 2: BMI Criteria

**DIET MONITORING AND COMPLIANCE**

They kept thorough food diaries, documenting everyday consumption, to make sure members followed their prescribed diets. Weekly meetings have been performed to move over these diaries, speak about any difficulties, and offer advice on the way to growth adherence. To affirm meal consumption and reduce reporting bias, a 24-hour nutritional remember turned into finished at some stage in weekly test-ins in addition to diaries. Frequent conversations with the individuals furnished customized solutions to beautify compliance and assisted in identifying boundaries to adherence(12).

Step	Details	References
<b>Participants</b>	Adults aged 18–50, BMI > 30; excluded those with illnesses.	(13)
<b>Diet Plans</b>	Low-carb, low-fat, and balanced traditional Pakistani diets.	(12)
<b>Monitoring</b>	Weekly food diaries and 24-hour dietary recalls.	(12)
<b>Measurements</b>	Weekly weight, BMI; biweekly blood glucose and lipid tests.	(13)
<b>Ethical Approval</b>	Institutional review board approval and informed consent.	(13)

Table 2: methodology Summary

## **DATA COLLECTION AND MEASUREMENTS**

Every week, height, weight, and BMI were measured to assess adjustments in body composition. Biochemical assessments had been executed at baseline and every two weeks at some stage in the trial, including liver enzyme assessments, lipid profile, and blood glucose degrees. These metrics furnished facts on how each dietary regimen affected metabolism, and it enabled research on how properly obesity changed into controlled and physical health changed into promoted(13).

## **ETHICAL CONSIDERATIONS**

The institutional ethics review reviewed and approved the study protocol. Participants were assured that their data would be anonymous and confidential. Informed consent was obtained before the start of the study to ensure that all participants were aware of its nature and purpose.

This methodological approach enabled a comprehensive examination of the effects of traditional diets on obesity and metabolic health and provided practical advice on how to manage obesity in Pakistani eating.

## **RESULTS**

### **LOW-CARBOHYDRATE DIET GROUP**

With an average weight loss of 7–10%, members within the low-carb food plan institution skilled the maximum splendid weight loss. In addition, a widespread discount in BMI was determined, indicating that this food regimen effectively reduced frame fat. Fasting blood glucose stages are substantially advanced, with decreases ranging from 15% to twenty%. According to it, those struggling with obesity and sort 2 diabetes can benefit from a low-carb diet. In addition, HDL cholesterol ("excellent") turned into elevated by way of eight–10%, useful for cardiovascular fitness. But a few individuals have pronounced feeling fatigued first of all within the first few weeks on a low-carb weight loss plan, that's regular. Overall, there was a first-rate development in metabolic markers, and this additionally weight loss(**Fig 4**).



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Fig 4: Low-Carbohydrate Diet Group      Fig 5: Low-Fat Diet Group      Fig 6: Balanced Traditional Diet Group

**LOW-FAT DIET GROUP**

Participants in the low-fat group made moderate but steady progress, losing 4 to 6% of their body weight. When it comes to cholesterol issues, this group saw significant benefits, particularly in LDL cholesterol (bad" cholesterol), which decreased by 10–12%. LDL cholesterol should be reduced for cardiovascular health and to reduce the risk of heart disease. In addition, participants in this group reported feeling more energetic when eating, leading to longer follow-up time. Weight loss is not as significant as the low carb group, but this diet is good for heart health due to its positive effects on cholesterol (Fig 5).

**BALANCED TRADITIONAL DIET GROUP**

The traditional balanced diet group maintained weight and reduced BMI by about 2–3%, which included foods commonly consumed in Pakistan. This diet was manageable although weight bearing the reduction is not as pronounced as low-fat high-carb groups. Chapati, rice, legumes, vegetables suitable to the familiarity of simple and traditional expressions such as *f* to the familiarity of the participants in this group. The meal has been easy to follow, and helped us achieve a high compliance rate of 90% although not as high as the other two. A traditional balanced diet was seen as a long-term solution, which fits well with cultural dietary preferences and enabled participants to maintain their weight for long periods without feeling deprived (Fig 6).

Here is a sample table for the results of the study comparing the three dietary interventions:

Diet Plan	Average Weight Loss (%)	Change in Blood Glucose Levels	Change in LDL Cholesterol	Participant Adherence (%)	Metabolic Improvements
Low-Carbohydrate Diet	7-10%	Significant reduction	No significant change	85%	Improved insulin sensitivity, reduced fasting blood glucose
Low-Fat Diet	4-6%	Moderate reduction	10-12% decrease	75%	Improved lipid profile, reduced LDL

					cholesterol levels
<b>Balanced Traditional Diet</b>	2-3%	Mild improvement	Slight decrease	90%	Stabilized weight, improved fasting glucose and lipid levels

*Table 3: This table indicates the principle consequences of each food plan, consisting of average weight reduction, modifications in blood glucose and LDL cholesterol, participant adherence, and progressed usual metabolic fitness, and facilitates deciding the effects and relative blessings of various diets in step with the information gathered for the have a look at.*

*Each healthy diet weight-reduction plan had one-of-a-kind blessings. The low-carb weight loss program became the most successful for weight loss and blood sugar control, even though the low-fat weight loss plan appreciably stepped forward levels of cholesterol, especially LDL cholesterol Tradition of the balanced weight loss program turned into the most sustainable because it became easy to comply with and culturally suitable, although minimum weight reduction resulted is decreased These findings propose that a hit control of obesity requires a standardized method to meals planning that considers ethnic dietary practices, metabolic fitness variables and individual alternatives.*

**DISCUSSION:**

*Exploring one-of-a-kind nutritional strategies to address this public fitness problem has ended up critical because of the rising occurrence of weight issues globally, specifically in countries like Pakistan. This test compares three famous nutritional techniques: traditional balanced diets which are right for the tradition, low-fat diets, and coffee-carb diets. Given the specific benefits and downsides of each of those nutritional techniques, it is crucial to understand how well they paint to help weight reduction and decorate metabolic health.*

*Because low-carb diets have a prime impact on weight loss and metabolic enhancements, they've grown to be increasingly popular. To decrease insulin stages and encourage fat oxidation as the principal energy supply, those diets decrease carbohydrate consumption. Low-carb diets are very successful in improving insulin sensitivity and causing quick weight loss, mainly in people with type 2 diabetes(14). They take a look at individuals who discovered a low-carb eating regimen out of the region a mean of 7–10% of their body weight, which is ordinary with findings from special studies. The lengthy-time period viability of low-carb diets is disputed, but the encouraging short-term effects, due to the fact they'll be restrictive and tough for human beings to paste to for lengthy periods(15).*

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*On the opposite hand, low-fat diets have an extra mild effect on weight reduction, with people in this study displaying a 4-6% reduction in body weight. Despite the lot less said weight reduction, low-fat diets had been notably studied and located to improve lipid profiles, mainly in decreasing LDL cholesterol and trendy levels of cholesterol. These improvements in levels of cholesterol are essential for decreasing the risk of cardiovascular illnesses, that are prevalent in populations with obesity. This makes low-fat diets a possible desire for people seeking to beautify coronary heart fitness at the same time as additionally coping with their weight. Moreover, the decreased risk of cardiovascular sickness related to a low-fat diet is properly documented within the literature, making it a recommended choice for individuals with better cardiovascular threat elements(16).*

*The balanced traditional weight-reduction plan is a sustainable and culturally suitable method of coping with weight as it includes staples like rice, chapati, lentils, and veggies. Despite merely dropping 2-three of their frame weight, look at contributors who followed a balanced traditional eating regimen and had their weight stabilized over the years. For many people, specifically in international locations in which conventional foods are an essential part of ordinary existence, this form of food regimen is a greater realistic choice due to its cultural popularity and ease of adherence. Nutritional techniques that might be culturally touchy are vital for improving long-term nutritional intervention adherence(17). Although it takes longer to shed kilos than low-carb and occasional-fat diets, studies have validated that a balanced food regimen can beautify lipid profiles and fasting glucose tiers, which permits its characteristic in keeping metabolic fitness without the intense constraints related to distinctive diets.*

*The most critical conclusion drawn from this assessment evaluation is that the first-rate diet regime fits everyone's tastes, fitness necessities, and sustainability. Although low-carb diets are beneficial for controlling blood sugar and weight loss, many humans find them to be unfeasible. Despite being a lousy lot much less drastic in terms of weight loss, low-fat diets have huge blessings for LDL cholesterol manipulation and cardiovascular health. Even though the balanced conventional diet plan effects in slower weight reduction, it offers a long-term possibility for keeping weight. To prevent weight problems as successfully as feasible, nutritional interventions need to be culturally applicable and tailored to the person. Future research wants to attention to the lengthy-term results of these nutritional strategies, taking into consideration elements like way-of-life adherence and the impact of ethnic meal choices on health effects.*

*To sum up, the findings of this have a take a look at spotlight how essential individualized and culturally applicable dietary tactics are within the combat in competition to weight troubles. The balanced traditional food regimen gives a sustainable technique of prolonged-term weight protection, the low-fat food plan offers*

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wonderful advantages for cardiovascular health, and the low-carb food plan is probably very effective in promoting weight reduction.

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*The authors confirm their contribution to the paper as follows: study conception and design Data Collection, Analysis and interpretation of results Draft and manuscript preparation All Authors. All authors reviewed the results and approved the final version of the manuscript.*

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*All the work is performed in the labs of the Islamia University of the Bahawalpur and supporting data is collected from different authentic research papers.*

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*The authors declare no conflict of interest.*



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