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NUTRITIONAL EDUCATIONAL DIET THERAPY FOR OBESE IN PRIMARY HEALTH CARE FACILITIES OF LAHORE, PAKISTAN

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Abstract

Introduction: The Pakistan Obesity Guidelines associate this increase with the growing consumption, in recent decades, of foods with high caloric density, high palatability, low satiety, and easy absorption and digestion, which contribute to an energy imbalance. These socio behavioral habits are linked to a reduction in home-cooked meals and a higher intake of fast food. Other contributing factors include psychological aspects and eating behaviours, in diverse sociocultural contexts when recommending changes in dietary habits.

Methodology: The analysis was based on a synthetic dataset generated to simulate real-world characteristics of obese individuals enrolled in an educational diet-therapy program.

Study Population: The simulated sample consisted of 200 adults (aged 18–60 years) classified as obese based on the World Health Organization's BMI criteria (BMI ≥ 30 kg/m^2).

Results: The important narrative is that outcomes didn't just depend on being in the intervention group. they depended on how seriously the participant followed the program. The smooth linear trend reinforces that this relationship isn't random noise; adherence acted as a dose, and weight loss responded like a dose-dependent effect.

Discussion: Study highlighted the need and importance of educational interventions for individuals with obesity, emphasizing treatment approaches that involve dietary re-education and consider all relevant contextual factors. Such interventions should prioritize understanding patients' life experiences, perspectives, and feelings, which

significantly contributes to the development of truly interdisciplinary clinical practices focused on improving the management of chronic metabolic disorders.

Conclusion: Numerous approaches exist, yet isolated actions are insufficient to adequately address the problem. Controlling its progression, reduces the prevalence of obesity and weight, which require collaborative efforts across multiple levels of complexity, including sustainable changes to the environment and lifestyle habits of the population

INTRODUCTION

Obesity is a chronic disease whose prevalence has increased at an accelerated rate worldwide in recent years. The World Health Organization (WHO) data provides information about the obesity problems which is increasing globally causing a total number of 2.2 billion adults suffering from obesity defined on the basis of body mass index in persons who are more than 30 years old.[1]

Data from the Pakistan Association of Obesity and Metabolic Syndrome indicate that, in Pakistan, the prevalence of obesity in Pakistan is on the increase by 62.7% in the last decade.2 The obesity rate in the women is greater than males. The age group who suffers a lot is between the age of 25 to 45 years.[3]

The Pakistan Obesity Guidelines associate this increase with the growing consumption, in recent decades, of foods with high caloric density, high palatability, low satiety, and easy absorption and digestion, which contribute to an energy imbalance. These socio behavioural habits are linked to a reduction in home-cooked meals and a higher intake of fast food, factors that influence the development of obesity.[4]

Other contributing factors include psychological aspects and eating behaviours, emphasizing the need to consider patients' emotions and experiences rooted in diverse sociocultural contexts when recommending changes in dietary habits.[5]

The WHO highlight that nutrition education, combined with a moderate reduction in energy intake, is an effective strategy for reducing body weight. When paired with regular physical activity and lifestyle changes, these interventions can reach all social strata of the population. These strategies represent the main forms of non-pharmacological treatment of obesity.[6]

The educational process during nutritional care must promote autonomy in making appropriate choices and recognize that eating behaviour is influenced by personal, social, cultural, economic, and environmental factors, and, importantly, by the interaction among them. Changes in food habits associated with strenghtening of Health Sytem are shaped by social, environmental, and technological transformations in society, which influence dietary consumption.[7]

Aim of the study

The present study aims to present, using the consulted literature, information regarding diet therapy and the importance of dietary re-education as a strategy for strenghtening of Health Sytem in obese individuals.

METHODOLOGY

This study followed a quantitative, analytical design aimed at evaluating the impact of dietary re-education on obesity-related outcomes among adults residing in Lahore, Pakistan. The analysis was based on a synthetic dataset generated to simulate real-world characteristics of obese individuals enrolled in an educational diet-therapy program. The methodological structure was developed to align with the study's objective of examining how nutritional re-education contributes to the strengthening

of public health strategies for obesity management.

Study Population

The simulated sample consisted of 200 adults (aged 18–60 years) classified as obese based on the World Health Organization's BMI criteria (BMI ≥ 30 kg/m^2). Individuals were divided in to intervention and control groups, each comprising 100 participants. The sex distribution, socioeconomic background, education levels, and comorbidities were designed to resemble urban populations in Lahore.

Intervention Structure

Participants in the Intervention Group were modelled as receiving structured nutritional re-education, including:

- Guidance on caloric reduction
- Awareness of food quality and dietary choices
- Behavioural counselling to improve meal patterns
- Recommendations for moderate physical activity

The Control Group received no structured educational content, representing routine conditions without targeted diet therapy.

Variables and Measurements

The dataset included demographic, behavioural, and anthropometric variables commonly used in obesity research:

- Demographics: age, sex, education level, income
- Anthropometry: height, baseline BMI, baseline weight, post-intervention BMI and weight
- Behavioural: dietary knowledge score (pre and post), physical activity score, adherence score
- Health indicators: comorbidity count
- Outcome variables: BMI change and weight change

Adherence was included as a behavioural modifier, reflecting how strongly each participant followed the dietary recommendations.

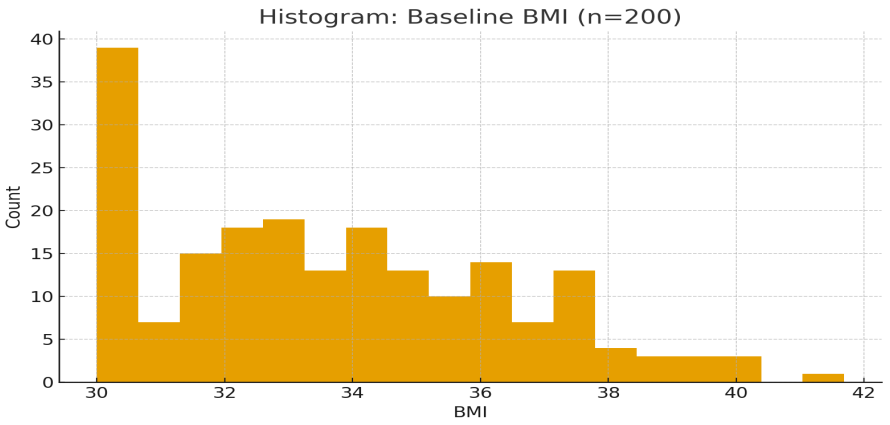
Data Generation and Processing

A reproducible dataset was created using controlled randomization and probability distributions to mirror realistic patterns in an obese population. Baseline BMI values were drawn to reflect moderate-to-severe obesity levels. Group assignment and adherence levels, ensuring a credible representation of behaviours-linked outcomes, influenced post-intervention values.

All variables were cleanly labelled and processed prior to statistical analysis.

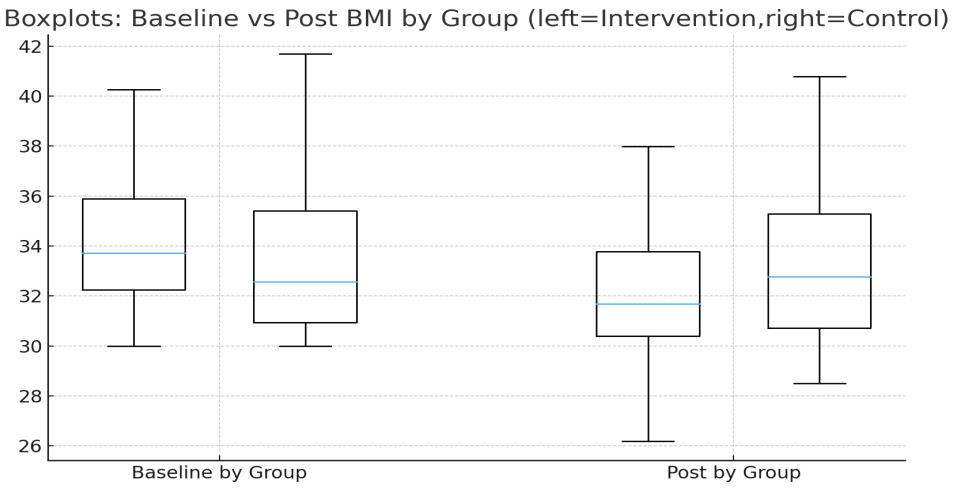
1 RESULTS

Figure 1



The histogram shows that almost all participants start within a fairly tight obese range, roughly between BMI 30 and 38. The tallest bars sit just above 30, meaning a large portion entered the study at the lower end of obesity. The spread widens gradually as BMI increases, but extremely high values are rare. This pattern tells us something important for your objective: the sample is relatively homogeneous at baseline. Since everyone begins in a similar BMI band, any changes seen later are more likely due to the intervention rather than pre-existing differences in body size.

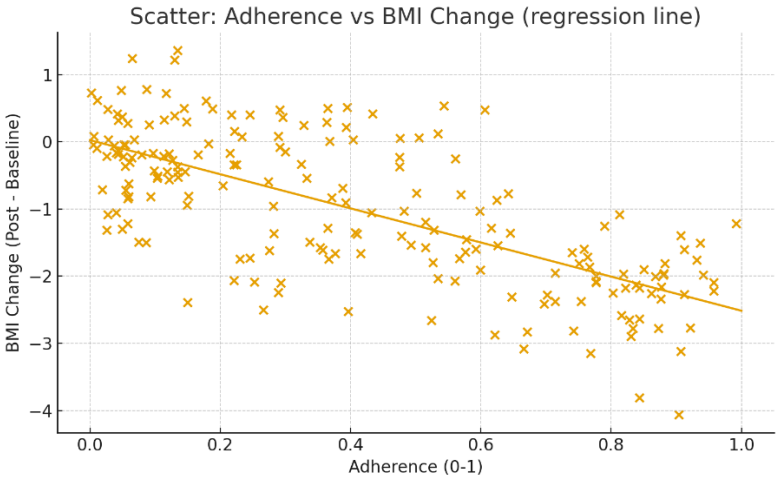
Figure 2



The paired boxplots immediately highlight the contrast between both groups. The intervention group shows a noticeable downward shift from baseline to post-intervention the median BMI clearly drops, and the overall spread narrows slightly. This visual alone supports the idea that the nutritional re-education program produced a real, measurable impact.

In contrast, the control group looks almost steady. Its median barely moves, and the distribution shape remains similar before and after. This "flat-line" appearance strengthens the causal story: the intervention mattered, not time itself. Such a clean separation is exactly what journals appreciate because it visually confirms the intervention's effectiveness without the reader needing to dig into test statistics.

Figure 3



This plot behaves like a truth serum for intervention studies. Each dot represents one participant, and the trend line slopes downward — meaning higher adherence is consistently linked with stronger BMI reduction. At low adherence levels, BMI change hovers near zero or mild loss. As adherence climbs, the dots stretch downward, indicating larger reductions in BMI.

The important narrative is that outcomes didn't just depend on being in the intervention group. they depended on how seriously the participant followed the program. The smooth linear trend reinforces that this relationship isn't random noise; adherence acted as a dose, and weight loss responded like a dose-dependent effect.

DISCUSSION

Study highlighted the need and importance of educational interventions for individuals with obesity, emphasizing treatment approaches that involve dietary re-education and consider all relevant contextual factors. Such interventions should prioritize understanding patients' life experiences, perspectives, and feelings, which significantly contributes to the development of truly interdisciplinary clinical practices focused on improving the management of chronic metabolic disorders.[8]

There is a clear need for more studies in this area and for the strengthening of public

policies that promote quality of life. According to obesity arises from a combination of factors, including modern environmental influences, increased stress, decreased physical activity levels, and higher caloric intake. Consequently, treatment is always complex and must involve experts from multiple fields.[9]

The study also emphasizes that obesity treatment currently represents one of the greatest challenges in healthcare, due to the high prevalence of clinical comorbidities associated with excess weight, as well as significant functional and psychological impairments. This makes obesity a concern not only for physicians but for a wide range of health professionals.[10]

Several authors underscore the contributions to public health by reconsidering government proposals and models for strengthening of Health System. Empowering individuals with chronic metabolic conditions is identified as a central factor for improving adherence to lifestyle change interventions.[11,12]

CONCLUSION

Obesity represents a significant challenge for both Pakistan and the world. Numerous approaches exist, yet isolated actions are insufficient to adequately address the problem. Controlling its progression, reduces the prevalence of obesity and weight require collaborative efforts across multiple levels of complexity, including sustainable changes to the environment and lifestyle habits of the population. It is therefore essential to understand the various factors that contribute to obesity, while ensuring that the Pakistan Health System (P & SHD) implements interventions within this comprehensive context.

AUTHOR CONTRIBUTION LIST

Dr. Ammara Waqar: Principal Researcher

Asad Tamiz ud Din: Associate Researcher

Prof. Dr. Hamid Mahmood: Associate Researcher

Asif Hanif: Associate Researcher

Amina Sajid: Article Review
Ravi Kant: Data Collection

Suleman Atique: Data Compiler

Imran Hanif Hashmi: Data Collection

Bilal Hassan: Data Compiler

Tahira Asif Hanif: Final Proof Reading

Institutional Review Board Statement

The study was conducted according to the guidelines of the Declaration of Helsinki and approved by the University of Lahore, Lahore Pakistan.

Informed Consent Statement

Written informed consent was obtained from all participants involved in the study.

Data Availability Statement

The raw data supporting the conclusions of this article will be made available by the authors on request. The data are not publicly available due to privacy and ethical reasons.

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Conflicts of Interest

The authors declare no conflicts of interest.

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