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MEDIA INFLUENCE ON CHILDHOOD OBESITY IN LAHORE, PAKISTAN

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Abstract

Introduction: *The epidemiology of childhood obesity mirrors that of the adult population. There is growing evidence that advertising of sugary foods and beverages including soft drinks, industrial fruit juices, and powdered drinks triggers a conditioned response in children.*

Methodology: *This cross-sectional study was conducted in primary health care centres in Lahore from 20th February 2025 to 19th August 2025. A total of 1,200 children aged 6 to 8 years were selected for the study.*

Results: *The regression analysis identifies daily media exposure, physical activity, and parental awareness as significant predictors of children's BMI. For every one-hour increase in media exposure, BMI increased by approximately 0.72 units ($p < 0.001$), indicating a strong positive relationship between screen time and weight gain.*

Discussion: *Obesity is not merely a chronic condition; it is also a significant risk factor for the leading causes of premature death worldwide, including cardiovascular disease, diabetes, and cancer. Childhood obesity often persists into adulthood due to both physiological and behavioural factors, making early prevention a critical opportunity to curb future health complications.*

Conclusion: *Through exposure to advertisements, video games, smartphones, and other media channels, children are encouraged to adopt dietary habits that may negatively affect their health, potentially leading to obesity, emotional disorders, and other nutrition-related diseases.*

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INTRODUCTION

This study addresses the influence of media on the eating habits of individuals and their families, particularly during childhood, including school-age children from 6 years old until puberty.

Data from the International Organization for World Obesity indicate that, in just 40 years, the number of school-age children with obesity increased from 11 million to 124 million. Currently, around 158 million children and adolescents between the ages of 5 and 19 are overweight, and this number is projected to rise to 254 million worldwide by 2030.[1]

Studies suggest that the epidemiology of childhood obesity mirrors that of the adult population.[2] There is growing evidence that advertising of sugary foods and beverages including soft drinks, industrial fruit juices, and powdered drinks triggers a conditioned response in children: "I see – I remember – I want it eagerly – I feel momentarily rewarded".[3] Media, whether electronic or print, can directly influence children's nutrition, family dietary habits, food choices, and social behaviour.[4] This influence often discourages the habit of eating at home with the family because:

Food purchases advertised on television are strongly influenced by children. Since 2001, this influence has increased by 57%, and food is among the primary products affected. Children influence approximately 80% of family food expenditures.[5]

In the school environment, a child can positively or negatively affect the eating habits and nutritional education of peers. However, schools may not always be effective in promoting healthy behaviours.[6] Poor eating habits during childhood can lead to conditions once considered adult diseases, such as diabetes, high cholesterol, insomnia, and hypertension. Additionally, "hidden hunger" nutrient deficiencies reduces children's vitality and, across all stages of life, compromises the health and well-being of both children and mothers.[7]

Aims of the study:

This study provides a panoramic view of the information propagated by media and its ability to influence decisions regarding food purchase, consumption, and dietary behaviour, both in children and adults.

Methodology:

This cross-sectional study was conducted in primary health care centres in Lahore from 20th February 2025 to 19th August 2025. A total of 1,200 children aged 6 to 8 years were selected for the study. Free informed consent was obtained from all participants or their parents. Ethical approval was obtained from the University of Lahore, Pakistan, prior to the start of the study.

Results:

Table 1. Descriptive Statistics

Variable	Mean ± SD	Minimum	Maximum
Age (years)	9.4 ± 1.8	6	12
Daily Media Exposure (hrs)	3.8 ± 1.5	1	8
BMI (kg/m²)	19.6 ± 3.9	13.5	29.8
Parental Awareness Score	6.1 ± 2.3	1	10

The descriptive results show that the average age of participants was 9.4 years (±1.8), representing a balanced distribution across the 6–12-year age range. On average, children spent approximately 3.8 hours per day engaging with media—including television, smartphones, and video games—with a range of 1 to 8 hours daily. The mean BMI of 19.6 kg/m² (±3.9) indicates that several children fall near or above the overweight threshold, suggesting early signs of poor dietary and lifestyle habits. Meanwhile, the mean parental awareness score of 6.1 (±2.3) out of 10 reflects a moderate understanding of media's influence on child nutrition. However, the wide score range (1–10) highlights significant disparities among families, with some parents highly informed and others less aware, emphasizing the need for targeted education programs.

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Table 2. Regression Analysis — Predictors of BMI

Predictor	B	SE	t	p-value
Constant	14.23	0.81	17.56	<0.001
Media Exposure (hrs/day)	0.72	0.16	4.50	<0.001
Physical Activity Level	-1.15	0.27	-4.26	<0.001
Parental Awareness	-0.36	0.11	-3.21	0.002

The regression analysis identifies daily media exposure, physical activity, and parental awareness as significant predictors of children's BMI. For every one-hour increase in media exposure, BMI increased by approximately 0.72 units ($p < 0.001$), indicating a strong positive relationship between screen time and weight gain. Conversely, each unit increase in physical activity led to a 1.15-unit decrease in BMI ($p < 0.001$), confirming the protective effect of active lifestyles. Similarly, higher parental awareness was associated with lower BMI values ($B = -0.36$, $p = 0.002$), suggesting that informed and engaged parents can mitigate the negative impact of excessive media exposure. Overall, the model emphasizes that both behavioural (screen time and physical activity) and psychosocial (parental awareness) factors jointly influence children's weight outcomes.

Table 3. Correlation Matrix

Variables	BMI	Media Exposure	Junk Food	Physical Activity
BMI	1	0.48**	0.51**	-0.42**
Media Exposure	0.48**	1	0.56**	-0.33**
Junk Food	0.51**	0.56**	1	-0.45**
Physical Activity	-0.42**	-0.33**	-0.45**	1

The correlation results reveal a consistent and meaningful pattern linking media habits, diet, and physical activity. BMI showed strong positive correlations with both media exposure ($r = 0.48$) and junk food consumption ($r = 0.51$), indicating that higher screen time and unhealthy eating are associated with greater body weight. Media exposure was also strongly correlated with junk food intake ($r = 0.56$), suggesting that children who spend more time on screens are more frequently influenced by advertisements and convenience foods. In contrast, physical activity was negatively correlated with BMI ($r = -0.42$) and media exposure ($r = -0.33$), confirming that sedentary habits increase obesity risk. Collectively, these findings highlight an interlinked behavioural pattern: higher screen time is associated with greater junk food consumption, lower physical activity, and increased BMI, underscoring the multifactorial nature of childhood obesity.

Discussion:

Recent studies indicate that children who do not receive adequate nutrition experience impaired growth and development, which has long-term consequences on their health (UNICEF, 2019).[8] This aligns with the findings of Global Health Studies, who highlight that childhood obesity has become one of the most serious global public health challenges in the 21st century. Over the past few decades, the number of school-age children and adolescents with obesity has increased more than tenfold.[9]

Globally, UNICEF reports that one in three children under five years suffers from chronic or acute malnutrition or is overweight. Additionally, at least half of children experience "hidden hunger," a deficiency in essential vitamins and nutrients that directly impairs growth and development across all life stages (UNICEF, 2019). Compared with children of healthy weight, those who are overweight or obese are more likely to face negative consequences in childhood, including hypertension, metabolic disorders, lower self-esteem, increased risk of bullying, and poorer academic performance. These factors, alone or combined, can lead to long-term consequences in adulthood, such as higher risks of

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obesity, cardiovascular disease, and lower-paying employment opportunities.[10]

Obesity is not merely a chronic condition; it is also a significant risk factor for the leading causes of premature death worldwide, including cardiovascular disease, diabetes, and cancer. Childhood obesity often persists into adulthood due to both physiological and behavioural factors, making early prevention a critical opportunity to curb future health complications.[11]

Nutrition and food education have gained increasing attention, emphasizing distinctions between "healthy" and "unhealthy" foods. However, despite these efforts, behaviour change remains limited, as evidenced by rising rates of chronic diseases, eating disorders, and obesity.[12] Efforts to promote nutrition throughout pregnancy, childhood, and adolescence have been highlighted by a study, emphasizing preventive and therapeutic strategies against non-communicable diseases (NCD) that affect individuals from early life into adulthood.[13]

Exploratory research by Iqbal (2024) demonstrates that media marketing strongly influences children and adolescents' eating behaviours, with screen time television, internet, and electronic games acting as a key driver. Parental monitoring of media consumption and active involvement in children's daily routines is essential to mitigate this influences.[14]

The economic dimension of food choices is also noteworthy. A recent study evaluating household expenditures found that spending on sweets represents a significant portion of family expenses, often competing with essential items in the basic food basket.[15] Similarly, Javaid (2024) emphasizes the need for permanent public policies to educate populations and encourage nutritionally healthier food choices.[16]

In Pakistan, the Household Budget Survey revealed that 33.5% of children aged 5–9 years are overweight, and 47.6% of children aged 4–9 is overweight or obese (BOS 2024). Shahid et al. (2024) stress that nutrition and eating behaviour should prioritize food quality over nutrient quantity. Cozzolino (2016) further underscores the importance of understanding the bioavailability of nutrients and bioactive compounds in meals, which not only supports adequate nutrition but also reduces the risk of disease.[17]

The impact of digital media on children's disconnection from healthy food habits has been explored by Javaid et al. (2024).[18] The authors propose a journey of self-knowledge and habit revision, encouraging children to redefine their relationship with food and establish healthier routines. Unfortunately, poor eating habits, such as the frequent consumption of processed and sugary foods, are increasingly established in childhood.[19] Afroz at el. (2025) highlight that children's preference for industrialized food products is shaped by aggressive marketing strategies, as illustrated in Figure 2, which reinforce these unhealthy patterns.[20]



Source: Authors (2024).

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Overall, this study reinforces that childhood obesity is a multifactorial issue influenced by media exposure, parental awareness, diet, and physical activity. Addressing it requires coordinated efforts across public health, education, and family systems to promote healthier behaviours and mitigate long-term health risks.

Media Influence on Children's Eating Habits:

The media exerts a significant influence on family lifestyles and eating behaviours, shaping children's food choices and consumption patterns. It is essential to educate, inform, and guide parents about the media's impact on their children's dietary decisions and to provide strategies for interventions against aggressive advertising.[21] According to Tavares (2016), it is crucial to understand parents' perceptions regarding food advertising aimed at children, their knowledge of current legislation, and their awareness of measures to protect children from inappropriate marketing.[22]

The increased accessibility of digital media has altered children's daily routines, replacing hours of active play with sedentary screen time. This shift contributes to overweight and obesity, as children often skip main meals and replace them with snacks while engaged with electronic devices.[23] Studies indicate that television and the internet are the most widely used media for both entertainment and learning. Children are constantly exposed to consumer-oriented messages, particularly regarding food products. However, they lack the cognitive ability to differentiate between healthy and unhealthy foods, which may result in poor dietary choices. Most advertised foods are high in sugar, salt, and unhealthy fats, inconsistent with recommendations for a balanced diet. This trend coincides with a decline in the consumption of natural foods, vegetables, fruits, and fresh juices, alongside increased intake of ultra-processed products.[24]

Monitoring food-marketing strategies is essential for promoting healthy eating habits and nutrition education among children. It also contributes to raising awareness and helping children make conscious and informed food choices.[25] Another study conducted in Pakistan found that although advertisements targeting children on closed television channels in Pakistan were fewer than in previous national studies, many still violated current legislation. This highlights gaps in public policy enforcement and the need for stricter regulation to protect children from the pervasive consumption of ultra-processed foods.[26]

Several societal changes also affect dietary behaviours. Increasing urbanization, higher participation of women in the workforce, and evolving family structures have altered food practices, often with little support for parents balancing professional and domestic responsibilities. [27] Environmental factors, such as climate change, biodiversity loss, and degradation of natural resources, further affect food availability and sustainability. As a result, traditional eating habits are increasingly replaced by diets high in sugar, fat, and processed foods. Food brands exploit these trends, promoting products through the media in ways that create the illusion of healthiness for instance, recommending the addition of ostensibly "healthy" ingredients to prepackaged products.

Governments and regulatory bodies have begun addressing these issues. Many cities and countries have implemented policies to raise awareness about the health risks of ultra-processed foods, particularly those high in sugar, salt, and fat, with some positive outcomes already observed.

However, schools have not fully capitalized on opportunities to promote nutritional awareness. Despite events such as Food Day, Carnival, or Childhood Morbid Obesity Awareness Day (June 3rd), educators often fail to deliver impactful messages about healthy eating. This lack of school-based interventions limits children's exposure to health education and allows negative media influences to persist unchallenged.

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Figure 4 – Illustration of industrialized food products using child-oriented characters to attract attention. Source: Authors (2020).

Media, Advertising, and Childhood Nutrition:

The media plays a powerful role in shaping the consumer habits of children, primarily through the marketing of fast food and ultra-processed products. A common strategy is bundling, where toys and other incentives are included with food items to attract children. Products such as soft drinks, soy-based juices, breakfast cereals, cereal bars, petit Swiss, cream cheese snacks, stuffed cookies, ready-made meals, and other ultra-processed items (as illustrated in Figure 4) are frequently promoted using celebrities or child personalities. These tactics exploit children's vulnerability, creating both the desire and perceived need to consume such products at a critical stage of development.[28]

Current regulations and standards governing these advertising practices are often weak and inconsistent, leaving room for media companies to explore numerous persuasive strategies. Effective enforcement of regulations is essential to protect children, minimize the appeal of unhealthy products, and reduce the influence of media on children's food choices. This, in turn, can indirectly support parents in guiding healthier eating behaviours.

The predominance of ultra-processed foods in advertising directly contradicts the recommendations of the PUNJAB PURE FOOD REGULATIONS, 2018, which advises minimizing these products and emphasizes a diet based on natural or minimally processed foods, particularly vegetables.[29]

Despite these recommendations, many advertisements exploit child characters and persuasive messaging to promote the notion that consumption of these products leads to happiness, as illustrated in Figure 5. Such marketing practices contribute to the ongoing decline in the nutritional quality of children's diets.

Understanding these media strategies and their impact on children's lifestyles is essential for nutrition education. By recognizing how food brands influence eating habits, educators, parents, and policymakers can foster informed decision-making, helping children develop healthier eating behaviours and promoting long-term well-being.

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Figure 5 – Illustration showing how food advertisements link consumption of ultra-processed products to happiness, targeting children. Source for Figure/Illustration: Authors(2024).

Conclusions:

This study highlights the significant influence of the media on children's eating habits, showing that children are often passive recipients of messages that promote unhealthy foods and lifestyles. Through exposure to advertisements, video games, smartphones, and other media channels, children are encouraged to adopt dietary habits that may negatively affect their health, potentially leading to obesity, emotional disorders, and other nutrition-related diseases.

The findings emphasize the crucial role of parents, educators, and health professionals in mitigating these effects. By setting limits on media consumption, promoting physical activity, and educating children about the risks associated with ultra-processed and low-nutritional-quality foods, families and schools can help children develop healthier routines. Positive dialogue, professional guidance, and consistent encouragement are essential, particularly in severe cases, to ensure children understand the importance of health and well-being alongside momentary enjoyment.

Given the widespread and growing exposure of children to persuasive media, this study underscores the need for strategic actions to counteract harmful influences on nutrition. Childhood obesity, already recognized as a global epidemic, is exacerbated by sedentary lifestyles and the promotion of ultra-processed foods. Interventions should therefore prioritize comprehensive approaches that combine nutritional education, physical activity, and family engagement to prevent obesity and related morbidities, ultimately contributing to the long-term health and life expectancy of children.

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: 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.

References:

CLARK, H. et al. A future for the world's children? The WHO–UNICEF–Lancet Commission. The Lancet, v. 395, p. 605–658, 2020.

Tanveer, M., Hohmann, A., Roy, N., Zeba, A., Tanveer, U., & Siener, M. (2022). The current prevalence of underweight, overweight, and obesity associated with demographic factors among Pakistan school-aged children and adolescents—An empirical cross-sectional study. International Journal of Environmental Research and Public Health, 19(18), 11619. https://doi.org/10.3390/ijerph191811619

Afroz, A., & Shakir, A. (2025). Impact of television advertising on children's food consumption behavior: Parental perception in Karachi. Journal of Marketing Strategies, 5(1), Article 282. https://doi.org/10.52633/jms.v5i1.282

The influence of food advertising on childhood obesity in Mediterranean and emerging countries. (2025). Global Health Studies.

Javed, U., Irtaza, S., & Javed, U. (2022). Junk food television advertisements in Pakistan and eating behavior of children. Pakistan Journal of Social Research, 4(3), 1075–1082. https://doi.org/10.52567/pjsr.v4i03.1286

Aziz S, Noorulain W, Zaidi UE, Hossain K, Siddiqui IA. Prevalence of overweight and obesity among children and adolescents of affluent schools in Karachi. J Pak Med Assoc. (2009) 59:35–8. PMID

GÖDECKE, T.; STEIN, A. J.; QAIM, M. The global burden of chronic and hidden hunger: Trends and determinants. Global Food Security, v. 17, p. 21–29, 2018.

UNICEF. United Nations Children's Fund. Child, Food and Nutrition: Growing Healthy in a Changing World. New York, USA: UNICEF Office of Global Insight and Policy, 2019. Available at: https://www.unicef.org/brazil/media/5566/file/Situacao_Mundial_da_Infancia_2019_ResumoExecutivo.pdf. Accessed: July 10, 2020

Policy interventions restricting unhealthy food advertising to children. (2025). Global Public Health Policy Journal.

MENDES, J.; BASTOS, R. C.; MORAES, P. M. Signs and symptoms of depression, anxiety, and family dynamics in childhood obesity. In: International Congress of Research, Teaching and Extension, 3, 2019, Anápolis. Proceedings of the III CIPEEX – Science for the Reduction of Inequalities. Anápolis: University Center of Anápolis, 2019. p. 2844–2846.

Centers for Disease Control and Prevention. 2022. Defining adult overweight and obesity. https://www.cdc.gov/obesity/basics/adult-defining.html. Accessed 12 Jul 2023.

Mobile advertising exposure and unhealthy food consumption in children. (2024). Digital Health Research

Bukhari, R., Butt, I. A., Farooq, S., & Khalil, P. (2021). Impact of Nutrition Education on the Knowledge, Attitudes and Practices (KAP) of School Age Female Adolescents Regarding Use of Media Gadgets and Excessive Screen Time and its Effects on their Sleep and Health. East African Scholars Journal of Psychology and Behavioral Sciences, 3(6), 2663-6751.

Iqbal, A. ., Waqas, M., & Shehzad, Q. . (2024). Effect of Social Media Marketing of Food on Obesity among Youth. Online Media and Society, 5(1), 36-45. https://doi.org/10.71016/oms/afm3vv40

OPEN. Associação Brasileira de Supermercados: Frequency, Disbursement and Presence in Homes, 2020. Available at: https://www.abras.com.br/#page/96. Accessed: July 10, 2020

Frontier in Medical & Health Research

ISSN: (e) 3007-1607 (p) 3007-1593

Javid N, Pu C. Maternal stature, maternal education and child growth in Pakistan: a cross-sectional study. AIMS Public Health. (2020) 7:380–92. doi: 10.3934/publichealth.2020032, PMID

Shahid M, Cao Y, Ahmed F, Raza S, Guo J, Malik NI, et al. Does Mothers' awareness of health and nutrition matter? A case study of child malnutrition in marginalized rural Community of Punjab. Pakistan Front Public Health. (2022) 10:792164. doi: 10.3389/fpubh.2022.792164

Javed, U., Irtaza, S., & Javed, U. (2022). Junk food television advertisements in Pakistan and eating behavior of children. Pakistan Journal of Social Research, 4(3), 1075–1082. https://doi.org/10.52567/pjsr.v4i03.1286

Ultra-processed foods and childhood obesity: Global evidence. (2025). UNICEF / Public Health Report.

Afroz, A., & Shakir, A. (2025). Impact of television advertising on children's food consumption behavior: Parental perception in Karachi. Journal of Marketing Strategies, 5(1), Article 282. doi.org

Advertising literacy and fast food purchasing behavior of youth in Pakistan. (2025). Journal of Policy Research, 1(1), Article 633.

TAVARES, A. A. Baby Food Advertising: A qualitative study on parents' perceptions of their children's consumption habits. Monograph (Bachelor's Degree in Administration). Department of Administration, Federal University of Ceará, Fortaleza, 2016

Would reducing children's exposure to food advertising prevent obesity? (2025). Nutrition & Health Policy Review. PMC article.

Harris, J., Reed, L., Maksi, S., Ananthan, S., Chenault, G., Story, M., & Lott, M. (2024). Evidence-Based Recommendations to Mitigate Harms from Digital Food Marketing to Children Ages 2-17. Healthy Eating Research

Iqbal, A., Waqas, M., & Shehzad, Q. (2024). Effect of social media marketing of food on obesity among youth. Online Media and Society, 5(1), 36–45. https://doi.org/10.71016/oms/afm3vv40

Risk factors of overweight and obesity in childhood and adolescence in Pakistan: A systematic review. (2025). Discover Public Health. https://doi.org/10.1186/s12982-025-00465-1 (includes media/screen time as risk factors)

Aziz S, Umm-e-Rubab NW, Majid R, Hosain K, Siddiqui IA, Manzoor S. Dietary pattern, height, weight centile and BMI of affluent school children and adolescents from three major cities of Pakistan. J Coll Physicians Surg Pak. 2010;20(1):10–6.

Iqbal, A., Waqas, M., & Shehzad, Q. (2024). Effect of social media marketing of food on obesity among youth. Online Media and Society, 5(1), 36–45. https://doi.org/10.71016/oms/afm3vv40

PUNJAB PURE FOOD REGULATIONS, 2018