Mental Health and Lifestyle Journal

Year 2024
Volume 2
Issue 3

The Effectiveness of Parent-Based Behavioral Intervention on Industrial Snack Requests and Parent–Child Conflict in Obese and Overweight Children

Mohammadreza. Bidgolian[1], Faezeh. Jahan[2*], Parviz. Sabahi[3], Hassan. Asadzadeh[4]

Article type:
Original Research

Article history:
Received 11 July 2024
Revised 08 September 2024
Accepted 12 September 2024
Published online 20 September 2024

1 PhD student, Department of Psychology, Semnan Branch, Islamic Azad University, Semnan, Iran
2 Assistant Professor, Department of Psychology, Semnan Branch, Islamic Azad University, Semnan, Iran
3 Associate professor, Department of Psychology, Semnan University, Semnan, Iran
4 Professor, Department of Educational Psychology, Faculty of Psychology and Education, Allameh Tabataba'i University, Tehran, Iran

*Correspondence: faezeh.jahan@iau.ac.ir

ABSTRACT

The aim of this study was to investigate the effectiveness of parent-based behavioral intervention on industrial snack requests and parent–child conflict in obese and overweight children. The research method was quasi-experimental with a pretest–posttest and follow-up design using a control group. The statistical population included all mothers of obese and overweight children aged 4 to 6 years in Tehran and their children. The sample consisted of 38 mother–child dyads selected from the statistical population through purposive sampling and assigned to experimental and control groups. For the experimental group, the parent-based behavioral intervention was implemented in eight one-hour sessions, while the control group remained on the waiting list. The research instruments included the Children's Industrial Snack Request Frequency Checklist and the Parent–Child Relationship Questionnaire (Pianta, 1994). The results indicated that parent-based behavioral intervention had a significant effect on simple industrial snack requests, insistent or conflict-related industrial snack requests, and parent–child conflict in the posttest and follow-up stages. The findings of this study provide useful information regarding parent-based behavioral intervention, and psychologists and psychiatrists may employ this approach to improve nutritional problems and parent–child conflict.

Keywords: parent-based behavioral intervention, industrial snack requests, parent–child conflict, obese children.

How to cite this article:
Bidgolian, M., Jahan, F., Sabahi, P., & Asadzadeh, H. (2024). The Effectiveness of Parent-Based Behavioral Intervention on Industrial Snack Requests and Parent–Child Conflict in Obese and Overweight Children. *Mental Health and Lifestyle Journal, 2*(3), 95-106. https://doi.org/10.61838/mhlj.2.3.10

Introduction

Childhood obesity has emerged as one of the most pressing public health challenges worldwide, affecting both developed and developing countries. According to recent global estimates, the prevalence of obesity

and overweight among children has reached alarming levels, with long-term implications for both physical and mental health outcomes (1). This growing epidemic is not only the result of biological and genetic predispositions but also reflects a complex interplay of environmental, familial, and behavioral factors that shape children's dietary preferences and lifestyle patterns. In recent years, research has increasingly emphasized the role of parent–child interactions, family dynamics, and food-related behaviors in the onset and persistence of childhood obesity (2, 3).

The prevalence of obesity among children is particularly concerning in low- and middle-income countries where rapid urbanization, the nutrition transition, and aggressive food marketing practices have dramatically altered eating habits (4, 5). For instance, systematic reviews in Iran have shown that even children under the age of five are experiencing overweight and obesity at notable rates, signaling the need for targeted interventions within early childhood (4). Similarly, UNICEF's regional reports highlight a marked rise in childhood overweight across Latin America and the Caribbean, where structural inequalities and limited access to healthy foods exacerbate the problem (6). These findings indicate that the global nature of the epidemic necessitates context-specific approaches, while acknowledging universal drivers such as unhealthy food consumption, parental feeding practices, and intergenerational transmission of lifestyle patterns (7, 8).

Among the most significant contributors to childhood obesity is the increased availability and consumption of processed and industrial foods, including snacks and sugar-sweetened beverages. Studies conducted in China, for example, have demonstrated a strong relationship between sugar-sweetened beverages, takeaway dietary patterns, and psychological as well as behavioral problems in children and adolescents (9). These findings align with research indicating that children's requests for unhealthy foods are shaped not only by personal preferences but also by external influences such as advertising, parental responses, and family communication styles (10). This phenomenon, often termed "pester power," describes the persistent requests of children for advertised foods, which frequently leads to family conflict and strained parent–child interactions (11, 12).

Family conflict surrounding food requests has been linked to broader relational outcomes within the household. For example, conflict between parents and children over snack requests is not an isolated behavioral problem but may reflect underlying difficulties in family communication and emotional regulation (13, 14). Repeated exposure to interparental conflict in early life has been shown to increase the risk of psychological problems in later childhood (14), suggesting that food-related conflicts could contribute to cumulative family stress. In divorced or high-conflict families, interparental conflict has also been associated with poorer child adjustment outcomes, mediated by impaired parenting practices (15). These findings underline the critical need to examine snack-related conflicts within a broader psychosocial framework that accounts for family cohesion, parenting stress, and relational dynamics (16).

Parenting practices play a central role in shaping children's eating habits and self-regulation skills. Research has consistently highlighted that parental responses to children's food requests influence both immediate dietary choices and long-term health behaviors (17). Permissive or negligent parenting styles, for example, are associated with higher rates of unhealthy food intake and weaker dietary boundaries, leading to greater susceptibility to obesity (18). Conversely, structured parenting that integrates behavioral boundaries and consistent rules around food consumption promotes healthier eating behaviors (3). Parental

feeding practices are also deeply influenced by parental stress and economic hardship, which may increase reliance on high-calorie, processed foods due to affordability and convenience (16).

To address these dynamics, behavioral and family-centered interventions have been developed to target both parental and child behaviors. Family-based weight management programs have been found effective in reducing unhealthy eating behaviors and supporting weight loss among children (7). Behavioral strategies, such as those utilizing behavior cards or contracts, have demonstrated success in modifying children's dietary behaviors by strengthening accountability and reinforcing positive choices (19, 20). Importantly, parent-focused behavioral interventions recognize that parents serve as gatekeepers to food environments, role models of dietary behavior, and regulators of emotional and conflict dynamics within the family (2).

The role of parent–child relationship quality in shaping dietary behaviors has also been emphasized in the literature. Parent–child closeness and reduced conflict are associated with healthier food-related practices and improved emotional outcomes for children (21). Interventions aimed at enhancing the parent–child relationship, such as play therapy or mother–child interaction training, have been shown to reduce conflict and strengthen parental self-efficacy (22-24). These psychosocial approaches suggest that strengthening the relational foundation between parents and children may indirectly reduce food-related conflict and encourage healthier eating behaviors.

In addition to relational strategies, external social and environmental factors contribute significantly to children's food requests and obesity risk. Marketing strategies directed at children through social media and advergaming have been found to significantly influence dietary preferences and snack requests (25). Binder and Matthes (12) further demonstrated that audiovisual media consumption increases children's susceptibility to media-motivated food requests over time. In families where advertising mediation is weak or inconsistent, children are more likely to adopt persistent request behaviors that escalate into conflict (10). Thus, the media environment constitutes a critical context that intersects with family processes to shape children's eating behaviors.

The sociocultural context also shapes parental perceptions and practices around feeding. Research in Mexico has highlighted both barriers and facilitators in reducing children's consumption of junk food, illustrating how cultural norms, economic constraints, and parental beliefs influence decision-making (26). Similarly, evidence from India underscores the intergenerational effects of maternal junk food consumption on children's obesity risk, reflecting both biological and behavioral pathways (5). These findings emphasize that parental modeling and dietary patterns are pivotal in determining children's long-term health trajectories.

Despite advances in understanding the multifactorial causes of childhood obesity, gaps remain in translating this knowledge into effective, sustainable interventions. Technology-enhanced behavioral parent training has emerged as a promising approach for supporting families, particularly those with limited resources (27). Such interventions may provide scalable solutions for addressing obesity prevention while accommodating diverse parental profiles and socioeconomic constraints. However, implementation challenges persist, including cultural adaptation, parental engagement, and ensuring long-term sustainability of behavior change (8).

Taken together, the literature underscores the importance of parent-focused interventions in addressing childhood obesity and food-related conflicts. Obesity is not merely a physiological issue but a behavioral and

relational phenomenon deeply embedded in family systems and social environments (1, 14). Parents play a central role not only as regulators of children's diets but also as mediators of family conflict, interpreters of media messages, and models of coping strategies in the face of food marketing pressures (11, 25). Understanding these dynamics provides the foundation for designing effective behavioral interventions that can reduce unhealthy food requests, minimize parent–child conflict, and promote healthier trajectories for children (19, 27).

The current study was designed to evaluate the effectiveness of a parent-based behavioral intervention in reducing children's industrial snack requests and parent–child conflict among obese and overweight children.

Methods and Materials

Study Design and Participants

The present study employed a quasi-experimental method with a pretest–posttest control group design and a two-month follow-up period, conducted in the fall and winter of 2024. The statistical population consisted of all mothers of obese and overweight children aged 4 to 6 years in Tehran and their children. The sample size was determined using PASS software, version 2021, and a total of 38 mother–child dyads who met the inclusion criteria were selected through purposive sampling and randomly assigned to experimental and control groups. Attrition included one dyad in the experimental group and three dyads in the control group, while the remaining participants attended until the end of the intervention.

Inclusion criteria included a child's age of 4 to 6 years, obese or overweight status based on body mass index, at least one simple request and one insistent or conflict-related request for snacks per week, the mother serving as the child's primary caregiver with a maximum of one additional caregiver, a maximum of two children in the family, at least a high school diploma for the mother, and access to and ability to use the "Bale" messenger application. Exclusion criteria included the presence of diagnosed psychological disorders, simultaneous participation in other child behavior interventions, and more than two absences from the sessions.

Data Collection

Diagnosis of Obesity and Overweight: To diagnose obesity and overweight in children, the cutoff points defined by body mass index and the CDC 2000 growth charts were used. Accordingly, children's height and weight (measured in meters and kilograms, respectively) were assessed, and their BMI was calculated by dividing weight by the square of height. A BMI equal to or above the 95th percentile and between the 85th and 95th percentiles (adjusted for age and gender) were defined as obesity and overweight, respectively. Children's weight was measured without shoes and with minimal clothing using a Seca digital scale with an accuracy of 0.5 kg, and their height was measured in a standing position with a wall-mounted mechanical stadiometer accurate to 0.5 cm.

Children's Industrial Snack Request Frequency Checklist: To collect data on the frequency of children's simple and insistent or conflict-related industrial snack requests, a researcher-made Industrial Snack Request Frequency Checklist was used. The checklist was completed by mothers over seven consecutive days during the pretest, posttest, and two-month follow-up weeks. It was designed based on the

operational definition of industrial snack requests, and the weekly mean scores were analyzed as the final index. The checklist included a comprehensive list of common industrial snacks, and mothers recorded each daily consumption instance during the week by marking the corresponding day. Face and content validity of the checklist were reviewed and confirmed by five experts in psychology and nutrition. To examine reliability, the test–retest method was used: 15 parents completed the checklist twice with a one-week interval, and the correlation coefficient between the two administrations was r = 0.80, indicating acceptable reliability. The list of snack items was developed based on the World Health Organization's definitions and classifications, as well as prior studies, including peer-reviewed research on children's snack requests and standardized domestic and international food frequency questionnaires. Item selection was finalized through consultation with nutrition specialists to ensure scientific accuracy and compliance. The general criteria for including items in the checklist were industrial nature, processed form, low nutritional value, and high use of additives such as sugar, salt, fat, flavor enhancers, artificial colors, and preservatives.

Pianta Parent–Child Relationship Questionnaire: This scale, first developed by Pianta in 1994, is a self-report instrument completed by a parent (mother or father) to assess parental perceptions of their relationship with their child. The 33-item scale measures three components: conflict (17 items), closeness (10 items), and dependency (6 items), using a 5-point Likert scale (1 = definitely applies, 5 = definitely does not apply). Higher scores on each subscale indicate greater presence of the measured dimension. Driscoll and Pianta (2011) reported Cronbach's alpha values of 0.75 for conflict, 0.74 for closeness, 0.69 for dependency, and 0.80 for the overall positive relationship. Ebarashi et al. (2009) reported alpha values of 0.84, 0.69, 0.64, and 0.80 for the respective subscales and confirmed content validity. In the present study, only the conflict subscale scores were used, with reliability calculated using Cronbach's alpha ($\alpha = 0.91$).

Intervention

Following receipt of the ethics code and approval of educational centers, the program announcement and entry prerequisites were published on the centers' virtual channels, and virtual groups were created on the "Bale" messenger to record pretest child request behaviors. The parent-based behavioral intervention, adapted from the program developed by Linn et al. (2016), was conducted for the experimental group across eight weeks, with one-hour weekly sessions. The control group did not receive any intervention. The intervention protocol was delivered across eight structured sessions with the active participation of mothers, emphasizing stimulus control, behavioral contracting, and positive reinforcement strategies. The first session focused on introducing mothers to the intervention framework, teaching gradual removal of industrial snacks from the home environment, and controlling external cues in settings such as gatherings and shopping centers. In the second session, mothers were trained to prevent snack consumption at home in the child's presence, avoid using snacks as rewards, and coordinate with other family members to maintain consistent stimulus control. The third session introduced mothers and children to healthy food alternatives to replace industrial snacks. Sessions four and five centered on establishing a behavioral contract, including setting two free-choice days per week, preparing the child in advance for snack purchases, managing unauthorized requests, and ensuring maternal adherence to agreed "free days." These sessions also emphasized identifying effective reinforcers, daily engagement with children in preparing healthy snacks, and planning interactive activities such as play on designated days. The sixth session trained mothers to

apply positive social reinforcement—such as smiling, praise, encouragement, and attention—in situations where the child demonstrated desirable behaviors. The seventh session was devoted to reviewing and consolidating prior content to prepare mothers for consistent implementation at home. Finally, the eighth session allowed mothers to report on their application of the program during the preceding week, with facilitators addressing difficulties and providing corrective guidance to strengthen adherence and outcomes.

Data Analysis

Demographic information, including children's age, gender, height, and weight, as well as mothers' age, education, occupation, number of children, and number of caregivers, was completed by mothers. Data were analyzed using SPSS version 24 and repeated-measures ANOVA in a two-way mixed design. Ethical considerations included obtaining written informed consent, maintaining confidentiality and privacy, ensuring voluntary participation, and providing the control group with training after the study concluded.

Findings and Results

The mean and standard deviation of mothers' age in the experimental group were 33.4 ± 4.8, and in the control group were 32.1 ± 4.3. The educational level of the mothers in the experimental group included high school diploma and associate degree, bachelor's, and master's, with frequencies of 4 (22.2%), 9 (50%), and 5 (27.8%), respectively. In the control group, the distribution was 2 (12.5%), 9 (56.2%), and 5 (31.3%), respectively. The mean and standard deviation of children's age in the experimental group were 5.1 ± 2.7, and in the control group were 5.5 ± 2.9. Among the participating children, 50% were girls and 50% were boys. In the experimental group, 10 children (55.6%) were overweight, and 8 children (44.4%) were obese. In the control group, 10 children (62.5%) were overweight, and 6 children (37.5%) were obese. Descriptive statistics of the pretest and posttest scores of the research variables by groups are reported in Table 1.

Table 1. Descriptive Statistics of Research Variables by Experimental and Control Groups

Variable	Group	Pretest Mean	Pretest SD	Posttest Mean	Posttest SD	Follow-up Mean	Follow-up SD
Simple request	Experimental	14.06	3.47	3.22	1.83	3.33	1.64
	Control	13.44	3.44	13.81	3.18	13.94	2.91
Insistent/conflictual request	Experimental	12.61	3.55	0.39	1.04	0.80	0.78
	Control	11.81	3.62	12.00	3.67	12.12	3.22
Conflict	Experimental	42.50	3.46	42.94	3.31	42.75	3.55
	Control	43.39	2.59	38.56	3.32	38.94	3.81

As shown in Table 1, the mean scores of simple industrial snack requests, insistent or conflictual industrial snack requests, and conflict in the experimental group decreased from pretest to posttest and follow-up compared to the control group. To analyze the data, repeated-measures analysis of variance was used. First, the assumptions underlying this test were examined. The Kolmogorov–Smirnov test was used to assess the normality of the score distribution. The results indicated that the assumption of normality was not rejected for either group ($p > .05$). Levene's test was used to assess homogeneity of variances, and the results showed that the equality of variances was not rejected for simple snack requests ($F = 0.022$, $p > .05$), insistent/conflictual snack requests ($F = 0.313$, $p > .05$), and conflict ($F = 0.186$, $p > .05$). Mauchly's test of sphericity showed that the significance level for the variables of simple requests and insistent/conflictual

requests was less than .05; therefore, the assumption of sphericity was rejected, and Greenhouse–Geisser correction was used for these variables. Thus, the conditions required for conducting the covariance analysis were met.

Table 2. Results of Multivariate Tests (Wilks' Lambda) for Dependent Variables

Variable	Value	F	Hypothesis df	Error df	Sig.	Eta²
Simple request	0.173	74.335	2	31	.001	0.807
Insistent/conflictual request	0.155	78.267	2	31	.001	0.835
Conflict	0.321	15.795	2	31	.001	0.433

The results of Wilks' Lambda in multivariate covariance analysis showed that there was a significant difference between the groups in at least one of the dependent variables ($p < .001$).

Table 3. Repeated-Measures ANOVA for Within-Group and Between-Group Effects

Variable	Source	SS	df	MS	F	p	Eta²
Simple request	Time	604.027	1.490	405.401	82.674	.001	0.721
	Time × Group	710.302	1.490	476.728	97.220	.001	0.752
	Group	1195.448	1	1195.448	71.965	.001	0.627
Insistent/conflictual request	Time	801.988	1.354	592.174	134.452	.001	0.808
	Time × Group	870.694	1.354	642.905	145.971	.001	0.820
	Group	1421.482	1	1421.482	75.002	.001	0.400
Conflict	Time	104.350	2	52.175	18.880	.001	0.371
	Time × Group	141.605	2	70.802	25.620	.001	0.445
	Group	150.409	1	150.409	5.308	.028	0.210

The results in Table 3 indicate that the F-values for the interaction between time and group were significant for the variables of simple requests ($F = 97.220$), insistent/conflictual requests ($F = 145.971$), and conflict ($F = 25.620$) ($p < .001$). Pairwise comparisons of the adjusted means across the three test stages (pretest, posttest, and follow-up) are presented in Table 4.

Table 4. Bonferroni Post Hoc Test Results for Research Variables Across Three Stages

Variable	Stage Comparison	Experimental Group Mean Difference	Sig.
Simple request	Pretest–Posttest	10.833	.001
	Pretest–Follow-up	10.722	.001
	Posttest–Follow-up	0.111	1.000
Insistent/conflictual request	Pretest–Posttest	12.167	.001
	Pretest–Follow-up	12.002	.001
	Posttest–Follow-up	0.165	1.000
Conflict	Pretest–Posttest	4.833	.001
	Pretest–Follow-up	4.444	.001
	Posttest–Follow-up	0.389	1.000

As shown in Table 4, in the variables of simple industrial snack requests, insistent/conflictual industrial snack requests, and conflict, the mean scores of the experimental group in posttest and follow-up were significantly lower compared to the pretest stage ($p < .01$). However, the difference between posttest and follow-up was not significant ($p > .01$). In the control group, no significant differences were found between pretest, posttest, and follow-up ($p > .01$). These findings indicate that parent-based behavioral intervention not only improved snack request behaviors and parent–child conflict in the experimental group but also maintained this effect at the follow-up stage.

Discussion and Conclusion

The present study aimed to examine the effectiveness of a parent-based behavioral intervention in reducing children's industrial snack requests and parent–child conflict among obese and overweight children. The results demonstrated that the intervention produced significant reductions in children's simple snack requests, insistent or conflictual requests, and overall parent–child conflict. These effects were maintained at the two-month follow-up stage, suggesting the durability of the intervention. The findings highlight the critical role of parent-focused strategies in addressing not only the dietary behaviors of children but also the relational tensions that arise around food within the family context.

The observed reductions in snack requests can be interpreted through the lens of prior research on parent–child interaction and self-regulation. Anderson and Keim (3) emphasized that early childhood is a sensitive developmental stage for shaping self-regulation skills, with parents acting as primary facilitators. By empowering parents to set consistent boundaries and engage in structured interactions, the intervention in this study likely promoted children's ability to regulate their desires for industrial snacks. This finding aligns with behavioral intervention approaches such as the use of behavior cards, which have shown efficacy in reducing unhealthy eating behaviors in preschool children (19). Similarly, Liu et al. (20) demonstrated that behavior contracts strengthen accountability and can modify persistent requests, a mechanism that is consistent with the outcomes observed in the current research.

The results also underscore the importance of reducing insistent or conflict-related requests, which are commonly associated with "pester power." Lawlor and Prothero (11) conceptualized pester power as a negotiation battle between children and parents, often reinforced by media exposure and inconsistent parental responses. In the present study, the intervention likely helped parents develop more consistent communication strategies, reducing the reinforcement cycle of persistent requests. This explanation is supported by findings from Binder and Matthes (12), who showed that children's media consumption significantly increases food purchase requests over time, and by Watkins et al. (10), who highlighted the role of family communication and mediation styles in shaping request behaviors. By enhancing parents' ability to manage requests calmly and consistently, the intervention may have weakened the behavioral persistence underlying insistent snack demands.

Another important finding of this study was the reduction of parent–child conflict following the intervention. Conflict within families, particularly around food, has been shown to contribute to broader relational stress and negative child adjustment outcomes. Driscoll and Pianta (21) reported that higher levels of conflict in parent–child relationships undermine closeness and emotional security, which in turn influence developmental outcomes. Likewise, Martin-Biggers et al. (13) identified that family conflict, chaos, and low cohesion contribute to negative food-related behaviors in both mothers and children. The reduction of conflict observed here indicates that the intervention not only addressed behavioral symptoms (snack requests) but also improved relational processes, reinforcing the idea that family-based interventions should target both behavioral and emotional aspects.

These findings are consistent with earlier research on family-centered therapeutic approaches. For instance, Mousavi et al. (24) demonstrated that family-centered play therapy improved the quality of parent–child relationships in children with attention deficit disorder, while Nosrati and Nemat Tavousi (22) found that play therapy interventions reduced parent–child conflict and improved maternal parenting self-efficacy.

Similarly, Abarashi et al. (23) showed that programs aimed at enhancing psychosocial development through improved mother–child interaction significantly strengthened parental self-efficacy and relationship quality. Taken together, these studies confirm that interventions addressing parent–child dynamics can generate broader benefits for both psychological and behavioral health.

The persistence of the intervention's effects at follow-up provides additional support for its efficacy. Westrupp et al. (14) emphasized that repeated exposure to interparental conflict in early life increases the risk of later mental health problems, suggesting that reducing conflict early has lasting protective effects. Moreover, Van Dijk et al. (15) found that interparental conflict undermines child adjustment through disrupted parenting, further illustrating the value of sustained reductions in conflict. In the present study, the maintenance of lower conflict levels and snack requests after two months suggests that parents were able to internalize and continue using the behavioral strategies introduced during the intervention.

The findings also align with broader public health evidence on childhood obesity prevention. The World Health Organization (1) has underscored the importance of early interventions that address unhealthy eating habits and family-level determinants of obesity. Similarly, Cochrane reviews have shown that interventions targeting children aged 5 to 11 can effectively prevent obesity when they include parental involvement (8). The present study contributes to this literature by demonstrating that parent-based behavioral interventions are effective even in children as young as 4 to 6 years, a developmental window that may be especially critical for establishing lifelong health trajectories.

Socioeconomic and cultural factors must also be considered when interpreting these findings. Schuler et al. (16) highlighted that parenting stress arising from economic hardship mediates the relationship between low income and children's intake of unhealthy foods. Similarly, Théodore et al. (26) found that cultural norms and resource limitations shape parental practices around feeding, particularly in efforts to reduce children's junk food intake. Although the present study did not explicitly measure economic or cultural variables, the effectiveness of the intervention suggests that structured behavioral strategies can be applied across diverse contexts, potentially overcoming some of these barriers.

The role of parental modeling also deserves attention. Dash et al. (5) provided evidence from India showing that maternal junk food consumption is directly associated with children's obesity risk. This highlights the reciprocal influence of parental behaviors on children's dietary patterns. Likewise, Sanchez (18) emphasized that negligent and permissive parenting styles increase children's vulnerability to unhealthy eating. By training parents to adopt consistent, structured, and health-oriented responses, the intervention in this study may have indirectly influenced parental behaviors as well, creating a healthier overall family food environment.

The findings also resonate with research on environmental and marketing influences. McCarthy et al. (25) demonstrated that exposure to unhealthy food marketing through social media significantly shapes children's diet-related outcomes, while Pettigrew et al. (17) identified pathways by which advertising influences children's food requests. The reduction of snack requests in the current study suggests that parent-based behavioral training can buffer the effects of external marketing pressures by equipping parents with strategies to resist and redirect such influences. In this sense, the intervention not only addressed direct family conflict but also helped shield children from broader obesogenic environments.

Finally, the results are consistent with research on innovative behavioral and technological approaches to parenting interventions. Yang et al. (27) showed that technology-enhanced parent training can effectively support families with low income, particularly when tailored to parent-centered profiles. Although the intervention in the current study was not technology-based, its success underscores the broader principle that empowering parents with targeted behavioral strategies is a key pathway for reducing childhood obesity and its associated conflicts. This also reflects the ecological perspective advocated by Ward et al. (2), who argued that family-centered interventions should target both maternal and child health outcomes simultaneously.

Overall, the present findings add to the evidence that parent-based behavioral interventions are effective in modifying children's eating behaviors and reducing family conflict. By integrating behavioral strategies with relational improvements, such interventions may serve as a sustainable and culturally adaptable approach to obesity prevention in early childhood.

Despite its contributions, this study has several limitations that should be acknowledged. First, the sample size was relatively small and limited to one urban context, which restricts the generalizability of the findings. Second, the reliance on maternal reports for measuring children's snack requests may have introduced reporting bias, particularly given that parents were the direct targets of the intervention. Third, the follow-up period of two months, while valuable, was relatively short, and longer-term sustainability of the intervention effects remains unclear. Additionally, the study did not account for potential confounding variables such as socioeconomic status, parental dietary behaviors, or children's exposure to food marketing, all of which may influence outcomes.

Future research should consider larger and more diverse samples across multiple regions to enhance the external validity of findings. Longitudinal studies with extended follow-up periods are necessary to assess the long-term sustainability of parent-based interventions. Incorporating objective measures of children's dietary intake, such as direct observation or biomarkers, could help overcome biases associated with self-report instruments. Furthermore, future interventions might explore integrating technology-enhanced components, as suggested by recent advances in digital behavioral training, to increase accessibility and adherence. Examining moderating variables such as parental stress, socioeconomic status, and cultural beliefs could also provide deeper insights into the mechanisms underlying intervention effectiveness.

The findings of this study highlight several practical implications for professionals working in child health, psychology, and public health. Clinicians and counselors can incorporate parent-based behavioral strategies into their interventions with families of obese and overweight children. Schools and community health centers may adopt parent-training programs as part of broader health promotion initiatives. Policymakers could also support the development and dissemination of culturally adapted behavioral programs to address rising rates of childhood obesity. Finally, practitioners should emphasize the importance of reducing parent–child conflict around food, not only for improving dietary outcomes but also for fostering healthier family relationships.

Acknowledgments

The authors express their deep gratitude to all participants who contributed to this study.

Authors' Contributions

All authors equally contributed to this study.

Declaration of Interest

The authors of this article declared no conflict of interest.

Ethical Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants (Ethics Code: IR.IAU.SEMNAN.REC.1403.005).

Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

Funding

This research was carried out independently with personal funding and without the financial support of any governmental or private institution or organization.

References

1. World Health O. Obesity and overweight. 2025.
2. Ward DS, Erinosho TO, Wasser HM, Munoz PM. Family-Centered Interventions to Reduce Maternal and Child Obesity. Obesity During Pregnancy in Clinical Practice2013. p. 297-335.
3. Anderson SE, Keim SA. Parent-child interaction, self-regulation, and obesity prevention in early childhood. Current obesity reports. 2016;5(2):192-200. doi: 10.1007/s13679-016-0208-9.
4. Khateri S, Moradi Y, Khazaei Z, Mirzaei H, Hanis SM, Aliabadi MA, et al. Prevalence of obesity and overweight in Iranian children aged less than 5 years: a systematic review and meta-analysis. Korean journal of pediatrics. 2019;62(6):206. doi: 10.3345/kjp.2018.07255.
5. Dash A, Balla S, Das S, Goli S. Examining the association between maternal junk food consumption and obesity among children: evidence from a cross-sectional survey in India. Journal of health, population, and nutrition. 2025;44(1):191. doi: 10.1186/s41043-025-00937-9.
6. Unicef. Childhood overweight on the rise in Latin America and the Caribbean: 2023 report. 2023.
7. Chai LK, Collins C, May C, Brain K, See DW, Burrows T. Effectiveness of family-based weight management interventions for children with overweight and obesity: an umbrella review. JBI Evidence Synthesis. 2019;17(7):1341-427. doi: 10.11124/JBISRIR-2017-003695.
8. Spiga F, Davies AL, Tomlinson E, Moore TH, Dawson S, Summerbell CD. Interventions to prevent obesity in children aged 5 to 11 years old. Cochrane Database of Systematic Reviews. 2024;2024(7). doi: 10.1002/14651858.CD015328.pub2.
9. Zhang Y, Wu X, Wang Q, Zong Q, Wang R, Li T, et al. The relationship between sugar-sweetened beverages, takeaway dietary pattern, and psychological and behavioral problems among children and adolescents in China. Frontiers in psychiatry. 2021;12:573168. doi: 10.3389/fpsyt.2021.573168.
10. Watkins L, Robertson K, Aitken R. Preschoolers' request behaviour and family conflict: The role of family communication and advertising mediation styles. Journal of consumer behaviour. 2021;20(5):1326-35. doi: 10.1002/cb.1938.

11. Lawlor MA, Prothero A. Pester power-A battle of wills between children and their parents. Journal of marketing management. 2011;27(5-6):561-81. doi: 10.1080/0267257X.2010.495281.
12. Binder A, Matthes J. What can stop the 'pester power'? A longitudinal study on the impact of children's audiovisual media consumption on media-motivated food purchase requests. Pediatric Obesity. 2023;18(6):e13018. doi: 10.1111/ijpo.13018.
13. Martin-Biggers J, Quick V, Zhang M, Jin Y, Byrd-Bredbenner C. Relationships of family conflict, cohesion, and chaos in the home environment on maternal and child food-related behaviours. Maternal & child nutrition. 2018;14(2):e12540. doi: 10.1111/mcn.12540.
14. Westrupp EM, Brown S, Woolhouse H, Gartland D, Nicholson JM. Repeated early-life exposure to inter-parental conflict increases risk of preadolescent mental health problems. European journal of pediatrics. 2018;177(3):419-27. doi: 10.1007/s00431-017-3071-0.
15. Van Dijk R, Van Der Valk IE, Deković M, Branje S. A meta-analysis on interparental conflict, parenting, and child adjustment in divorced families: Examining mediation using meta-analytic structural equation models. Clinical psychology review. 2020;79:101861. doi: 10.1016/j.cpr.2020.101861.
16. Schuler BR, Daundasekara SS, Hernandez DC, Dumenci L, Clark M, Fisher JO, et al. Economic hardship and child intake of foods high in saturated fats and added sugars: The mediating role of parenting stress among high-risk families. Public Health Nutrition. 2020;23(15):2781-92. doi: 10.1017/S1368980020001366.
17. Pettigrew S, Jongenelis M, Miller C, Chapman K. A path analysis model of factors influencing children's requests for unhealthy foods. Eating Behaviors. 2017;24:95-101. doi: 10.1016/j.eatbeh.2016.12.006.
18. Sanchez JH. Lived experiences of young adults exposed to negligent and permissive parenting styles: Walden University; 2024.
19. Lin M, Pan LP, Han J, Li L, Jiang JX, Jin RM. Behavioral intervention reduces unhealthy eating behaviors in preschool children via a behavior card approach. Journal of Huazhong University of Science and Technology [Medical Sciences]. 2016;36(6):895-903. doi: 10.1007/s11596-016-1681-9.
20. Liu L, Liu Y, Wang T, Liu Y. The application of behavior contract in education. Research and Advances in Education. 2023;2(3):49-51. doi: 10.56397/RAE.2023.03.10.
21. Driscoll K, Pianta RC. Mothers' and Fathers' Perceptions of Conflict and Closeness in Parent-Child Relationships during Early Childhood. Journal of Early Childhood & Infant Psychology. 2011(7).
22. Nosrati M, Nemat Tavousi M. The effectiveness of play therapy based on parent-child relationship on parent-child conflict and maternal parenting self-efficacy. Measurement and Research in Counseling and Psychology. 2020;2(1(3)):87-104. doi: 10.52547/jarcp.2.1.87.
23. Abarashi Z, Tahmasian K, Mazaheri MA, Panaghi L. The effect of the program "Enhancing the psychosocial development of the child through improving mother-child interaction" on parental self-efficacy and mother-child relationship in children under three years old. Research in Psychological Health. 2009;3(3):49-58.
24. Mousavi SF, Afrooz G, Arjmandnia AA, Ghabari Bonab B. Evaluating the effectiveness of family-centered play therapy on the parent-child relationship in children with attention deficit disorder. Royesh Psychological Studies. 2023;12(5):1-10.
25. Mc Carthy CM, de Vries R, Mackenbach JD. The influence of unhealthy food and beverage marketing through social media and advergaming on diet-related outcomes in children-A systematic review. Obesity Reviews. 2022;23(6):e13441. doi: 10.1111/obr.13441.
26. Théodore FL, Lozada-Tequeanes AL, Alvarado R, Kim-Herrera EY, García-Guerra A, Rodríguez-Ramírez S, et al. Exploring barriers and facilitators to feeding children with minimal or no "Junk Food": Insights from Mexican women. Public Health Nursing. 2025;42(1):23-32. doi: 10.1111/phn.13420.
27. Yang Y, Parent J, Gil KM, Jones DJ. The Efficacy of Technology-Enhanced Behavioral Parent Training for Families With Low Income: Do Parent-Centered Profiles Moderate Treatment Outcomes? Behavior Therapy. 2025;56(2):261-75. doi: 10.1016/j.beth.2024.10.002.