

## Parents' Perceptions toward the Effect of Food Advertising Directed at their Children

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### Abstract

**Background:** Advertising directed at children has received regular focus for many years as it is fraught with ethical concerns, while children are a vulnerable group that should be protected rather than being the object for companies' marketing. Recent concerns about the increased rates of obesity among children worldwide have resulted in the resurgence of interest towards food advertising targeting children. Since parents play an important mediation role in controlling their children, thus, it is important to understand parents' perceptions. The aims of this study were to examine the parents' perceptions toward the effect of food advertising on children's eating habits and childhood obesity. Moreover, to investigate the prevalence of overweight and obesity among parents and their children.

**Methodology:** A cross-sectional study was conducted among 332 parents of children aged between 4 and 14 years at shopping mall and public parks in the state of Qatar. A survey was carried out to measure parent's perceptions toward the effect of food advertising directed at children. Anthropometric measurements were self-reported except for parents' weight which was obtained via an electronic scale. SPSS program version 21 was used for analysis and p-value  $\leq 0.05$  indicated statistical significance.

**Results:** The findings demonstrated that more than 50% of participated parents and their children were either overweight or obese. The majority of parents expressed negative perceptions of food advertising targeting children and preferred to better regulations of this area ranging from modification of advertising contents to its total prohibition (63%).

**Conclusion:** These findings confirm previous data indicating that exposure to food advertising can increase the desire to consume advertised products. This research generally confirms the need for better legislative regulations of this issue and larger contribution of food products that have positive implications on children's health in the future.

**Keywords:** Advertising; Parents; Children; Perceptions; Obesity; Eating; Habits; Attitude

### Introduction

Obesity is defined by the World Health Organization (WHO) as a common and preventable condition in which excessive fat accumulated in adipose tissue to the extent that health is deleteriously affected [1]. The Body Mass Index (BMI) of  $\geq 30 \text{ kg/m}^2$  indicates obesity [2]. While a child is classified as obese when a BMI centile is over 95% using (WHO) charts [3]. Nowadays, obesity among children is a major concern as they are at increased risk of becoming obese during adulthood and developing associated chronic diseases such as

diabetes mellitus, cancers, strokes, and cardiovascular disease [4]. As per the Centers for Disease Control and Prevention (CDC), it has been estimated that 5% to 10% of the direct medical cost of the US is related to obesity (\$113.9 billion). In 2008, the direct medical cost per-person of overweight reached \$226, whereas approximately \$1723 was associated to obesity [5]. In 2012, 92 million were at risk of being overweight in the world, while the global prevalence of childhood obesity has reached approximately 43 million cases. Between 1990 and 2010, the universal prevalence of obesity has increased from 4% to more than 7% and it's expected to reach more than 9% in 2020 [6]. Similarly, the prevalence of obesity among children has increased from 6.5 to 19.6% among age group of 6 - 11 years old [7]. It has been stated that the highest prevalence of childhood obesity of 20-30% was reported in North America, Western Pacific, and Europe, while the lowest prevalence was that on South East Asia and Sub-Saharan Africa [8]. Surprisingly, the prevalence of obesity among school age children in industrialized countries has reached a level comparable to other countries undergoing economic growth including Egypt, Chile, Brazil, and Mexico [8].

Concerns about children's diet and obesity have resulted in increased public, academic, and political attention. Although the growth of childhood obesity has been related to various factors including increased energy intake, decreased energy expenditure, lack of nutrition knowledge, home environment, exposure to media content along with parents' perceptions, beliefs and eating habits. Almost one factor continues to dominate the debate which is the effect of TV food advertising directed at children [9]. Increased TV viewing has been considered as a contributing factor to childhood obesity as it associates with reduced physical activity and increased food consumption [10]. Furthermore, critics have argued that food advertising, in particular, is mainly responsible for the increased rate in obesity among children as a result of promoting energy-dense food. It has been shown that energy-dense food products contain high proportions of sugar, salt, and fat with low nutrients content [11].

It has been stated that the lacking of comprehensive data about childhood obesity in the Arab Gulf States including Qatar is due to the limited availability of both local datasets and national surveys. Qatar has emerged as the richest country in the world in terms of the GDP. Despite all notable improvements, the rapid urbanization, industrialization, market globalization and economic development have become responsible for the emerging obesity epidemic especially among children in Qatar [12]. In 2013, the overweight and obesity rates reached 76%. Studies reported that in 2006, childhood obesity in Qatar reached 26% and increased up to 40% by 2014 [13]. The estimated prevalence of obesity for 2030 suggested that this will remain the case in accordance with anticipated changes in population demography and size [14].

In order to understand the growing prevalence of childhood obesity, it is necessary for parents to take into account the obesogenic environment and ensure their children's diets [15]. A growing concern about unhealthy food advertising has been present in the world for several years as marketing and commercial wield a powerful influence on parents' and children's eating behaviors. While the warnings about the potentially damaging effects of TV food advertisements targeting children have recently become stronger [16]. Empirical evidence found that food advertising messages can affect nutritional knowledge and behaviors and trigger children's decisions. Children learn by observation as they imitate their parents' food style. Thus, children's food preferences are affected by their environments including food stuffs, and role models [17].

Today, the estimates of advertising messages are astonishing as most of the television programs are commercially supported. While marketers aim to develop positive, creative, and long-lasting messages. Children are considered as a vulnerable group whom their skills and experience are limited by their age. Therefore, children are almost unable to understand the persuasive intent behind food advertising. Due to children's vulnerability, critics have raised ethical concerns about the food advertising directed at children. In contrast, food marketers have realized that children have a strong influence on their parents' buying behaviors. Thus, advertisers started to focus on child-oriented TV advertisements [18].

Parents are still the gatekeeper who make the final purchasing decision. It seems that there are plenty of researches in regard to advertising food products to children, however, research on how parents perceive the effect of TV food advertisements on children is limited [10]. Since parents are considered as a dominant factor who affect their children's food choices and are responsible for their children's nutrition, it is important to study the attitudes and perceptions of parents about TV food advertising targeting children [19].

To date, very limited studies have marginally investigated the perceptions of parents toward food advertisements directed at children. This is a significant gap in the literature that this study attempts to address. While, discussing the effect of food advertising from the perspective of parents may provide unique implications in the advertising literature. Increasing parents' awareness, preventing conflicts and providing insights for better relationships among parents and their children may be another important contribution of this study. Besides, the present study will identify diverse environmental factors including parents' education, home environment, family's eating patterns, and advertising medication. Most importantly, the study will provide implications for public policy regarding the perception of parents toward the impact of food advertising on children. Thus, the findings would have relevance for regulators, policymakers, educators, and consumer advocates to establish a more responsible advertising environment in today's society [20].

### Aim of the Study

The present study aimed to investigate the parents' perceptions toward the effect of food advertising on children's eating habits and childhood obesity. Moreover, to examine the prevalence of overweight and obesity among parents and their children.

### Methodology

#### Study design and sampling

A cross-sectional study was conducted among 332 parents of children aged between 4 and 14 years at shopping malls and public parks in Doha, the state of Qatar.

Parents of children aged 4 - 14 years old were targeted in this study while each family was allowed to fill a questionnaire for one child only to avoid repetition. Exclusion criteria included parents not having children aged 4 - 14 years or parents of a child that has already participated. In regards to participant recruitment, a study poster was distributed in the shopping mall and public parks three days before the date of data collection. The poster was attractive enough to catch the readers' eyes at first glance and the objective was explaining the project, identifying inclusion criteria, and encouraging parents to participate in this study. Parents were approached randomly, they were asked first if they have a child between 4- to 14-year-old, if yes, they were told about the study and asked if they had interest in the study. If they showed interest, they were given the participation information sheet and requested to give their permission to participate in the research. In case parents had more than one child within this age group, they were asked to participate for only one child (the youngest) as younger children are expected to be more affected by food advertising due to the limited cognitive and social skills [21]. Those who agreed to participate, a questionnaire with an explanation letter were given along with a consent form to be signed and return back with the completed filled questionnaire.

The sample size was determined from unknown population through using a special equation indicating 95% confidence interval with 5 units (5% of true population) as a margin of error. This has been achieved via specific equation:  $n = p(1-p) \left(\frac{Z}{E}\right)^2$  [22] in which:

$n$  = Number to sample

$p$  = a "best guess" for prevalence (i.e.  $\pm 0.50$ )

$Z^2 = (1.96)^2$  which is equal to 95% confidence (i.e.  $\alpha = 0.05$ )

$E$  = The maximum acceptable error for the estimated prevalence (i.e.  $\pm 0.05$ )

$n = 0.5(1-0.5) \left(\frac{1.96}{0.05}\right)^2 = 384$  participants.

### Data collection

The data was gathered during November and December 2016. A self-administered questionnaire was given to the parents and collected back from them by hand on site. Completion of each questionnaire took approximately 15 to 20 minutes. The questionnaire was available in two main languages (English and Arabic) for the parents to choose from.

The basis of this research questionnaire was obtained from surveys developed by Eagle, *et al.* (2002) and Morley (2007) [6,23]. Questionnaires were revised to adapt the chosen research methodology and the culture/environment of Qatar. The original English version was translated into Arabic by a professional translator, and to avoid any inconsistency, the Arabic version was translated back to English. The first draft of the questionnaire was pilot tested on ten parents to be verified before executing a large-scale survey. Parent's comments were discussed and necessary adjustments were made accordingly.

The questionnaire was intended to measure parent's attributes and perceptions toward the effect of food advertising directed at children. The questionnaire consists of close-ended multiple-choice questions. While, to eliminate any neutrality or indecision from the respondents, a 4-point Likert scale was used for the scale questions. The questionnaire made up of five sections; section (A) meant for collecting demographic data, sections (B), (C) and (D) designed for measuring parent's concerns about food advertising targeting children, while section (E) aimed at presenting parent's thoughts in regard to selected food/drink items and how frequently those items are consumed by their children (Appendix D). The questionnaire comprises 10 constructs that include: childhood obesity, eating behaviors/food preference, children's understanding of advertising, advertising ethics and practices, intra-family conflict, home environment, role of government, banning of food advertising, food advertising concerns, and advertising contents.

Most importantly, parents were approached one by one separated from where the other parents waited to ensure their confidentiality and privacy. Parents reported their children's weight and height, and their BMI was calculated accordingly. Parents' height was also self-reported, while their weight status was obtained via an electronic scale (digital reading). To ensure an accurate weight measurement, the scale was calibrated at zero reading before starting to take the weight. Moreover, only one scale was used to ensure the validity of the weight measurement.

### Validity and reliability

Validity is a degree used to identify if the instrument has measured what it has set out to measure. The original questionnaire which was modified for use in this study has been already validated by Eagle, *et al.* (2002) and Morley (2007) [6,23]. However, the pilot test of 10 parents lead to minor refinements of the questionnaire such as codes, wording and sequencing. Participants who participated in piloting helped in establishing content validity of the questionnaire and improving the questions formats and scales [24]. Reliability of an instrument refers to the consistency of a measure. This was achieved through administrating the questionnaire twice to the same participants at different times [25]. Ten parents completed the questionnaire on two separate occasions; parents were informed of the second trial after they submitted their questionnaire on the first occasion. The period of two weeks was not long enough for a real change to happen in parents' nutritional knowledge and behaviors; however, it was considered long enough for them to forget their response to the first set of surveying. Reliability was significantly established for the whole 5 sections included 40 constructs by Cronbach's alpha coefficient of 0.805.

### Ethical consideration

The study was approved by expedited ethics review from the University of Roehampton London. Local permission was obtained from the management office of the malls and the security guard service of public parks in Doha. Participation in the study was totally voluntary and confidentiality of all the participants was assured. Personal identifiable information or names were not sought in this study, while

only numbers were used to identify the participants. Moreover, relevant information was verbally explained to the parents before distributing questionnaires. Those who agreed to participate in the study signed a consent form and were informed on how their data will be used. The consent form used in this study provided parents with adequate information in regards to the aim of the research, the voluntary nature of participation, the anonymity of the data they provide, and their ability to withdraw from the study at any time [26].

### Data analysis

The interpretation of BMI classes was referred to the WHO guidelines. With the metric system, the BMI, defined as the body weight in kilograms divided by height in meters squared, was used for a purpose of measuring population prevalence of overweight and obesity. For parents, the BMI of 25 to 29.9 is classified as overweight and a BMI of 30 or above is considered as obese. While children's BMI values were classified differently according to the WHO growth charts. Childhood obesity is defined as a BMI at or above the 95<sup>th</sup> percentile, while, a BMI of  $\geq$  85<sup>th</sup> centile is classified as overweight. Data collected from the survey were statistically analyzed with the SPSS program version 21. Some variables were categorized into a relatively small number of groups since too much variables are often difficult to analyze. Descriptive statistics (frequencies, percentages, mean and standard deviations) were used to describe the basic features of the data.

Demographic data was presented as percentages through tables, and graphs, while prevalence was tested for measuring obesity and overweight among parents and their children. One-Way Analysis of variance (ANOVA) test was performed to study the association between dependent and independent variables and determine the presence of any significant differences among different group means. Statistical significance was indicated by p-value of  $\leq$  0.05. Chi-square test used to examine the association between categorical variables and Cross-tabs analyses were used to summarize observations by categories. While, Cronbach's alpha, the most common measure of internal consistency was calculated to determine the questionnaire reliability [27].

### Results

The calculated sample size was 384, however, only 369 parents were interviewed, of which 18 declined and 19 questionnaires were excluded because of incompleteness in majority of variables. Thus, the sample size was considered to be 332 parents giving a response rate of 89.97%.

#### Demographics characteristics of the study population

The demographic characteristics of the sample was consisting of 332 parents; 118 males (63.5%) and 214 females (64.5%). The majority of the sample (95.2) were married couples, while 64.2% of the whole sample were non-Qataris. The percentages of parents who their bachelor degree (82.5%) were higher than others with either school (2.4%) or post graduate degree (6.9%). On the other hand, most of the reported children (63.5%) were between 4 and 8 years old, while the numbers of boys were more than girls (220 versus 112). Most of the participants (65%) were having less than three TV sets in their household. As per parents, the majority of children (65.7%) spent three to five hours daily in watching TV, using a mobile and computer, and playing games. The other group (30.4%) spent more than 5 hours every day. While only 3.9% of them spent less than three hours in front of screens. Whereas most of parents were having shared meals with their children either on daily basis (41.6%) or at least three to five days per week (44.3%). 13% of parents reported eating a single meal together less than two days a week, while 1.2% did not often share meals with their children (See table 1).

#### Prevalence of overweight and obesity among children and parents

The majority of children were having normal BMI (42.2%) followed by at risk of overweight (27.7%) and overweight groups (18.5%), and 10.5% of the reported children were obese. While parents participated in this study were more likely to be overweight (46.7%) than obese (7.2 %), while 46.7% of them were having normal BMI (See table 2).

**Table 1:** Demographics characteristics of the study population.

		n	Percentage %
Parents age group	18 - 29	70	21.1
	30 - 39	157	47.3
	40 - 50	80	24.1
	> 50	25	7.5
Parents gender	Male	118	35.5
	Female	214	64.5
Children age group	4 - 8	211	63.5
	9 - 14	121	36.3
Children gender	Male	220	66.3
	Female	112	33.7
Nationality	Qatari	119	35.8
	Non-Qatari	213	64.2
Marital status	Married	316	95.2
	Divorce	11	3.3
	Widow/widower	5	1.5
Number of children	1 - 3	241	72.6
	> 3	91	27.4
Education level	School-level	35	2.4
	University degree	274	82.5
	Post graduate degree	23	6.9
Number of TVs	< 3	216	65
	≥ 3	116	34.9
Children's TV/media viewing time	< 3 hours	13	3.9
	3 - 5 hours	218	65.7
	> 5 hours	101	30.4
Family shared meals	Daily	138	41.6
	3 - 5 days/week	147	44.3
	< 2 days/week	43	13.0
	Very rare	4	1.2
Total		332	100%

**Table 2:** Prevalence of overweight and obesity among children and parents.

		n	Percentage %
Children's BMI	Normal	140	42.2
	At risk of overweight	92	27.7
	Overweight	60	18.5
	Obese	35	10.5
Parents' BMI	Normal	151	45.5
	Overweight	155	46.7
	Obese	24	7.2
Total		332	100%

**Parents' concerns over the effects of advertising targeting children**

In relation to parents concerns on the effect of advertising on children, the majority of parents (80.4%) expressed their concerns toward the general food advertising directed at children during their TV watching time, while parent were more concerned about unhealthy food advertising (81.6%). Concerns raised mostly over using famous characters in delivering food advertising messages (75%), followed by using magazines or games (72.9%) along with providing toys (66.9%) in promoting advertised products to children. Most of the participated parents (67.2%) were also concerned about advertised food products distributed at schools. In contrast, a similar proportion of the parents (64.2%) had no concern about any healthy food advertised product (See figure 1).

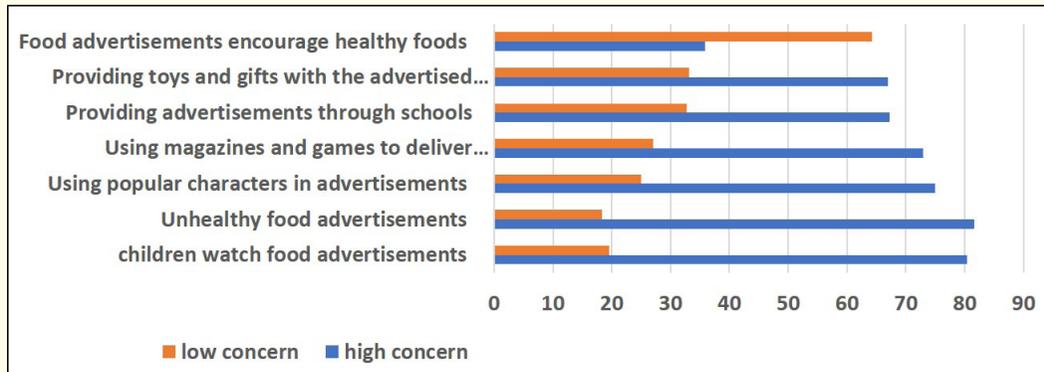


Figure 1

**Parents' perception toward the influences of food advertising on children's eating habits and food preferences**

The majority of parents agreed that food advertising encourages family discussions (82.2%) as well as family conflicts (78.9%). 81.6% of parents perceived that it is unethical for food companies to influence children's buying request, food preferences, eating attitudes especially those who are under 14 years old. Parents expressed their high concerns about the tricks used by food commercials and advertising (84.3%), the amount of sugar and fat in advertised products (78%), the use of popular characters to promote food products to children (80.1%). Most importantly, parents who asked to ban all food advertisements were higher than those who believed that only unhealthy food advertisement should be banned (82.8% versus 63%) (See table 3).

**Parents perceptions of the most advertised products**

In relation to the perceptions of parents toward some advertised products as shown in figure 2, there was consensus among parents' perceptions about some advertised products. More than 85% parents agreed that unhealthy advertised products are unsafe for consumption including Pepsi, burger, chips, and sweets. Accordingly, the majority of parents (98%) confirmed that fruits and vegetables are considered as safe food items. While, all the participants (100%) believe that milk is a very safe item to be consumed by their children (See figure 2).

**Discussion**

**Prevalence of overweight and obesity among children**

According to the WHO, obesity rates have jumped from 857 million to over 1.2 billion cases (nearly 30% of the world's population). Similarly, the number of overweight and obese children increased to more than 42 million between 1990 and 2013 [28]. In the current

**Table 3:** Parents' perception toward the influences of food advertising on children.

Parents' perception		Disagree/Strongly disagree Number (%)	Agree/Strongly agree Number (%)
Influence on behaviours and food preferences	TV food advertisements encourage unhealthy eating habits	67 (20.2%)	265 (79.8%)
	Influence children's requests	4 (1.2%)	328 (98.8%)
	Make it harder for children eat regular meals	73 (22%)	259 (78%)
Children's understanding of advertising	Distinguishing programmes from advertisements	3 (0.9%)	330 (99.1%)
	Understand the commercial intent	257 (77.4%)	75 (22.6%)
	TV advertising uses tricks and gimmicks	52 (15.6%)	280 (84.3%)
Advertising contents	There are many advertisements during children programs	5 (1.5%)	327 (98.5%)
	There are high fat and sugar content in food advertisements	57 (17.1%)	259 (78%)
Intra-family conflict	Food advertisements lead to a family conflict	70 (21.1%)	262 (78.9%)
	Food advertisements encourage a family discussion	59 (17.8%)	273 (82.2%)
Governments, ethics and regulation	Advertisements provide enough information about advertised products	150 (45.1%)	182 (54.9%)
	The current regulations are effective	264 (79.5%)	68 (20.5%)
	Inadequate government control on TV food advertisements	61 (18.4%)	271 (81.6%)
	Banning the use of popular characters in advertisements	66 (19.9%)	266 (80.1%)
	Schools play an active role in educating children about food advertisements	60 (18.1%)	272 (81.9%)
	It is accepted for food companies to influence children under 14 years old	271 (81.6%)	61 (18.4%)
Banning advertisements	All food advertisements	266 (80.1%)	66 (19.9%)
	Only unhealthy food advertisements	113 (37%)	209 (63%)
	Not to ban food advertisement at all	275 (82.8%)	57 (17.2%)

study, the majority of children were either at risk of overweight (27.7%), overweight (18.5%), or obese (10.5%). Whereas the overall high prevalence of parents who were either overweight (46%) or obese (7.2%) clearly indicates that population in Qatar show no exception to the global trend.

The prevalence of overweight and obesity in children has been reported previously in Qatar [13,29,30]. But, after comparing the results of this study with previous studies conducted in Qatar, it seems that prevalence of overweight and obesity among children is getting worse with no signs of improvement. In relation to Qatar's Middle Eastern neighboring countries, a national study done in the United

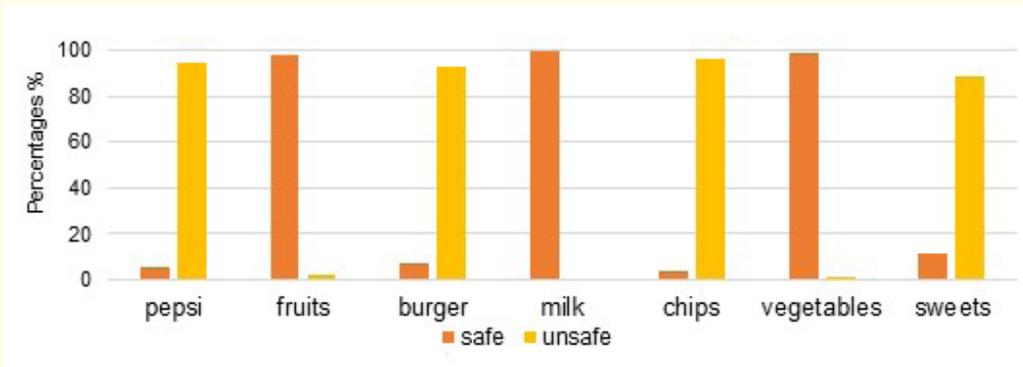


Figure 2

Arab Emirates revealed that from the total sample of 4381 children, 944 (21.5%) were overweight and 601 (13.7%) were obese [31]. The population in Arab Gulf countries increases as a result of their unhealthy environment. These factors include limited outdoor activity and unlimited quantities of food with a high amount of Trans fat and sugar [32].

This study indicated that parents of overweight and obese children were able to recognize their child’s actual weight status. In contrast, a recent cross-sectional study conducted in Saudi Arabia showed that the level of misclassification among parents was high as 90% of parents of obese kids reported that their child had normal body weight [33]. Although, this study showed that 97.3% of the parents perceived that obesity is on the rise globally, only 13% of them were able to expect the real high rates childhood obesity in Qatar. Moreover, this study found a significant association between parental obesity and children’s BMI. Present findings are consistent with a previous longitudinal cohort study which declared that the most affected age group by parental BMI is children between 7 and 15 years old [34].

**Parents’ perceptions of food advertisements directed at children**

This study showed that the perceptions of parents toward the effect of food advertising were significantly associated with their age, education level, and marital status ( $p < 0.05$ ). Surprisingly, more concerns and awareness were identified among non-Qatari, and well-educated parents and parents whose ages were between 18 and 39 years. In contrast, there was no association of parents’ perceptions with their gender and nationality ( $p > 0.05$ ). It has been argued that parents’ behaviors and attitudes are not just based on their interests but they all get affected by age, gender and ethnicity [35]. In contrast, it has been found that the negative attitude of parents toward TV advertising were stronger between researchers, teachers, and parents with higher education levels [36]. Likewise, it has been demonstrated that parent’s understanding of the advertising effect process can be improved by an enhanced education [37].

The majority (80%) of the parents participated in this study strongly agreed that food advertising affects children’s food preferences and food requests. More than 70% of parents declared that food advertising encourages unhealthy eating habits and make it harder for children to eat regular meals. Whereas 67.2% of parents did not even trust the messages provided by food advertising. Almost same perceptions were reported by parents in Croatia [38], India [39], and Australia [40,41]. Similarly, it has been stated that children are more likely to miss their regular meals and consume 45% more from calorie-dense and low-nutrient foods when they are exposed to food advertising [42].

In this study, the majority of parents (99.1%) agreed that children can distinguish between programs and advertisements, but still 77.4% of them believed that their children are unable to understand the commercial intent of food advertisements. Supportive evidences were found in previous studies showing that children prior to age 8 years have a little understanding of the persuasive messages behind food advertising because of their cognitive development levels [43,44]. It has been asserted that preteens are able to process the cognitive ability to evaluate the advertising, however, they can be still persuaded by the emotive messages of food advertisements [44].

the current study demonstrated that the majority of participated parents were concern about the type of food advertising presented during children's programs (80.4%), and the way of delivering advertising messages by using popular characters (75%), magazines and games (72.9%), providing toys and gifts (66.9%), or providing unhealthy advertised products at school (62.2%). However, 64.2% of the parents had no concern about healthy food advertising. It has been claimed the ultimate goal of heavy marketing directed towards children is to develop brand awareness and recognition, while, in order to make an early positive relationship between children and brands, commercial companies work hard on products' packages to ensure an impulsive shopping, encounter direct and indirect advertising in schools such as vending machines [44]. Therefore, it is no surprise that more than 40% of the total energy of students come from consuming calorie-dense foods that lack nutritional value [45].

In regards to advertised food products, 78% of parents participated in the current study expressed their concern about increased marketing of food products high in fat and sugar. More than 80% perceived tat chips, burger, and soft drinks (i.e. Pepsi and Cola) are unsafe products, while more than 90% of them declared that milk, vegetables and fruits are considered as safe products that should be consumed more by their children. A similar perspective was found in previous researches reported that most of parents had no concerns about healthy products like fruit and vegetables or dairy products [46,47].

It was noted in the present study that more than 80% of parents agreed that the Government has a considerable role to play in regulating food advertising directed to children. They also admitted the active role of schools in addressing this issue. While the majority of participants (79.5%) argued that the regulations are not enough and expressed the need for more governmental support. One study indicated that calls for government control have grown louder, however, food advertising companies aggressively oppose these efforts which is considered as a shield against any government action on unhealthy advertising directed to children [48,49]. Similar concerns were shared by various countries. Swedish government that has the strictest regulations instituted a ban on food advertising directed to children under 12 years old. While, in Belgium and Australia, broadcast commercial during children's program is forbidden [44]. In-school marketing to children has grown globally because of the desire to reach larger number of children and increase sales [50]. The same trend is expected in the Middle East especially among private schools who mostly look for a profit rather than the quality of provided products. However, according to the WHO, no reports have been found of any changes in the Middle Eastern countries in the food marketing regulations [51].

### Strengths and Limitations

This study was performed on a calculated sample size with high response rate that probably improved validity and representativeness of the findings. Another important strength of the present study is that the selected sample represented both high and low socioeconomic status (SES) groups of different nationalities came from multiple geographic and socioeconomic heterogeneous areas. Thus, the findings may be generalizable.

Despite all mentioned strengths, this study had several limitations as with all surveys especially in relation to information bias. Firstly, the parent-reported height and weight of children may be less accurate especially among overweight/obese groups due to overestimation of height and underestimation of weight as they may consider obesity as a stigma [52]. Secondly, parent-reported measures are susceptible to recall bias since parents were reporting on their children and probably forgot some actual attributes/attitudes of the children. Furthermore, BMI is an easy way to measure obesity, however, it may not be considered as a prefect measure as it does not directly assess

body fat. Body fat is best captured by other measures such as bioelectrical impedance (BIA) and skinfold thickness. For that reason, future studies could consider the primarily measuring of the body fat percentage (BFP) [53]. In addition, this study depended on a closed-ended questionnaire as a data collection method, which could decrease the chance of participants to express their feelings and to add further comments.

### Conclusion

This study demonstrated negative parents' perceptions of food advertising targeting children as they tend to better regulations of this area ranging from modification of advertising contents to its total prohibition. Children are more easily influenced than adults by attention-getting marketing messages and their skills are limited in understanding health consequences of unhealthy food consumption. Regardless of the series of factors that influence children's choice of food, there is no doubt that it is very important to understand parents' perceptions since parents play a significant mediation role in controlling their children. Increased parents' awareness would help children understand how media and food advertising can affect their weight status and eating habits and increase children's self-awareness as well.

This research generally confirms the need for better legislative regulations and larger contribution of food products that have a positive implication on children's health in the future. Having populations with high levels of awareness and knowledge would help in preventing unhealthy eating habits and obesity. This would help the government to ensure a high quality of life and reduced medical care expenses. Thus, for future practices, research should focus more on parents with an aim of increasing their awareness about food advertising directed to children. While more emphasis on education is needed for both parents and their children for a better understanding of the advertising's contents accompanied by stricter industry regulations and national legislations.

### Conflict of Interest

The author declares no conflict of interest.

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