

Violation of Food Advertising Regulations in Iran: A Systematic Review

Abstract

Background: The prevalence of non-communicable diseases (NCDs) and the status of nutritionally high-risk behaviors in the country are not promising. Because of undeniable impact of media advertising on food choices, to combat the problem some regulations on food advertisements are developed in the country. However, the high prevalence of NCDs warns of the possibility that either the laws are not given the necessary attention or they are not implemented properly. Therefore in the present review, all studies on how the country's visual and written mass media comply with regulations related to food product advertisement were systematically reviewed. **Methods:** We searched all studies, including Persian and English articles, dissertations, and research projects, published and unpublished reports in eight domestic and international databases and search engines during the years 1996 to December of 2020 (25 years). Then, the content of the eligible studies was extracted, evaluated, and reported. **Results:** A total of 18 eligible studies (articles and reports) were included in the review. The results indicated violations of rules and regulations including displaying food products of low nutritional value and obese people, misleading/exaggerating claims, award offers, induction of gluttony, consumerism, and inconsistency with scientific facts. Most of the studies (55%) had, implicitly or explicitly, targeted children and adolescents. **Conclusions:** The results of this study indicated a violation of the rules and regulations of health policies, mainly in the field of promoting foods of low nutritional value during the study period. Violations of the ban on advertising for children were also reported in more than half of the studies.

Keywords: Advertisement, food products, health policy, health regulation, mass media, systematic review

Background

Non-communicable diseases (NCDs) are among the leading causes of death in the world.^[1] According to the World Health Organization (WHO), they cause 41 million deaths annually, which is equivalent to 71% of the world's total deaths. With regards to the mortality rate cardiovascular disease, cancer, respiratory diseases, and diabetes rank the first to fourth, respectively, and nutrition is directly related to three of them.^[2] In other words, improving nutrition can lead to a noticeable reduction in the mortality resulted by NCDs.

Processed foods are potentially contributing factors to the increasing prevalence of NCDs; therefore it is not surprising that their manufacturers were being referred to as the "vectors of the NCD epidemic".^[3]

To confront NCDs, there are some recommendations on less consumption of

sugar, salt, and fat. To achieve this, there are two main solutions, including either reduction of the nutritional risk factors in industrial food products or empowering consumers to choose healthier food products by themselves.^[4,5] In this regard, the food industry may reformulate products in a way to decrease their sugar, salt, and fat content. On the other hand, the consumers should be educated to limit consumption of dietary risk factors.

There is a body of documents that imply that exposure to advertisements can influence consumption of foods.^[6-8] Regarding the unique and undeniable role of advertisements on food choice, many countries have regulations on broadcasting food advertisements.

In the USA, the Federal Trade Commission (FTC) is mainly in charge of prohibitions against misleading food advertisements and its responsibility of regulating such advertisements is under the FTC Act. When the FTC detects a violation in an advertisement, it can make a formal

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complaint against the accused company or issue a monetary penalty.^[9]

In addition, the Federal Communications Commission (FCC) has the responsibility of establishing public interest obligation for TV broadcasters.^[10] Action for Children's Television (ACT) also urged the FCC and FTC to prohibit or limit advertising directed at children.^[11] In this regard, the amount of commercial time during children's programming is limited to 10.5 minutes per hour on weekends and 12 minutes per hour on weekdays.^[12] According to the European Union (EU) Country Commercial Guide, nutrition and health claims are only allowed on food labels if they are included in one of the EU's positive lists.^[13] Approximately half of the countries from the EU region report taking legal steps toward limiting the advertising of foods that are high in saturated fats, trans fats, free sugars, and/or salt (HFSS) to children.^[14] The advertising industry in Australia is expected to adhere to the Code of Ethics which was set out by the Australian Association of National Advertisers (AANA).^[15] In Asian and African countries, some practices and codes of advertising standards have been reported as well.^[16,17] For example, Ethiopia has passed the law to regulate promotion of breast milk substitute since 2016.^[18] According to some regulations on the broadcasting time for children and youth in Thailand, advertisement of harmful products such as fried or baked potato, extruded snacks, crackers, biscuits, and wafer on TV must have a warning message with clear sound and text for at least five seconds.^[19]

Iran is no exception. According to the Regulation on the Establishment and Monitoring of the Work and Activity of Advertising Centers (1978) Note Ch, article 12, any form of marketing specified for children is banned.^[20] Based on the Protection of Consumers' Rights (2009), featuring children in the advertisements of goods has been prohibited and untruth advertising that mislead consumers has been forbidden.^[21] According to article 37 of the Fifth Development Plan of the Islamic Republic of Iran (2011–2015), in order to deal with health risk factors the Ministry of Health is obliged to announce the list of actions and goods that harm health and potentially abusive drugs annually. Pursuant to the article, the advertising of health-threatening services and products, a list of which are determined and announced annually by a working group, is prohibited by all mass media. Based on the note provided for this article, non-compliance with the provisions of the article shall be subject to a fine with the order of the competent judicial authorities. In case of repetition, for each time at least 20% of the fine is added to the previous one.^[22]

Considering all aspects, although the current policies have been adopted to prevent and control NCDs,^[23] the figures and evidence of the state of health in the country are not promising, indicating their inefficiency. Therefore, in the current study compliance of visual and written mass media

with regulations of food advertising in Iran during a period of 25 years (1996 to 2020) was systematically reviewed. To better understand the nature of the advertisements, scientific validity of the advertising messages was also evaluated.

Methods

The review was guided by the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-analyses) statement.^[24] In the first step, the results of all relevant studies, including dissertations and research projects, published and unpublished Persian and English reports on the content of food advertisements in the mass media of the Islamic Republic of Iran during the years 1996 to 2020 were investigated. The National Nutrition and Food Technology Research Institute (NNFTRI) ethical committee (IR.SBMU.NNFTRI.REC.1396.179) approved the study. Searching the database and selection of the resource are shown in Figure 1.

Literature search

Two librarians (SA and MH) separately searched within the national and international databases and search engines including Scientific Information Database (SID), Civilica, IRANDOC, Magiran, Google, PubMed, Scopus, and ISI/ Web of Science (WOS). To obtain documents of research projects as well as dissertations at the Research Center of Islamic Republic of Iran Broadcasting (IRIB), a senior nutritionist visited the desired locations.

Inclusion criteria

All Persian or English studies related to the research topic including original research articles, narrative or systematic reviews, policy briefs, published or unpublished reports, news, and dissertations which were published during the study period were included in the review.

Search strategy

We used "market*", "advertis*", "tv";televis*", "media", "magaz*", "commerc*", "radio*", "broadcast*", "food*", "eat*", "drink*", "snack*", "biscuit*", "cracker*", "chips", "junk*", "health*", "unhealth*", "content*", "polic*", "regul*", "viol*", "preferenc*", "iran*" in two languages singly and/or in combination using AND and OR operators. Furthermore, authors who were likely to have similar publications were contacted and reference lists of all included articles were reviewed to search for additional studies.

Screening

To determine the relevant articles, after completing the library search and data collection all the titles and abstracts of the search were first read independently by three members (MA, AZ, and D.Gh) of the review team. Full articles were evaluated by two authors (MA and AZ), separately. Disagreements were discussed to reach a consensus.

Critical appraisal

After inclusion of the articles, two authors independently evaluated them with the help of a researcher-made tool [Table A5 as supplementary file] for which special emphasis was on the methodology and the objectives of the documents. Any disagreement was resolved via discussion. The items of the researcher-made tool included “title of the study”, “first author’s name”, and some questions including “Are the policies related to food advertising in Iran explained in the findings?”, “Are the findings clear and in line with the objectives of the study?”, “Has a full explanation been given on how to record data (commercial messages/advertisements)?”, “Are the study and sampling method suitable for achieving the goals?”, “Has the method of conducting the study and collecting data been fully explained?”, and “Is the purpose of the research well stated?”.

Data extraction

Information of all articles were extracted by MA according to Table 1. As shown in the table, the extracted information included “first author’s name”, “resource type”, “purpose of the study”, “target group”, “data collection tool(s) and analysis method”, “examples of violation of regulation(s)/scientific fact(s)”, “conclusion of the study”, and “comment”. To define violation of regulations in the present study, we relied on the definitions mentioned in each study, and the related information are presented in the column of “Examples of violation of regulation(s)/scientific fact(s)” in Table 1. The examples of violation mainly included depiction of banned or harmful food products, using overweight characters, claiming that the food products were superior to natural healthy samples (e.g., superiority of ice cream over human milk), and false or misleading messages (without scientific validity) for promoting food products. Data of “comment” column was derived by the researcher-made tool which was mentioned in detail earlier.

Results

Description of Studies

A total of 2205 potentially relevant citations were retrieved by searching the previously mentioned databases. Three more reports were collected through library search. One thousand forty-five documents were excluded because of duplication. Another 1128 documents were excluded after screening titles and abstracts and 32 documents were retrieved. Finally, after exclusion of 14 studies (two national reports were not accessible and 12 articles were not eligible), 18 studies were included in the review. Details of the extracted studies included in the review are presented in Table 1.

According to Table 1, the most frequently studied medium was television. Two studies (11%) had evaluated magazines, and in two studies (11%) radio and television were

analyzed simultaneously. The most studied resources were articles (72%), followed by reports (23%) and news (5%). Children were the target group of six studies (33%); however, they were implicitly targeted in four more studies. In other words in more than half of the studies, children were either explicitly or implicitly targeted. In five studies (27%), violation of regulations were ascertained; however, in other studies violations were reported either implicitly or not reported at all.

Based on the table, the most frequent (83%) violation included depiction of unhealthy foods which were typically energy-dense and rich in sugar, salt, and fat. Presence of obese actors (either children or adults) in the entire or a part of the food advertisements was reported in 22% of the studies. Scientific validity of the nutritional content of the advertisements in two studies (11%) were questioned. Other reported violations included presentation of unethical values and neglect of the principles of healthy eating.

Discussion

In this review, television was the most frequently studied medium and other media, namely, billboards, satellite, and social media networks including Instagram, Telegram, and so on were not studied. Regarding the substantial role of “online advertising markets” in the new world,^[43] need for further studies on their content and probable effect on the customers’ behaviors in the country is strongly felt. The fact that food marketers have long been active in the digital arena has been already documented.^[44–46]

Violation of regulations in our review mainly included depiction of high caloric foods with added sugar and/or salt. A study conducted in three Persian Gulf countries, including the United Arab Emirates, Kuwait, and Saudi Arabia, examined the frequency and quality of food advertised on TV. The results showed that many advertisements promoted foods high in calorie, saturated fats, sodium, and added sugar.^[47] In another study in Turkey that analyzed the content of TV food commercials on Turkish national television networks with free broadcasts, the frequency of junk food advertisements was 10 times and the frequency of soft drink advertisements was seven times more than the frequency of basic food advertisements.^[48]

Presence of obese actors (either children or adults) in the entire or a part of the advertisements was another reported violation. The presence of obese actors in the advertisements may imply the belief that obesity is not a health concern, especially for children.^[49] However, a recent study explored that adolescents with higher body mass index and lower health consciousness were likely to prefer healthy food options if their presenters were thin.^[50] According to a study in Brazil, fat people in TV advertising acted like clowns and were “used” to illicit laughter.^[51] Another study conducted in USA indicated that fat characters on commercial television had generally

Table 1: Details of the studies included in the review

Author (year)	Resource Type Research Article/Report/ Thesis/News	Purpose of the Study	Target Group	Data Collection Tool(s) and Analysis Method	Examples of Violation of Regulation(s)/ Scientific Fact(s)	Conclusion	Comment
Ferdows ^[25] (2019)	News	To report violation of IRIB ¹ in terms of marketing of banned food products	Public	Not mentioned	Displaying banned food products (e.g., potato chips and soft drinks)	IRIB has displayed 16 banned food products since the beginning of April 2019	A clear violation of the regulation was reported. Method of data collection or analysis was not mentioned.
Hajizadehghaz (2016) ^[26]	Research article	Content analysis of advertisements in children's television An experimental study with 403 primary school children in Shirvan to evaluate the relationship between remembering of TV food commercials and interest in them and consumption of similar foods	School children	Observation (checklist) for content analysis in one week Interview (questionnaire)	Frequent display of foods rich in sugar and salt (fruit juice, fruit leather, plum paste, and tomato paste)	Although compared to the previous studies, the frequency of TV food commercials, at least in children's program, was significantly reduced and the limited number of advertisements did not promote the consumption of healthy foods.	No specific law or document was mentioned How to comply with the policies was not discussed.
Etemad (2016) ^[27]	Research article	Content analysis of IRIB commercial messages to seek how harmful to health they were	Public	Observation (checklist) for content analysis of programs in selected channels of radio and TV for two consecutive months	Foods which were less healthy (2.9%), harmful, or harmful with the possibility of abuse (1.3%) were promoted in IRIB.	Almost 4% of investigated commercials were harmful or harmful with the possibility of abuse of food products.	The reason for choosing the channels was not explained. Two types of advertisements had not been analyzed. The harmfulness of health services provided in the studied advertisements, was not evaluated.
Etemad (2016) ^[28]	Research article	Assessing the status of the advertisements about the products that are harmful to health from the IRIB Monitoring how the Fifth Development Plan law of IRIB is implemented	Public	Observation (checklist) for content analysis of TV programs broadcasting from channels <input type="checkbox"/> and <input type="checkbox"/> from 6 a.m. to midnight in first halves of February and September 2013	Cheese puffs, chips, and fast foods were advertised 252, 265, and 86 times, respectively.	IRIB has not paid enough attention to the law banning the advertising of products that are harmful to health. The need for continuous monitoring of advertising, the use of appropriate legal and regulatory solutions, and new deterring laws is felt.	Subtle advertisements of programs were not included. The reason for choosing the channels was not mentioned. Data was evaluated by only one team. Due to the subjectivity of the issue, it was preferred to evaluate at least part of the data by another person or team and the percentage of agreement was reported.

Contd...

Table 1: Contd...

Author (year)	Resource Type Research Article/Report/Thesis/News	Purpose of the Study	Target Group	Data Collection Tool (s) and Analysis Method	Examples of Violation of Scientific Fact (s)	Conclusion	Comment
Movahhed (2014) ^[29]	Research article	Content analysis of food advertisements related to oral health in four main channels of IRIB.	Public	Observation (checklist) for content analysis of 18 hours a day of four selected channels 1, 2, 3 and Khorasan Razavi for one week.	2.8% of food advertisements were cariogenic which included chocolates, lollipops, cakes, sugary drinks, carbonated and not carbonated soft drinks, energy drinks, crisps, and puffed cheese.	A significant reduction in the frequency and duration of broadcasting food advertisements harmful to teeth has been observed on Iranian television. Non-harmful food advertisements were more than harmful food advertisements.	The share of food advertising in comparison to other advertisements was not specified. Advertisements were generally divided into food and nonfood sections, while it was preferred to review food advertisements separately.
Amini (2014) ^[30]	Research article	Evaluation of the frequency, content, and method of presenting food advertisements in Iranian TV in one year (2007-08) A comparison between the current study with a similar study in 2000	Primary school children	Observation (checklist) for content analysis of All advertisements broadcast before, during, and after the broadcast of children's programs on two national television channels of Iran for 4 weeks during the period 2007-08.	Frequent display (31%) of energy-dense foods such as chocolate, carbonated beverages, cheese puffs, ice cream, cookies, and candies. Eight percent of the advertisements showed overweight persons. Using an obese baby actor and pointing out that ice cream is tastier than breast milk.	Food products advertised through children's television programs had little nutritional value and were contrary to dietary recommendations. The overall frequency of commercial messages has decreased in children's programs; however, the consumption of high-fat, sweet products as well as products with low nutritional value is still encouraged.	A clear violation of the law is reported. All aspects of the methodology have been observed.
Abdollahian (2012) ^[31]	Research article	Determining the status of TV food advertisements broadcast in IRIB in terms of the use of satisfaction and persuasion methods, and advertising attractions in advertising of junk foods	Public	Observation (check list) for content analysis of 90-minute of 308 advertisements broadcast on four TV channels from 16:00 to 23:00 for one month.	29.5% of the advertisements were related to food products. 10.7% of all advertisements were dedicated to junk foods.	On average, a food ad was broadcast on television every minute.	There was no mention of a violation of a specific law or document. Examples of foods without nutritional value were not mentioned. A team by itself has done the analysis. It would be preferred if part of coding was done by another team.

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Author (year)	Resource Type Research Article/Report/ Thesis/News	Purpose of the Study	Target Group	Data Collection Tool (s) and Analysis Method	Examples of Violation of Regulation (s)/ Scientific Fact (s)	Conclusion Comment
Boroujerdi- Alavi (2012) ^[32]	Research article	Investigate how and what kind of ethical values are presented in food commercials broadcast from channel □ of Iran's TV aimed at children and adolescents in 2009.	Public	Observation (check list) for content analysis of 16 TV food advertisements that were directed at children and adolescents	The advertisements were presented to the audience in fourteen different categories or groups and some of them had been repeated several times, which may increase the ability of the ad to attract the audience's attention.	In the advertisements under review in addition to using persuasion and persuasion methods, themes were also included in the advertising messages, which in fact was a greater effort to make changes in the mental condition of the audience.
					TV commercials seem to have the potential to promote food that lack healthy nutritional value.	Use sometimes immoral concepts to encourage children to buy foods
					Induction of gluttony and longing for food, greed, craving for food	Most of the moral values conveyed through the advertisements to children and adolescents were negative values.
					Eating the share of others and not respecting the rights of others, showing scenes of snatching food from each other	Consumerism and promoting the lifestyle associated with the upper social classes implicitly
					Normalizing the problem of obesity and neglecting the principles of healthy eating	Using an obese child as the actor of the advertisement

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Author (year)	Resource Type Research Article/Report/ Thesis/News	Purpose of the Study	Target Group	Data Collection Tool (s) and Analysis Method	Examples of Violation (s)/ Scientific Fact (s)	Conclusion	Comment
Boroujerdi- Alavi (2011) ^[33]	Research article	The degree of compliance of TV food advertisements of the first channel with the instruction developed by IRIB in the summer of 1998, in two sections of introduction and general principles which the latter included 81 principles	Public	Observation (check list) (with seven variables) for content analysis of TV food advertisements of the first channel in autumn and winter of 2008 and spring and summer of 2009 from 6 to 12 p.m. of each season for one week (28 days) were randomly selected.	15.6% of the advertisements were misleading. 48.38% showed harmful scenes of health and safety about children. Only 12 principles were observed in advertising. It can be concluded that IRIB did not follow its own instructions. 22.8% of the advertisements were malicious. 12.4% offered award to encourage the audience to buy the products.	In 16.7% of the advertisements, 64 principles are not observed. Only 12 principles were observed in advertising. It can be concluded that IRIB did not follow its own instructions.	The research method is not discussed in detail. Failure to mention examples of concepts such as harmful to health, and being misleading. It was not clear which group of advertisements the violations belong to and whether they include food products or not. The necessary measures for the validity of the study had not been discussed. Regarding policies, only the internal instruction of IRIB was mentioned.
Karami (2011) ^[34,35]	Research article	To assess the food advertising mode on channel 2 and News Network of Iran Broadcasting	Children	Observation, content analysis of TV food advertisements for 20 days (10 days for every channel including 4 weekends and 6 working days).	More than 85% of food advertising broadcast for kids before, after, and during their programs in channel with low nutritional value 2 attributed to unhealthy food including puffs, chips, drinks, candies, conserved foods, sausages and salami, squeezed plum, and mixed junk foods.	The majority of food advertisements directed at children attributed to unhealthy foods including junk snacks with low nutritional value	No regulation was discussed. IRIB was mentioned.
Omidvar (2009) ^[35]	Report	Content analysis of food advertisement in children's magazines in 2007.	Primary school children	Observation (check list) for content analysis of food advertisement in 12 children's magazines	Four percent of the total advertisements were for food advertisements which advertised fruit leather and dried fruits.	The advertised food products were not forbidden.	No regulation was discussed.

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Author (year)	Resource Type Research Article/Report/ Thesis/News	Purpose of the Study	Target Group	Data Collection Tool (s) and Analysis Method	Examples of Violation of Regulation (s)/ Scientific Fact (s)	Conclusion	Comment
Mirzaei (2006) ^[36]	Research article	Answer to the question, "What kind of pattern and lifestyle did TV advertisements promote and which socioeconomic class of society did it represent?"	Public	Observation (check list) for content analysis of a sample size of 110 TV advertisements broadcast before and within popular TV programs by probable sampling in three stages from all channels 1, 2, 3, 4, and 5 in the first six months of 2005	26.7% of food advertising was allocated to junk foods.	The broadcast advertisements reflected the lifestyle of the upper and upper-middle class. The necessary measures for the validity of the study had not been discussed. The examples of junk foods were not mentioned.	Advertising policies were not mentioned.
Amini (2005) ^[37]	Research article	Determining frequency and the nature of the advertised food	Children	Observation (check list) and an experimental study with junior high school students Content analysis of all TV advertisements before, during, and after the children's program of channel 1 of the IRIB from 3:45 to 7 p.m. during an ordinary week were recorded.	The largest advertised food group (36%) was cheese puffs. Obese actor were used in some of the advertisements. Half of the nutritional messages for promoting food products were false or misleading.	Food advertising had enticed children to consume foods that did not conform to scientific advice. Since the most frequently advertised food product was the most consumed product among children, this age group needs a special educational solution to offset the possible effects of TV commercials.	No specific law or document is mentioned. Violations are mentioned only due to violations of scientific recommendations.
Shahhosseini (2003) ^[38]	Report	Understanding the structure of the advertisements broadcast between TV series, channels 1 and 3 of the IRIB from 9 to 12 pm	Public	Observation (check list) for content analysis of 400 advertisements from channels 1 and 3 (200 advertisements per channel) in the middle of 2001	31.5% of the advertisements were for snacks (they may contain junk foods). 87.3% showed images of greed.	It was explicitly about showing greed and breaking the law.	It is not clear in which group of advertisements the violation of the law had been seen. Examples of snacks were not known.

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Mohammadpour-Ahramjani (2002) ^[39]	Research article	Analysis of nutritional research articles in highly published newspapers, including Kayhan, Etelaat, Resalat, Hamshahri, Sobh-e Emrooz, Iran, Khorasan and Abrar Sports, published in 1999	Public	(3 months of summer, 3 months of autumn) by probable sampling in a regular probabilistic sampling in time series Observation (a check list containing 16 variables) for content analysis of 24 issues of 8 titles of the newspaper which were randomly evaluated in a statistical month of 1999 The newspapers were coded by two teams separately.	2.7% of nutritional contents did not match the authoritative scientific sources and the scientific validity of 16.4% was questioned.	Nutritional issues made up a small portion of the total content in the newspapers under study, and published material was not presented based on existing problems and predetermined policies.	No policy was mentioned. Violations were merely listed based on scientific advice. The percentage of agreement of the coders had not been reported.
Pournorooz (1998) ^[40]	Report	Analysis of TV advertisements directed at children in the first half of 1997 (1376)	Children	Observation (check list) for content analysis of advertisements broadcast before cartoons and movies on Friday for six months. One week from each month and only Fridays from the weeks were recorded by regular probabilistic sampling method.	Cheese puffs included 47% of the foods displayed. 32% of the advertisement were for chocolates and ice creams. In 43% of the advertisements, obese children were shown.	Junk foods were frequently advertised. Obese children were seen in a significant portion of the advertisements.	No specific policy was mentioned. It was not defined if the snacks were healthy.

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Boroujerdi-Alavi (1998) ^[41]	Research article	Investigating the structure and content of TV advertisements of five TV channels of the IRIB.	Public	Observation (check list) for content analysis of the advertisements of five channels for one day in November	There was no special case.	Food advertisements had the largest share among other advertisements. Most of the food advertisements were directed at children.	No specific policy was mentioned.
Dibaji (1997) ^[42]	Report	Determining the time share of all types of advertisements advertised on all TV channels of the IRIB during a week from December 10 to 16	Public	Observation (check list) for content analysis of all advertisements of the all channels of the Islamic Republic TV for a week	Advertisements on TV channels often showed low nutritional value food products that contradicted health and nutrition recommendations.	10% of the time share of advertisements in channels 1, 2, 3, and 5 was allocated to snacks. More than half of the time share of pre-program advertisements for children and adolescents (53%) was allocated to snacks.	No specific policy was mentioned. It was not defined if the snacks were healthy.

¹IRIB: Islamic Republic of Iran Broadcasting

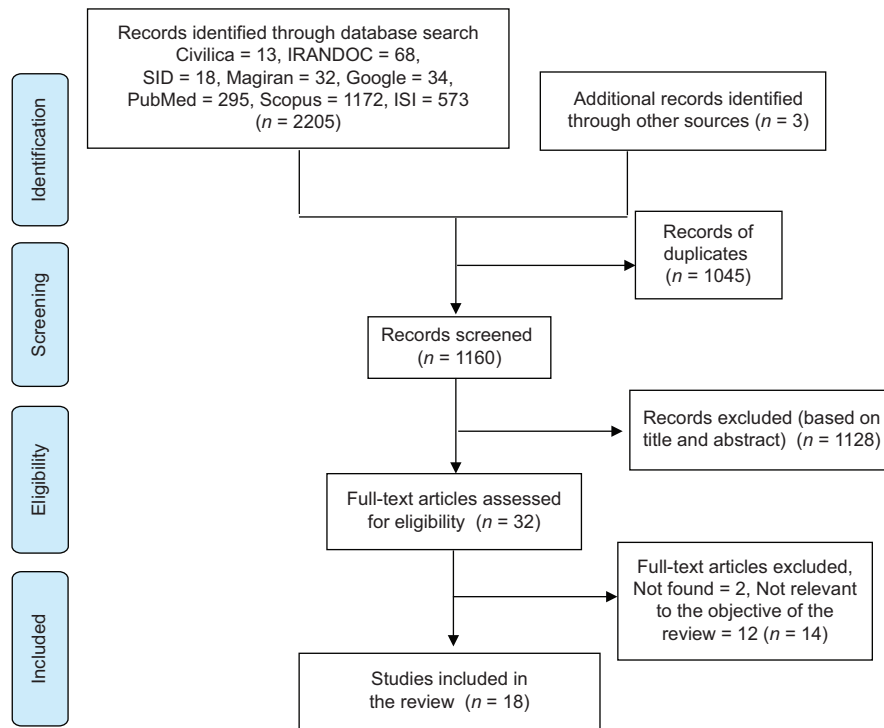


Figure 1: Flowchart of document selection process

negative characteristics and were less likely to be considered attractive.^[52]

Scientific validity of the nutritional content of the advertisements in two studies (12%) were questioned.^[39,53] In two studies, unhealthy food products were implicitly preferred over healthy products in which the violations took place very skillfully.^[37,30]

Other reported violations included presentation of unethical values (according to the authors, some examples of unethical values included craving for food, eating the share of others, not respecting the rights of others, consumerism, and using obese characters in the advertisements) and neglecting the principles of healthy eating.^[32,38] Misleading nutritional claims and other violations like depiction of harmful food products have been reported in other studies as well.^[54–56]

According to the present review, violation of food marketing regulations was observed in the mid-70s, when the principles for making and distributing commercial messages were not imperative, and continued to the late 90s, when the mentioned principles were more enforced. It upholds the reality that legislation by itself cannot make a difference. To achieve the desired result, when formulating any policy it is essential to decide on its implementation and evaluation strategies from the very beginning.

Only three studies had fully documented the state of conformity of commercial messages with health policies in the country and reported a display of food products harmful to health on the national radio and television.^[25,27,28]

Based on the Regulation on the Establishment and Monitoring of the Work and Activity of Advertising Centers (1978) Note Ch, article 12,^[20] any form of marketing directed at children is banned, however, according to the current review in more than half of the studies the advertisements were directed at children and adolescents. Regarding the well-documented vulnerability of this target group toward the persuading marketing messages,^[57–59] it is not uncommon for food marketers to pay close attention to them.

It is stated that in the marketing of tobacco, alcohol, processed foods, and breast milk substitutes, the related industries applied various tactics to mislead the audience about the harmfulness of these products.^[59] It can be concluded that the advertising of unhealthy food marketing is skillfully applied by investors and owners of these products and is not accidental at all. In addition, in another study the tactic trade and investment dispute was added to the previous tactics.^[60]

Undoubtedly, the abundant profit from food marketing is to the extent that it persuades investors to apply a variety of direct and indirect methods and tactics to win in this market. It highlights the importance of making laws in a comprehensive and obstructive manner. However, the development of various rules and bills will not help mitigate the present problems until the obstacles to law enforcement are properly identified in advance and a solution is tailored for them.^[60]

One of the main challenges of enforcing the laws controlling the production and distribution of harmful

food products in the country has been the reduction of the exclusive income of the IRIB and the possibility to provide 70% of its budget through advertising. Moreover, granting the Institute of Standards and Industrial Research of Iran (ISIRI) logo and production license to the mentioned industries has made it difficult to enforce the law.

On the other hand, reducing the production of highly processed and potentially harmful food products such as carbonated beverages, cheese puffs and chips, which are very widespread, can lead to unemployment and thus the possibility of increasing imports and smuggling of said products. It is an executive challenge for the law and needs to be addressed.

Strengths and limitations

To the best of our knowledge, this is the first review that comprehensively and systematically reports the status of violation of advertising in Iran. However, since the interpretations and definitions of the included studies on violation of regulations were not the same, the comparison between the studies and consequent conclusion was difficult. Furthermore, access to two national reports was not possible in our study.

Conclusions

Review of documents and news in the period under study has shown a clear violation of food marketing policies by the country's media. Displaying food products with low nutritional value and high content of fat, salt, and added sugar; making misleading or scientifically incorrect nutritional claims; the use of obese actors; promoting themes such as gluttony; consumerism; and extravagance are examples of the violation of the law. Advertising companies have tried to lure, deceive, and mislead the audience through various methods. The findings of this study will help policymakers evaluate the effectiveness of regulations on food marketing. Investigating the issue of compliance with advertising regulations along with content analysis is suggested in future similar studies. Furthermore, regarding the substantial role of digital marketing in the new world studies on online advertising is highly recommended.

Supplementary Information

Table A1 to A5, Search strategies and Table A5, The criteria for evaluating the studied documents

Ethics approval and consent to participate

This study was approved by the Ethics Committee of National Nutrition and Food Technology Research Institute. Approval code was IR.SBMU.NNFTRI.REC.1396.179

Availability of data and materials

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

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Conflicts of interest

There are no conflicts of interest.

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Search Strategies

Table A1: Scopus search strategy (December19, 2020)

Database	Search Terms	Item Found
TV Commercial and Food Policy		
#1	TITLE-ABS-KEY (market* OR advertis* OR tv OR televis* OR media OR magaz* OR commerc* OR radio* OR broadcast*)	8,961,657
#2	TITLE-ABS-KEY (food* OR eat* OR drink* OR snack* OR biscuit* OR cracker* OR chips OR junk* OR health* OR unhealth*)	7,760,847
#3	TITLE-ABS-KEY (content* OR polic* OR regul* OR viol* OR preferenc*)	9,074,394
#4	TITLE-ABS-KEY (iran*)	172443
#1 AND #2 AND #3 AND #4	(TITLE-ABS-KEY (market* OR advertis* OR tv OR televis* OR media OR magaz* OR commerc* OR radio* OR broadcast*)) AND (TITLE-ABS-KEY (food* OR eat* OR drink* OR snack* OR biscuit* OR cracker* OR chips OR junk* OR health* OR unhealth*)) AND (TITLE-ABS-KEY (content* OR polic* OR regul* OR viol* OR preferenc*)) AND (TITLE-ABS-KEY (iran*))	1,172
Design study filter		
	Search #3 AND Filters: Clinical Trials	
	Search: #3 AND Filters: Meta-Analysis	
	Search #3 AND Filters: Randomized Controlled Trial	
	Search: #3 AND Filters: Review	
	Search: #3 AND Filters: Systematic Review	

Table A2: PubMed search strategy (December 19, 2020)

Database	Search Terms	Item Found
TV Commercial and Food Policy		
#1	market* [Title/Abstract] OR advertis* [Title/Abstract] OR tv [Title/Abstract] OR televis* [Title/Abstract] OR media [Title/Abstract] OR magaz* [Title/Abstract] OR commerc*[Title/Abstract] OR radio*[Title/Abstract] OR broadcast*[Title/Abstract]	1,760,387
#2	food* [Title/Abstract] OR eat* [Title/Abstract] OR drink*[Title/Abstract] OR snack*[Title/Abstract] OR biscuit*[Title/Abstract] OR cracker*[Title/Abstract] OR chips[Title/Abstract] OR junk*[Title/Abstract] OR health*[Title/Abstract] OR unhealth*[Title/Abstract]	3,399,815
#3	content* [Title/Abstract] OR polic* [Title/Abstract] OR regul* [Title/Abstract] OR viol* [Title/Abstract] OR preferenc*[Title/Abstract]	3,392,724
#4	iran*[Title/Abstract]	51,577
#1 AND #2 AND #3 AND #4	("market*" [Title/Abstract] OR "advertis*" [Title/Abstract] OR "tv" [Title/Abstract] OR "televis*" [Title/Abstract] OR "media" [Title/Abstract] OR "magaz*" [Title/Abstract] OR "commerc*" [Title/Abstract] OR "radio*" [Title/Abstract] OR "broadcast*" [Title/Abstract]) AND ("food*" [Title/Abstract] OR "eat" [Title/Abstract] OR "drink*" [Title/Abstract] OR "snack*" [Title/Abstract] OR "biscuit*" [Title/Abstract] OR "cracker*" [Title/Abstract] OR "chips" [Title/Abstract] OR "junk*" [Title/Abstract] OR "health*" [Title/Abstract] OR "unhealth*" [Title/Abstract]) AND ("content*" [Title/Abstract] OR "polic*" [Title/Abstract] OR "regul*" [Title/Abstract] OR "viol*" [Title/Abstract] OR "preferenc*" [Title/Abstract]) AND "iran*" [Title/Abstract]	295
Design study filter		
	Search #3 AND Filters: Clinical Trials	
	Search: #3 AND Filters: Meta-Analysis	
	Search #3 AND Filters: Randomized Controlled Trial	
	Search: #3 AND Filters: Review	
	Search: #3 AND Filters: Systematic Review	

Table A3: ISI search strategy (December 19, 2020)

Database	Search terms	Item found
TV Commercial and Food Policy		
#1	TOPIC: (market* OR advertis* OR tv OR televis* OR media OR magaz* OR commerc* OR radio* OR broadcast*)	4,742,539
#2	TOPIC: (food* OR eat* OR drink* OR snack* OR biscuit* OR cracker* OR chips OR junk* OR health* OR unhealth*)	4,591,723
#3	TOPIC: (content* OR polic* OR regul* OR viol* OR preferenc*)	6,640,699
#4	TOPIC: (Iran*)	118,950
#5	#1 AND #2 AND #3 AND #4	573
Design study filter		
	Search #3 AND Filters: Clinical Trials	
	Search: #3 AND Filters: Meta-Analysis	
	Search #3 AND Filters: Randomized Controlled Trial	
	Search: #3 AND Filters: Review	
	Search: #3 AND Filters: Systematic Review	

Table A4: Search strategy of Persian data banks

Data bank	Keywords	Result
SID: https://www.sid.ir/Fa/Journal/AdvancedSearch.aspx	Television AND Food (4)	18
	Advertisement AND Food (6)	
	Media AND Food (4)	
	Commercial AND Food (1)	
	Commercials AND Food (3)	
Civilica: https://civilica.com/search/paper/	Television AND Food (3)	12
	Advertisement AND Food (7)	
	Media AND Food (1)	
	Commercial AND Food (1)	
	Commercials AND Food (0)	
Magiran: https://www.magiran.com/paperadvancedsearch	Television AND Food (6)	32
	Advertisement AND Food (12)	
	Media AND Food (6)	
	Commercial AND Food (4)	
	Commercials AND Food (4)	
Google Scholar: limited to title	Television AND Food (3)	34
	Advertisement AND Food (11)	
	Media AND Food (2)	
	Commercial AND Food (5)	
	Commercials AND Food (13)	
IRANDOC: https://ganj.irandoc.ac.ir/#/articles/9907f3b1ac4ea4f949179d7d6f69a129	Television AND Food (3)	68
	Advertisement AND Food (50)	
	Media AND Food (9)	
	Commercial AND Food (1)	
	Commercials AND Food (5)	

Table A5: The criteria for evaluating the studied documents

No	Author (year)	Documents' title	Criteria	Yes	No
			Are the findings related to food advertising policies in Iran explained in the findings?		
			Are the findings clear and in line with the objectives of the study?		
			Is there a full explanation on how to record data (commercial messages/advertisements)?		
			Are the study and sampling method appropriate to achieve the goals?		
			Is the method of conducting the study and data collection fully explained?		
			Is the purpose of the research well stated?		