

FAST-FOOD MARKETING STRATEGIES AND THEIR IMPACT ON CHILDHOOD OBESITY

Afonso M. Herédia¹

João Hipólito²

Odete Nunes³

Luísa Ribeiro⁴

Tatiana Moura⁵

Tito Lancero⁶

ABSTRACT

Overweight and obesity are growing health problems in children. The increase in fast-food consumption has greatly contributed to this phenomenon. Children are a frequent target for fast-food advertising, and the television is one of the most used marketing channels. We assessed the frequency of fast-food ingestion, television viewing time and body mass index (BMI) in children from 8 to 12 years of age. A quantitative approach was followed, using a self-report questionnaire. The sample was composed of 60 children with an age average of 9.88 years ($SD=1.37$). It was found that longer television viewing times were associated with higher frequency of fast-food ingestion for both school days ($r_s = 0.54, p < .001$) and weekends/holidays ($r_s = 0.50, p < .001$). A positive and moderate correlation between television viewing times and BMI ($r_s = 0.51, p < .001$; $r_s = 0.55, p < .001$) was also observed. The results indicate that television advertising makes children wanting to try the fast-food advertised (67%; $n = 40$), and ask parents to buy it (60%; $n = 36$). The good taste (72%; $n = 43$) and the gifts (38%; $n = 23$) are what the children in our study most appreciate in fast-food restaurants. Despite legal regulatory mechanisms, marketing continues to have a strong impact on the promotion of fast-food consumption in children.

Keywords: Fast-Food, Television Advertising, Body Mass Index, Childhood Obesity.

JEL Classification: D10

1. INTRODUCTION

Over the last decades, the increase in the consumption of fast-food has had a detrimental effect on consumers' health, including a higher risk of excessive weight and obesity. Children are particularly susceptible to fast-food negative effects (Fulkerson, Farbachsh, Lytle, Hearst, Dengel, Pasch & Kubik, 2011).

Fast-food usually refers to food with short cooking times, high on calories, low priced and easily accessible (Muda, 2007). We use the term fast-food to encompass food (including drinks) with high energy density and poor on micronutrients, but rich in calories, fat, sugar and salt (World Health Organization, 2003). According to Poti and Popkin (2011), fast-

¹ Universidade Autónoma de Lisboa, Lisbon, Portugal (afonsodeheredia@gmail.com)

² Centro de Investigação em Psicologia (CIP-UAL), Universidade Autónoma de Lisboa, Lisbon, Portugal (jhipolito@autonoma.pt)

³ Centro de Investigação em Psicologia (CIP-UAL), Universidade Autónoma de Lisboa, Lisbon, Portugal (onunes@autonoma.pt)

⁴ Centro de Investigação em Psicologia (CIP-UAL), Universidade Autónoma de Lisboa, Lisbon, Portugal (mribeiro@ual.pt)

⁵ Universidade Autónoma de Lisboa, Lisbon, Portugal (tatiana.gmoura@hotmail.com)

⁶ Centro de Investigação em Psicologia (CIP-UAL), Universidade Autónoma de Lisboa, Lisbon, Portugal (tlancero@ual.pt)

food is one of the main sources of calories for individuals between the ages of two and eighteen, and in the USA its consumption has been increasing since the 70s. In Portugal, more than half of pre-school children (52%) consume soft drinks daily, over half (65%) eat sweets at least once a day and most (73%) consume savoury snacks (pizza, hamburger, chips and others) one to four times a week (DGS, 2016).

The fast-food industry invests heavily in commercials, gifts and other marketing strategies to generate consumer patterns and long-term fidelity (Evans, 2008). Children and adolescents are important groups for this industry, for they can directly buy the products, manipulate and influence their family into buying them, and will be future consumers (Boulos, Vikre, Oppenheimer, Chang & Kanarek, 2012). Due to its hypercaloric composition, children who regularly consume this type of food have higher risk of obesity and related health issues. This phenomenon is a public health problem increasingly present in modern society, sometimes of alarming or even epidemic proportions (Cattaneo, Monasta, Stamatakis, Lioret, Castetbon, Frenken, Manios, Moschonis, Savva, Zaborskis, Rito, Nanu, Vignerová, Caroli, Ludvigsson, Koch, Serra-Majem, Szponar, van Lenthe & Brug, 2010). Also in Portugal, inadequate eating habits constitute the first risk factor in the reduction of healthy life years (19%), followed by arterial hypertension (17%) and high body mass index (13%) (DGS, 2016). A high percentage of children between seven and nine ingest values of saturated fat (81.4%), sugar (97.3%) and cholesterol (53%) above those recommended by the World Health Organization (WHO) (Valente, Padez, Mourão, Rosado & Moreira, 2010).

The fast-food high consumption rate in younger population layers and the ensuing health problems render pertinence to the study of fast-food marketing targeting children and teenagers. This study focuses on the association between marketing, in TV ads, with excess weight and obesity. The authors conducted a research on television viewing time, fast-food consumption frequency and body mass index, with a sample of 60 children between 8 and 12 years of age.

2. FAST-FOOD CHAINS MARKETING STRATEGIES

Advertising strategies aims to create a meaning for actions and enhance communication power (Pérez, 2012). Food marketing is strongly directed to younger groups, especially towards children, including pre-school children, with the intent of creating not only brand recognition but also preference and loyalty. A specific product can be asked for by a child as young as 2 years old, and 76% of the times it will be requested inside a supermarket. In most of those times, it will be about a food product, frequently required by its brand (McNeal, 1999). Therefore, marketers aim to foster brand preference, which precedes buying, and tends to be long-lasting, shaping future consumer habits (Moore, Wilkie & Lutz, 2002; Boulos, Vikre, Oppenheimer, Chang & Kanarek, 2012). Babies as young as six months are already able to form mental images of logos and mascots, recognizing them by their characteristic shape and form. At two years of age, children are able to ask their parents for objects associated with those images (Nadeau, 2011).

Marketing specialists, when creating their strategy, are aware that young children, as young as 24 months of age, do influence their families' consumer habits. This influence is exerted from a persuasive and insisting behaviour towards their parents. This phenomenon, known as the nag factor or pester power, consists of a constant request for the appealing and familiar products, created by marketing, without concern for the family financial capacity (McNeal, 1999; Boulos *et al.*, 2012; Anitha & Bijuna, 2016).

Fast-food chains use several marketing channels, like TV advertising, marketing in schools, marketing through the Internet, sponsoring, and placing products and promotions.

Of these six techniques, the most frequently used is TV advertising, which is also the more regulated (Hawkes, 2004).

2.1 TV advertising

The main food marketing vehicle to reach children is television. Fast-food companies spend the majority of their budget for publicity on it (Gallo, 1999; Boulos *et al.*, 2012). Children start to watch TV quite early, and do it for several hours each time. In Portugal, the reported average is 2.7 daily hours for eleven years old (Klepp, Wind, Bourdeaudhuij, Rodrigo, Due, Bjelland & Brug, 2007), increasing to four to six hours in children between seven and nine years old (Carvalho, Padez, Moreira & Rosado, 2006). Between 2007 and 2008, a study from the Portuguese Regulatory Entity for Social Communication (Entidade Reguladora para a Comunicação Social, 2009) estimated that children between 4 and 14 years old watch TV shows (addressed to their age group or otherwise) an average of 2 hours and 51 minutes per day. The same study also reports that viewing time is inversely proportional to social class. The difference between opposite classes is about 90 minutes. Viewing time is also higher for girls, around 40 minutes longer than for boys (Entidade Reguladora para a Comunicação Social, 2009). In 2010, the average viewing time in this age group (4-14) was about three hours per day, even on weekends (Pereira, 2011). In the USA, food products are among the most frequently advertised in children's television channels. It is estimated that children between 2 and 7 years of age watch an average of 12 food products' advertisements a day, which represents more than 4400 commercials of that type of product every year (Walter, Schwartz, Angelini & Rideout, 2007). Television advertising of food products directed towards children and teenagers have some appealing characteristics, such as pleasant flavour (in 34% of the commercials), fun (18%), prizes or contests (16%), and innovative or special products (10%). Other strategies include promoting a website, referencing an active life style, claiming health benefits, and using a TV or children's movie character (Paiva, Sousa & Mendes, 2014; Walter, Schwartz, Angelini & Rideout, 2007).

In Portugal, as in other European countries, hypercaloric food advertisements, unlike healthier foods, are the most viewed commercials by children, appearing mostly during children's programmes (DECO, 2005, cited by Rodrigues, Carmo, Breda & Rito, 2011).

2.2 Other marketing channels

Marketing in schools is an ever increasing reality. One of the reasons is the fact that on a single location there is an agglomeration of the desired marketing targets (Nadeau, 2011), in a repetitive and daily environment, allowing messages to be transmitted without much competition. The advertising campaigns are not just of the direct type (hallway posters, free food tasting, etc.) but also involve indirect advertising (for example, including sponsors' logos in school materials) (Union des consommateurs, 2006).

Internet marketing is playing an ever increasing role among children and adolescents. In fact, within a business context, the Internet has become a main marketing channel (Cardoso & Cardoso, 2012). In Europe, and according to a study carried out in several European countries, including Portugal, young people use the Internet a lot and increasingly from an early age. In addition, 77% of young Europeans aged 15 to 16 claim to use the Internet on a daily basis (European Union, 2010). The number of hours that young people spend on the Internet also seems to be increasing (Kaiser Family Foundation, 2002; Rideout, Foehr & Roberts, 2010). In the advertising that fast-food companies conduct through this platform, interactive tools that are appealing to children and adolescents are often used, such as games, puzzles, contests, downloading of recipes and wallpapers for computers, music clips and the

sending of newsletters. Companies often advertise their websites on the packaging of the food products they market (Montgomery, 2001).

Sponsorship is another channel used. Fast-food chains usually sponsor activities such as sporting events, television programmes and music shows (World Health Organization, 2013b). Product placement is also used by fast-food chains. This technique typically involves displaying the brands on films, TV shows, video clips, video games, etc., through financial support (Hawkes, 2004). This placement is done, for example, through the inclusion of products as an integral part of the background or setting or of the script itself, making the plot more realistic as it gets closer to an everyday image (Nadeau, 2011).

Promotions are another marketing tool, and aim to encourage the purchase of products directly at the points of sale. The most frequently used promotions by fast-food chains include giving prizes, sweepstakes or discounts on products (Union des consommateurs, 2006; Boulos *et al.*, 2012).

3. CHILDREN'S UNDERSTANDING OF MARKETING

Children, especially up to 8 years of age, have not yet attained a sufficient level of cognitive and psychological development to become aware of the nature and intentions of marketing and advertising and are, therefore, defenceless regarding them (Committee on Communications, American Academy of Pediatrics, 2006; Swinburn, Sacks, Lobstein, Rigby, Baur, Brownell, Gill, Seidell & Kumanyika, 2008).

Thus, some authors have drawn attention to children's fragility in the face of marketing and advertising, as they often still cannot distinguish, for example, television advertising from the programming itself (World Health Organization, 2013a). It is estimated that children begin to make this distinction between the ages of 4 and 7 years, becoming aware of the intention of persuasion at 8 years. However, it is only around the age of 11 or 12 that they can formulate critical thinking about advertising itself (Livingstone & Helsper, 2004; Andronikidis & Lambrianidou, 2010, cit. por Iglesias, Calda & Lemos, 2013).

4. MARKETING REGULATION AIMED AT CHILDREN

Of all marketing channels, the one that is, globally, best regulated is television. According to a study published by the WHO (Hawkes, 2007), 85% of the 73 countries surveyed had regulations regarding television advertising aimed at children. It was also found that, in 44% of these countries, the regulations covered specifics, such as limiting the time and content for advertisements directed directly to the child population.

In Portugal, the Law on Television and Audiovisual Services stipulates that children's programmes may only be interrupted by advertisements once every half hour, if the programmes are over thirty minutes long (Alves, 2011). In turn, the Advertising Code makes it clear through Articles 13 and 14 that child advertising must be alert with regard to the psychological fragility of minors, which requires caution as to their content, thus avoiding the encouragement of behaviour that is detrimental to consumer health and safety and especially to children (*Diário da República* – Government's Official Gazette, 1990).

5. THE INFLUENCE OF MARKETING ON CHILDREN'S BEHAVIOUR

Several studies carried out since 1970 have focused on the role that television can play on childhood obesity. These studies led to the conclusion that children who were most exposed

to TV commercials were more likely to prefer food advertised in them. An association between the number of hours of television viewing and the number of requests that children make to their parents to buy specific products from certain brands has also been shown. It was also found that the number of hours children watch television is associated with a higher consumption of high energy density foods rich in calories, fat, sugar and salt. Likewise, the relationship between the number of hours of television viewing and the prevalence and incidence of obesity has also been demonstrated (Coon & Tucker, 2002; Boulos *et al.*, 2012; Bingham, Varela-Silva, Ferrão, Gama, Mourão, Nogueira, Marques & Padez, 2013).

Children between the ages of 2 and 11 are the most vulnerable to the effects of advertising on food consumption (Rodrigues *et al.*, 2011). Given that most advertised foods are unhealthy, the WHO considers television advertising to be an important element in weight gain and childhood obesity (World Health Organization, 2013b).

6. THE IMPACT OF FAST FOOD ON CHILDHOOD OBESITY

Obesity and overweight are defined by the relationship between weight and height of the individual, i.e. body mass index (BMI). This refers to the quotient between the weight in kilograms and the square of the height in metres.

The criteria for defining overweight and childhood obesity situations vary somewhat depending on the entity that defines them (table 1). The three entities most used to define these situations are the Centers for Disease Control and Prevention (CDC), the International Obesity Task Force (IOTF) and the WHO.

Table 1. Definitions of overweight and obesity. Adapted from Antunes & Moreira, 2011

Reference	Definition	Index used	Cut-off point
CDC	BMI percentile for age.	IMC	Overweight = percentile >85 e <95; Obesity = percentile ≥95
IOTF	Cut-off points defined through interception with BMI points for overweight and obesity classification in adults.	IMC	Overweight regarding the BMI >25 and < 30 in adults; Obesity regarding the BMI ≥30 in adults.
WHO	Distribution of the height to weight z-score, i.e. the relationship between the weight found and the ideal weight for the height.	Weight and height	Overweight = score $z > 1$ and <2; Obesity = score $z \geq 2$

Source: Antunes and Moreira, 2011

All definitions have in common the use of weight and height, and the definition most frequently used in studies is that proposed by the CDC. For the CDC, children whose BMI is above the 95th percentile for age and gender are considered obese. Children with a BMI between the 85th and 95th percentile are considered to be overweight (Antunes & Moreira, 2011), between the 5th and 85th percentile are considered normoponderal and below the 5th percentile are considered to be underweight (Centers For Disease Control and Prevention, n.d.).

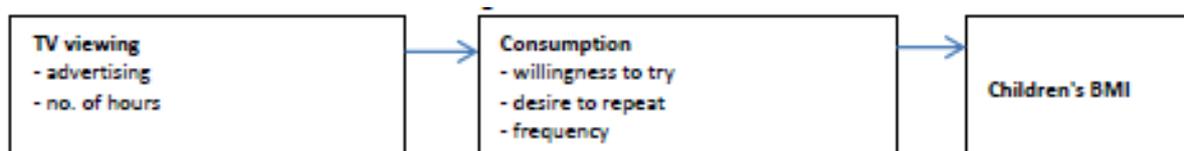
In Portugal, a number of studies were carried out to show that, between 2 and 10 years of age, the prevalence of overweight varies between 9.1% and 27.4% in the male gender and between 13.4% and 26.5% in the female gender, with obesity being between 5.9% and 19.8% for males and between 6.1% and 21.3% for females. These values were calculated according to the CDC criteria. For adolescents between 10 and 19 years of age, and also

according to the criteria of the CDC, the prevalence of overweight is 8.3% for males and 18.9% for females. In this age group, obesity is between 15% and 12.2%, for the male and female genders, respectively (Antunes & Moreira, 2011). According to Antunes and Moreira (2011: 283), the results described above “show the existence of high levels of overweight and obesity, confirming these states as a serious public health problem in Portuguese children and adolescents, making it necessary to repress this epidemic and reverse the situation as soon as possible”. Using IOTF criteria, Bingham, Varela-Silva, Ferrão, Gama, Mourão, Nogueira, Marques & Padez, (2013) have verified that between 3 and 10, the overweight prevalence is 19.7% and obesity, 8.2%, and higher in females.

Frequent fast-food consumption is a worrying health risk issue, since most of these foods have high levels of saturated fats, carbohydrates and sodium, all of which are associated with obesity and problems such as hypertension, cardiovascular diseases, type 2 diabetes (World Health Organization, 2007), and even the risk of depression (Sánchez-Villegas, Toledo, de Irala, Ruiz-Canela, Pla-Vidal & Martínez-González, 2012; Frontini, Gouveia, Moreira & Canavarro, 2016). Obese children are also more at risk to be subject to negative stereotyping, becoming victims of bullying, developing negative emotions and unhealthy behaviors (Farhat *et al.*, cited by Bingham *et al.*, 2013). Obese children report worse quality of life and higher levels of psychological problems than normoponderal children (Frontini, Gouveia, Moreira & Canavarro, 2016). Quality of life is multidimensional, and includes self-esteem, emotional and psychological stability, and subjective well-being, which in turn are influenced by others’ and self perception (Malveiro & Jesus, 2015).

Given that currently overweight and childhood obesity have a significant prevalence, it is pertinent to study the factors that may influence it, such as fast food consumption. As television advertising is one of the marketing strategies most used by fast-food companies to increase the consumption of this type of food by children, it is relevant to investigate its influence on children’s eating behaviour. This increase in consumption may have an impact on the prevalence of overweight and childhood obesity. These questions formed the basis of the research model used in this study (Figure 1). The 8 to 12 years old age group was chosen because at these ages children are still quite vulnerable to the influence of advertising and can already express themselves well enough to be able to respond individually to a simple questionnaire.

Figure 1. Research model used



Source: Own Elaboration

This research aimed to ascertain whether fast-food choices in children aged 8 to 12 years are influenced by television advertising and to what extent it can have repercussions on their BMI. It also had specific objectives: to identify some of the factors that can induce children to eat fast-food (taste of food, fun, gifts, speed of service, low cost); to ascertain whether television advertising has a positive influence on children’s willingness to try out fast-food food they see being advertised, and to ask parents to buy them; to determine children’s perception of the need to use an insistent behaviour (nag factor); to examine the prevalence of overweight and obesity in the sample studied; to verify whether television viewing time is related to how often children consume fast-food; to examine the relationship between body mass index, television exposure time and frequency of fast-food consumption; to find out if

there is an association between gender and the children's will to try out fast-food foods they see in adverts, and to ask parents to buy them; to discover if there is an association between gender and the level of insistence with which children ask their parents to buy fast-food; to investigate whether there are statistically significant differences in the frequency of fast-food consumption between the two genders; to check whether the urges to try and ask parents for certain fast-food items, which is caused by advertising, influence the BMI.

7. METHODOLOGY

The literature review allowed us to verify that television advertising is the main marketing channel for fast-food aimed at children, so the methodology used was focused on the evaluation of the impact of this type of advertising on children. A quantitative approach was used through the survey method using a questionnaire.

7.1 Participants

The research used a convenience sample composed of 60 children (32 males, constituting 53.3%, and 28 females, corresponding to 46.7%), aged 8 to 12 years ($M = 9.88$, $SD = 1.37$), users of two paediatrics clinics located in Lisbon, regardless of the reason why they went to the paediatrician. The data were collected in person, as it was a convenience sample.

7.2 Instrument

The research instrument used was a questionnaire composed of 9 questions (Annex A), in view of the proposed objectives. An exhaustive search of questionnaires on this topic validated for the Portuguese population was made, including direct contact with two national researchers with papers published in this area, but no questionnaires with these characteristics were found or recommended. Thus, it was decided to make an instrument that resulted from the fusion of questions from several Portuguese and foreign questionnaires on this subject (De Klerk, 2008; Rodrigues, 2010; Alves, 2011), selecting from each of them the questions that best met our objectives. In some cases, it was necessary to make changes to the questions in the original questionnaires. The questionnaire used closed-ended questions, with the exception of questions related to weight and height. The statistical treatment of the data was conducted using the IBM SPSS Statistics® software, version 20.0.

7.3 Procedure

We contacted the persons in charge of several medical practices to obtain authorization to conduct the study. After permission was granted, one of the authors went to the waiting rooms of the clinics and spoke individually with the parents of the patients present, explaining the scope and purpose of the study and proposing the individual and voluntary completion of the questionnaire, with guaranteed confidentiality and anonymity. In all cases, the questionnaires were completed by the participants themselves, sometimes with the help of their parents regarding their current weight and height.

Then, the data were processed statistically with the software previously indicated, in accordance with the proposed objectives. The percentile corresponding to the BMI of the participants, for age and gender, was checked using the tables published by the Directorate-General for Health (2005) (Annexes B and C). Based on the percentiles obtained, the BMI was classified according to the CDC classification: low weight, normoponderal, overweight and obesity.

8. RESULTS

When questioned about how much time they spent watching TV on weekdays and weekends/holidays (Question 3), most respondents said they watch TV for 1 to 2 hours a day during school days ($n = 26$, 43.30%) and 2-3 hours a day on weekends and holidays ($n = 28$, 46.70%) (Table 2).

Table 2. Distribution of responses regarding time spent watching television

	Up to 1 hour		1-2 hours		2-3 hours		Over 3 hours		Total	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
School days	22	36.70%	26	43.30%	9	15.00%	3	5.00%	60	100.00%
Weekends/holidays	2	3.30%	15	25.00%	28	46.70%	15	25.00%	60	100.00%

Source: Own Elaboration

Regarding the frequency of consumption of fast-food (question 4), most (68.4%, $n = 41$) responded not to have eaten or to have eaten 1 to 2 times in the last month. However, 31.60% ($n = 19$) of the respondents had a frequency of fast-food consumption of 3 or more times in the last month (Table 3).

Table 3. Frequency of fast-food consumption during the last month

Frequency	<i>n</i>	%
None	19	31.7
1-2 times	22	36.7
3-5 times	11	18.3
6 times or more	8	13.3
Total	60	100.0

Source: Own Elaboration

Regarding question 5 – “what do you like most in fast food restaurants?”–, referring to the causes that most induce children to eat this type of food, the option answered by the largest number of respondents was “the food tastes good” with 43 answers (71.67%), followed by the options “they have nice toys” with 23 answers (38.33%) and “they are cheap” with 22 answers (36.67%). The least chosen option was “the food is healthy”, answered by 16.67% ($n = 10$) of the respondents (Table 4).

Table 4. Preferred Characteristics in Fast-Food Restaurants

Characteristic	<i>n</i>	%
The food tastes good	43	71.67
The food is fun	20	33.33
They have nice toys	23	38.33
They are cheap	22	36.67
The service is fast	17	28.33
The food is healthy	10	16.67

Source: Own Elaboration

When questioned about the willingness to try a certain food they have not had before, when they see it advertised on TV (question 6), 40 participants (66.70%) say yes, while the remaining 20 (33.30%) respond negatively.

When asked about asking their parents to buy a particular food they like when they see it advertised on television (question 7), most children (66.00%, $n = 36$) answered yes, with the negative response rate being 40.00% ($n = 24$).

Of the 36 children who answered “yes” to this question, most (44.4%, $n = 16$) stated that they were neither too or little insistent with their parents to get the food they wanted, followed by the children who said they were very insistent (38.90%, $n = 14$) (Table 5).

Table 5. Degree of insistence with parents to buy fast-food advertised on TV

Degree of insistence	<i>n</i>	%
Little insistent	6	16.7
Neither little or very insistent	16	44.4
Very insistent	14	38.9
Total	36	100.0

Source: Own Elaboration

The analysis of the results of our sample shows that the prevalence of overweight and obesity in the sample studied is 35.0% ($n = 21$), although most (65.0%, $n = 39$) children in the sample have a normal BMI for age and gender, according to the CDC criteria (Table 6).

Table 6. Distribution of the IMC

Classification IMC	<i>n</i>	%
Normoponderal	39	65.0
Overweight	8	13.3
Obesity	13	21.7
Total	60	100.0

Source: Own Elaboration

In order to determine whether television viewing time is related to the frequency with which children consume fast-food (data from the last month) and if the BMI is related to television exposure time and frequency of fast-food consumption, Spearman’s correlation coefficient was used. The analysis of these results revealed the existence of a significant positive and moderate intensity correlation between television viewing time and the frequency with which children consume fast-food during school days ($r_s = 0.54$, $p < .001$) and on weekends /holidays ($r_s = 0.50$, $p < .001$), as shown on Table 7.

Table 7. Correlation between television viewing time and fast-food consumption.

No. of TV viewing hours	Frequency of consumption	BMI
School days	0.54*	0.51*
Weekends/holidays	0.50*	0.55*

* Significant correlation at significance level of 0.01.

Source: Own Elaboration

It was also noted that the BMI classification is significantly related, in a positive sense and with moderate intensity, to the length of television viewing in school days

($r_s = 0.51, p < .001$) and on weekends/holidays ($r_s = 0.55, p < .001$) (Table 7) and to the frequency of fast-food consumption ($r_s = 0.57, p < .001$).

From the analysis of Table 8, we found that most boys ($n = 23, 71.88\%$) and girls ($n = 17, 60.71\%$) said they wanted to try and ask their parents for the fast-food advertised on TV. We performed the Chi-square test to find out the relationship between gender and children’s willingness to try fast-food products they see in television advertising (question 6), which allowed us to conclude that there is no association between these two variables ($\chi^2_1 = 0.84, p = .36$).

Table 8. Relationship between gender and willingness to buy unknown food

		Willingness to buy				Total
		No	%	Yes	%	
Gender	Male	9	28.12	23	71.88	32
	Female	11	39.29	17	60.71	28
Total		20	100.00	40	100.00	60

Source: Own Elaboration

The analysis of the results in Table 9 indicates that the majority of boys ($n = 18, 56.25\%$) and girls ($n = 18, 64.29\%$) answered affirmatively about asking their parents to purchase fast-food products that they like when seeing them in television advertising (question 7).

The Chi-square test between gender and the answer to this question also allows concluding that there is no statistically significant association between these two variables ($\chi^2_1 = 0.40, p = .53$). We note that in any situation, regardless of gender, most of the answers lean to the “yes”, either in terms of trying to, or in asking parents to purchase fast-food that they see in television advertising.

Table 9. Relationship between gender and asking parents to purchase the advertised product

		Request to buy advertised product				Total
		No	%	Yes	%	
Gender	Male	14	43.75	18	56.25	32
	Female	10	35.71	18	64.29	28
Total		24		36		60

Source: Own Elaboration

In order to study whether there is an association between gender and the degree of insistence with which children ask their parents to buy fast-food products, the Chi-square test was used again. However, as the percentage of cells in the contingency table with an expected frequency of less than 5 is greater than 20%, the assumption of applicability of the test is not verified, due to the small number ($n = 36$) of children who answered “Yes” to question no. 7. For this reason, only the percentages were interpreted (Table 10). Thus, the data show that most boys (55.6%, $n = 10$) say that they are very insistent on their parents to buy the fast food they want, while the majority of the girls (61.1%, $n = 11$) affirm to be neither little nor very insistent.

Table 10. Relationship between gender and degree of insistence with parents

		Degree of insistence			
Gender		Little insistent	Neither little nor very insistent	Very insistent	Total
Male	<i>n</i>	3	5	10	18
	% within gender	16.7	27.8	55.6	100.0
Female	<i>n</i>	3	11	4	18
	% within gender	16.7	61.1	22.2	100.0
Total	<i>N</i>	6	16	14	36
	% within gender	16.7	44.4	38.9	100.0

Source: Own Elaboration

We also examined whether there are statistically significant differences in the frequency of fast-food consumption between the two genders, and whether the desire to try a particular food and the willingness to ask parents to buy a particular food caused by television advertising influence the BMI. Accordingly, we used the Mann-Whitney test, from which no statistically significant differences were detected in the frequency of fast-food consumption between genders ($U = 143.00, p = .534$), with the value for boys ($Mdn = 19.56$) being slightly higher than for the girls ($Mdn = 17.44$). In both genders, the greater number of answers fell on the option 1 to 2 times in the last month.

As for children who claim to be willing, and those who be not, to experience a particular food advertised on TV, statistically significant differences of a moderate effect between the BMI classification ($U = 294.50, p = .050, r = .25$) were identified. It was found that children who were willing to try a particular fast-food product had higher BMI values ($Mdn = 33.14$ versus $Mdn = 25.23$).

Regarding the desire to ask parents to buy a particular food they already enjoyed, after TV advertising, no statistically significant differences in BMI classification were found between children who have and those who do not have that desire ($U = 331.50, p = .073$). However, it was shown that children who stated that they wanted to ask their parents to buy a particular food had higher BMI values ($Mdn = 33.29$ versus $Mdn = 26.31$).

9. CONCLUSION

The health problems caused by childhood obesity require strategies to combat it. According to the WHO (Hawkes, 2007), strategies to prevent obesity in children and adolescents include the following: promoting an active lifestyle, limiting television viewing time, promoting consumption of fruits and vegetables, restricting the consumption of foods with high energy density and micronutrient deficiencies (such as fast-food), restricting the consumption of sugary soft drinks.

As mentioned earlier, the fight against fast-food consumption may also involve increased regulation of advertisements aimed at children (Termini, Roberto & Hostetter, 2011).

Research suggests that television advertising of fast-food products has an influence on children aged 8 to 12 years. According to our results, what children value most in fast-food restaurants is the good taste of food and the gifts provided, which are the most prominent elements in television advertising (Nadeau, 2011; Walter *et al.*, 2007).

Gender does not appear to be associated with significant differences in the behaviour of the children studied, as no statistically significant results were found regarding the association

between gender and children's willingness to try fast-food products they see in television advertising, nor between gender and asking parents to buy these foods. Similarly, there were also no statistically significant differences in the frequency of fast-food consumption between genders.

The distribution of answers to questions 6 and 7 seems to indicate that in this sample, television advertising has an influence on children's willingness to try out fast-food products they see advertised on television and to ask parents to buy them because the majority of respondents answered yes to these questions. These findings are consistent with what has been found by other authors (Coon & Tucker, 2002; Chamberlain, Wang & Robinson, 2006).

Regarding the distribution of answers to question no. 8, although most respondents gave an intermediate response, that is, they do not need to insist too little or too much with parents for them to buy them a food product that they see advertised on TV, one notes that children in the sample feel they need to adopt an insisting behaviour (nag factor), since more than a third of respondents (38.9%, $n = 14$) report that they are very insistent. This conclusion is corroborated by other authors (e.g. McNeal, 1999).

The existence of a significant positive and moderate intensity correlation between television viewing time (question 3) and the frequency with which children consume fast-food (question 4) on school days ($r_s = 0.54$, $p < .001$), and on weekends/holidays ($r_s = 0.50$, $p < .001$), seems to indicate that the longer the time children spend watching TV, the higher the number of times they consume this type of food (see Table 7).

It is also shown that the classification of the BMI is positively, moderately and significantly related to television viewing time (question 3) in school days ($r_s = 0.51$, $p < .001$) and during weekends/holidays ($r_s = 0.55$, $p < .001$) as well as the frequency of fast-food consumption ($r_s = 0.57$, $p < .0$).

These results seem to indicate that higher BMIs are related to longer television viewing time and higher frequency of fast-food consumption (question 4). These conclusions are consistent with the work of several authors (Chou, Rashad & Grossman, 2008).

The prevalence of overweight (13.3%) and obesity (21.7%) in the sample studied (see Table 6) was similar to that found in other studies conducted in Portugal (Antunes & Moreira, 2011).

We also noticed that children who show a desire to try new fast-food food products when shown on TV have higher BMI values ($Mdn = 33.14$) than the others ($Mdn = 25.23$), and this difference is statistically significant.

Therefore, it seems that the children with greater desire to consume these foods are precisely those that probably already have a less healthy diet (and therefore a higher BMI), which may indicate a cycle in which higher consumption of fast-food creates greater will to repeat the consumption. This result may signal the fact that fast-food is a potentially addictive substance (Garber & Lustig, 2011).

Although this study allows us to reach the above conclusions and allows a comparison with the researched literature, the sample obtained, being of convenience and of limited size, restricts the generalization of our results. Although the characteristics of the sample allow a parametric and non-parametric statistical study, it cannot be considered sufficiently representative of the Portuguese population, so it would be interesting to do a more extensive study. In future research, one could study the influence of the children's lifestyle on overweight and television viewing time.

REFERENCES

- Alves, M. A. (2011). *Marketing Infantil: um estudo sobre a influência da publicidade televisiva nas crianças*. Dissertação de mestrado. Faculdade de Economia. Universidade de Coimbra. Retrieved from: https://estudogeral.sib.uc.pt/bitstream/10316/17955/1/Disserta%C3%A7%C3%A3o%20de%20Mestrado_M%C3%B3nica%20Almeida%20Alves_2009130843.pdf
- Anitha, P. and Bijuna, C. M. (2016). Influence of Family Structures on Pester Power and Purchase Outcomes - A Conceptual Framework. *Procedia Economics and Finance*. 37: 269 – 275. doi: 10.1016/S2212-5671(16)30124-1
- Antunes, A. and Moreira, P. (2011). Prevalência de Excesso de Peso e Obesidade em Crianças e Adolescentes Portugueses. *Acta Médica Portuguesa*. 24: 279-284.
- Bingham, D. D., Varela-Silva, M. I., Ferrão, M. M., Gama, A., Mourão, I., Nogueira, H., Marques, V. R. and Padez, C. (2013). Socio-Demographic and Behavioral Risk Factors Associated with the High Prevalence of Overweight and Obesity in Portuguese Children. *American Journal of Human Biology*. 25: 733-742.
- Boulos, R., Vikre, E. K., Oppenheimer, S., Chang, H., Kanarek, R. B. (2012). ObesiTV: how television is influencing the obesity epidemic. *Physiology & Behavior*. 107(1): 146-53. doi: 10.1016/j.physbeh.2012.05.022. Epub 2012 Jun 4.
- Cardoso, P. J. R and Cardoso, A. (2012). Adolescents' attitudes toward internet advertising. *Revista Portuguesa de Marketing*. 14(27): 20-31.
- Carvalho, M. M., Padez, M. C., Moreira, P. A. and Rosado, V. M. (2006). Overweight and obesity related to activities in Portuguese children, 7–9 years. *European Journal of Public Health*. 17: 42–46. doi:10.1093/eurpub/ckl093
- Cattaneo, A., Monasta, L., Stamatakis, E., Lioret, S., Castetbon, K., Frenken, F., Manios, Y., Moschonis, G., Savva, S., Zaborskis, A., Rito, A. I., Nanu, M., Vignerová, J., Caroli, M., Ludvigsson, J., Koch, F. S., Serra-Majem, L., Szponar, L., van Lenthe, F. and Brug, J. (2010). Overweight and obesity in infants and pre-school children in the European Union: a review of existing data. *Obesity Reviews*. 11: 389-398. doi: <http://dx.doi.org/10.1111/j.1467-789X.2009.00639.x>
- Centers for Disease Control and Prevention (n.d.). *Body Mass Index: Considerations for Practitioners*. Retrieved from: <http://www.cdc.gov/obesity/downloads/BMIforPractitioners.pdf>
- Chamberlain, L., J., Wang, Y. and Robinson, T. N. (2006). Does Children's Screen Time Predict Requests for Advertised Products? *Archives of Pediatrics and Adolescent Medicine*. 160: 363-368. doi:10.1001/archpedi.160.4.363. Retrieved from: <http://archpedi.jamanetwork.com/article.aspx?articleid=204827>
- Chou, S., Rashad, I. and Grossman, M. (2008). Fast-Food Restaurant Advertising on Television and Its Influence on Childhood Obesity. *Journal of Law and Economics*. 51: 599-618. doi: <http://dx.doi.org/10.1086/590132>
- Committee on Communications, American Academy of Pediatrics (2006). Children, adolescents, and advertising. *Pediatrics*. 118 (6): 2563-2569. doi: <http://dx.doi.org/10.1542/peds.2006-2698>
- Coon K. A. and Tucker K. L. (2002). Television and children's consumption patterns. A review of the literature. *Minerva Pediatrica*. 54(5): 423-36.
- De Klerk, R. C. M. M. (2008). *Children's Preferences of Fast Food*. Dissertation submitted in partial fulfillment of the requirements for the degree of Magister Commercii. University of Johannesburg. Retrieved from: <https://ujdigispace.uj.ac.za/handle/10210/3473>

- Direcção Geral da Saúde (2016). *Portugal – Alimentação Saudável em números – 2015 [Portugal – Healthy Food Intake in Numbers – 2015]*. Lisbon. Portugal. DGS.
- Diário da República - Government's Official Gazette (1990). Decree-Law no. 330/90. *D.R. I Série*, 245: 4353-4357.
- Direcção Geral da Saúde (2005)/ Directorate-General for Health. *Saúde Infantil e Juvenil: Programa-Tipo de Actuação*. Lisbon. Direcção Geral da Saúde.
- Entidade Reguladora para a Comunicação Social/Regulatory Entity for Social Communication. (2009). *A Televisão e as Crianças. Um ano de programação na RTP 1, RTP2, SIC e TVI*. Lisbon. Entidade Reguladora para a Comunicação Social.
- European Union (2010). *Digital Agenda: survey of children's Internet use; competition for high quality online content*. Brussels. Europa Press Releases. Retrieved from: http://europa.eu/rapid/press-release_IP-10-1368_en.htm
- Evans, W. D. (2008). Social Marketing Campaigns and Children's Media Use. *The Future of Children*. 18(1): 181-203. doi: <http://dx.doi.org/10.1353/foc.0.0009>
- Frontini, R., Gouveia, M. J., Moreira, H. and Canavarro, M. C. (2016). Adaptação Psicossocial na Obesidade Pediátrica: Um Estudo com Pais, Crianças e Adolescentes. *Psychology, Community & Health*. 5(5): 85-101. doi: 10.5964/pch.v5i2.182
- Fulkerson, J. A., Farbakhsh, K., Lytle, L., Hearst, M. O., Dengel, D. R., Pasch, K. E. and Kubik, M. Y. (2011). Away-from-home family dinner sources and associations with weight status, body composition and related biomarkers of chronic disease among adolescents and their parents. *Journal of the American Dietetic Association*. 111(12): 1892–1897. doi: <http://dx.doi.org/10.1016/j.jada.2011.09.035>
- Gallo, A. E. (1999). Food Advertising in the United States. In: U.S. Department of Agriculture, Economic Research Service, Food and Rural Economics Division. *America's Eating Habits: Changes and Consequences. Agriculture Information Bulletin*. 750: 173-180. Washington, DC: USDA/Economic Research Service.
- Garber, A. K. and Lustig, R. H. (2011). Is fast food addictive? *Current Drug Abuse Review*. 4(3): 146-62. doi: <http://dx.doi.org/10.2174/1874473711104030146>
- Hawkes, C. (2004). *Marketing Food to Children: the Global Regulatory Environment*. Geneva. Publications of the World Health Organization.
- Hawkes, C. (2007). *Marketing Food to Children: the Global Regulatory Environment*. Geneva. Publications of the World Health Organization.
- Iglesias, F., Caldas, L. S. and Lemos, S. M. S. (2013). Advertising to children: an analysis of persuasive tactics on a free channel. *Psicologia & Sociedade*. 25(1): 134-141. <https://dx.doi.org/10.1590/S0102-71822013000100015>
- Klepp, K.-I., Wind, M., Bourdeaudhuij, I., Rodrigo, C. P., Due, P., Bjelland, M. and Brug, J. (2007). Television viewing and exposure to food-related commercials among European school children, associations with fruit and vegetable intake: a cross sectional study. *International Journal of Behavioral Nutrition and Physical Activity*. 4(1): 46. doi:10.1186/1479-5868-4-46
- Livingstone, S. and Helsper, E. (2004). *Advertising foods to children: understanding promotion in the context of children's daily lives*. London. London School of Economics and Political Science. Retrieved from: http://eprints.lse.ac.uk/21757/2/Advertising_foods_to_children.pdf
- McNeal, J. (1999). *The Kids Market: Myth and Realities*. Ithaca. New York. Paramount Market Publishing.

- Montgomery, K. C. (2001). Digital kids: the new online children's consumer culture. In: D. G. Singer and J. L. Singer (eds.). *Handbook of Children and the Media*. 635-650. Thousand Oaks, CA. Sage Publications.
- Moore, E. S., Wilkie, W. L. and Lutz, R. J. (2002). Passing the torch: Intergenerational influences as a source of brand equity. *Journal of Marketing*. 66(2): 17-37. doi: <http://dx.doi.org/10.1509/jmkg.66.2.17.18480>
- Muda, W. A. M. W. (2007). Globalization of Fatness: Cultural, Social, and Economic Perception of Obesity in Southeast Asia. In: API Fellows (coord.), *Reflections on the Human Condition: Change, Conflict and Modernity. The Work of the 2004/2005 API Fellows*. 161-176. Bangkok: Nippon Foundation.
- Nadeau, M. E. (2011). *Review of Effects, Strategies, and Tactics. Food Advertising Directed at Children. Report Prepared for the Quebec Coalition on Weight-Related Problems*. Retrieved from: http://www.childhoodobesityfoundation.ca/files/files/AMorel_food_advertising_directed_at_children.pdf
- Malveiro, J. A. and Jesus, S. N. (2015). The quality of life perception: A comparative study of institutionalized elderly. *OMNIA Revista Interdisciplinar de Ciências e Artes*. 3: 67-86. Faro. Portugal. Grupo de Estudos Interdisciplinares.
- Paiva, M. S., Souza, K. C. A. and Mendes, M. G. C. (2014). O mundo imaginário da publicidade infantil. *Comunicação, Mídia e Consumo*. 11(32): 73.
- Pereira, S. (2011). *A relação das crianças e dos jovens com a televisão e a internet*. Cadernos BAD 1/2. Retrieved from: <http://www.bad.pt/publicacoes/index.php/cadernos/article/viewFile/736/735>
- Pérez, R. A. (2012). El estado del arte en la Comunicación Estratégica [the state of the art in strategic communication]. *Spatial and Organizational Dynamics, Discussion Papers*. 10 (Marketing). University of Algarve, Portugal. CIEO – Research Centre for Spatial and Organizational Dynamics.
- Poti, J. M. and Popkin, B. M. (2011). Trends in energy intake among US children by eating location and food source, 1977-2006. *Journal of the American Dietetic Association*. 111(8): 1156-1164. doi: <http://dx.doi.org/10.1016/j.jada.2011.05.007>
- Rodrigues, A. S., Carmo, I., Breda, J. and Rito, A. I. (2011). Associação entre o marketing de produtos alimentares de elevada densidade energética e a obesidade infantil. *Revista Portuguesa de Saúde Pública*. 29(2): 180-187. doi: [http://dx.doi.org/10.1016/S0870-9025\(11\)70022-0](http://dx.doi.org/10.1016/S0870-9025(11)70022-0)
- Rodrigues, W. S. (2010). *Consumo e Infância: A Percepção dos Pais com Relação à Presença do Nag Factor nas Demandas de Consumo dos Filhos*. Monografia para habilitação em Publicidade e Propaganda. Centro Universitário de Brasília. Retrieved from: <http://repositorio.uniceub.br/bitstream/123456789/3113/1/20564664.pdf>
- Sánchez-Villegas, A., Toledo, E., de Irala, J., Ruiz-Canela, M., Pla-Vidal, J. and Martínez-González, M. A. (2012). Fast-food and commercial baked goods consumption and the risk of depression. *Public Health Nutrition*. 15(3): 424-32. doi: 10.1017/S1368980011001856.
- Swinburn, B., Sacks, G., Lobstein, T., Rigby, N., Baur, L. A., Brownell, K. G., Gill, T., Seidell, J. and Kumanyika, S. (2008). The 'Sydney Principles' for reducing the commercial promotion of foods and beverages to children. *Public Health Nutrition*. 11: 881-886. doi:10.1017/S136898000800284X
- Termini, R. B., Roberto, T. A. and Hostetter, S. G. (2011). Food Advertising and Childhood Obesity: A Call to Action for Proactive Solutions. *Minnesota Journal of Law, Science & Technology*. 12(2): 619-651.

- Union des consommateurs (2006). *The Marketing of Junk Food to Children*. Montreal. Canada. Union des consommateurs. Retrieved from: <http://uniondesconsommateurs.ca/docu/agro/MarkJunkFoodChildren.pdf>
- Valente, H., Padez, C., Mourão, I., Rosado, V., Moreira, P. (2010). Prevalência de inadequação nutricional em crianças Portuguesas [Prevalence of nutritional inadequacy in Portuguese children]. *Acta Médica Portuguesa*. 23: 365-370.
- Walter, G., Schwartz, N., Angelini, J. R. and Rideout, V. (2007). *Food for Thought. Television Food Advertising to Children in the United States. A Kaiser Family Foundation Report*. Retrieved from: <http://www.kff.org/entmedia/upload/7618.pdf>
- World Health Organization (2003). *Diet, Nutrition and the Prevention of Chronic Diseases*. Geneva. WHO technical report series.
- World Health Organization (2007). *The challenge of obesity in the WHO European Region and the strategies for response*. Copenhagen, Denmark. WHO Regional Office for Europe.
- World Health Organization (2013a). *Lax marketing regulations contribute to obesity crisis in children*. Retrieved from: <http://www.euro.who.int/en/media-centre/sections/press-releases/2013/06/lax-marketing-regulations-contribute-to-obesity-crisis-in-children>
- World Health Organization (2013b). *Marketing of foods high in fat, salt and sugar to children: update 2012–2013*. Copenhagen, Denmark. WHO Regional Office for Europe.

ANNEX A

Questionnaire

This questionnaire is intended for a research work as part of the Organizational Psychology of Health and Economic Psychology course units of Universidade Autónoma de Lisboa. The questionnaire is anonymous and all your answers will be confidential.

If you are between 8 and 12 years of age, complete this questionnaire with an X where you will find a □. Your answers are very important. There are no right or wrong answers.

1 – How old are you?

_____ years old.

2 – What is your gender?

Male

Female

3 – How many hours a day do you watch television?

	Up to 1 hour	1 – 2 hours	2 – 3 hours	Over 3 hours
School days	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Weekends and holidays	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

4 – Last month, how many times did you eat at a fast-food restaurant? (For example, McDonald's or Pizza Hut, Burger King, KFC).

None

1 – 2 times

3 – 5 times

6 or more times

5 – What do you love the most at fast food restaurants? (You can choose more than one option).

Food tastes good

Food is fun

They have nice toys

They are cheap

The service is fast

The food is fast

6 – When you see an advertisement on television that you like about a fast-food product you do not know about, do you feel like buying it and trying it?

Yes

No

7 – When you see an advertisement that you like on television about food (for example, chocolates, sweets, biscuits, chips, sodas, hamburgers or pizzas), do you usually ask your parents to buy the product that was advertised?

Yes

No

8 – If you answered “Yes” in the previous question, to get your parents to buy the food you want, what is your level of insistence on these occasions?

- Little insistent
- Neither too much nor too little insistent
- Very insistent

9 – How tall are you and what is your weight? (Example: 125 corresponds to 1 meter and 25 centimetres - If you do not know, you can ask your parents).

_____ Centimetres.

_____ Kg.

Thank you very much for your participation!

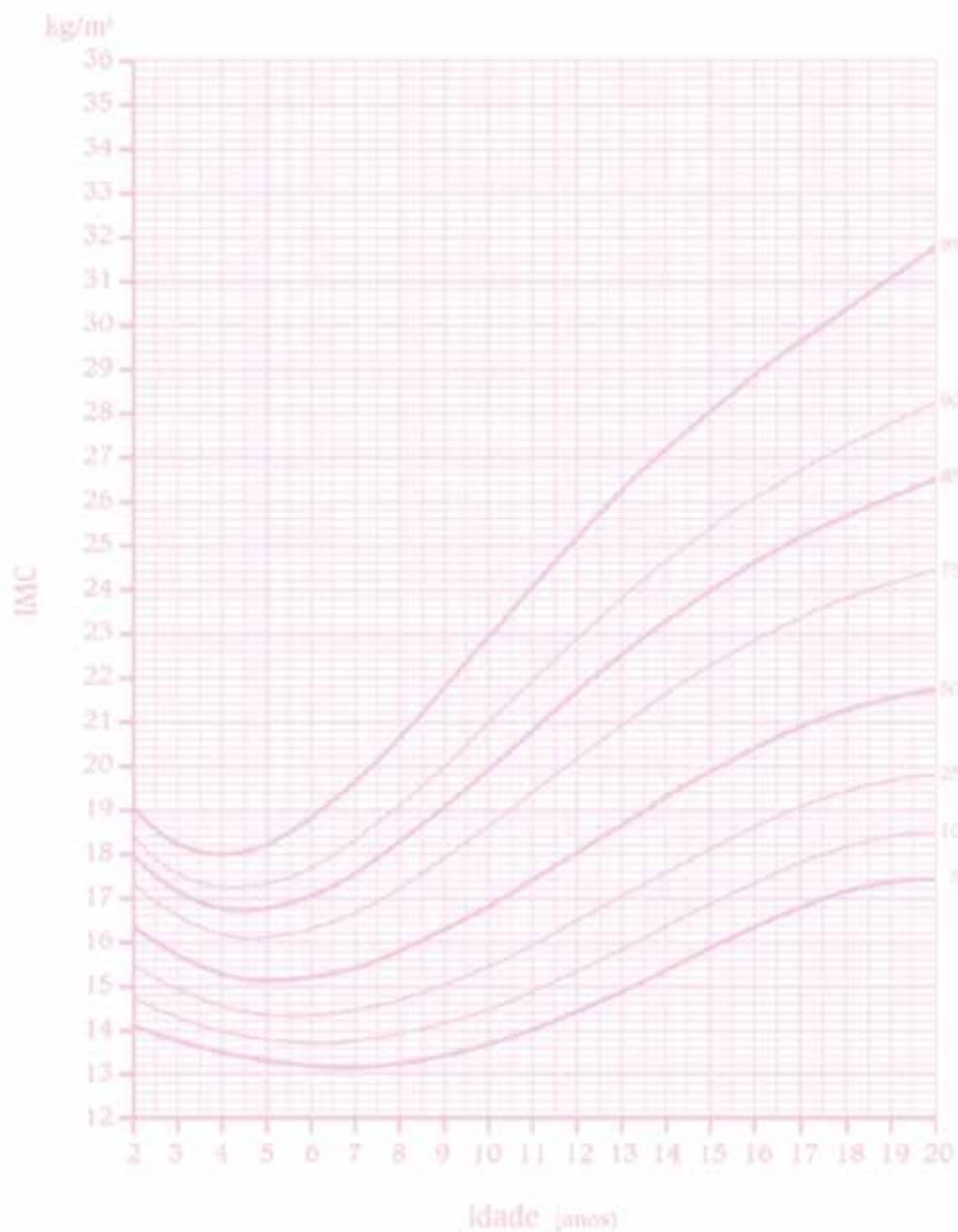
ANNEX B

BMI Percentile Table for the Female Gender

(Retrieved from Direcção-Geral da Saúde/ Directorate-General for Health, 2005)

RAPARIGAS

índice de massa corporal 2-20 anos



OBESIDADE > percentil 95
EXCESSO DE PESO > percentil 85 e < percentil 95

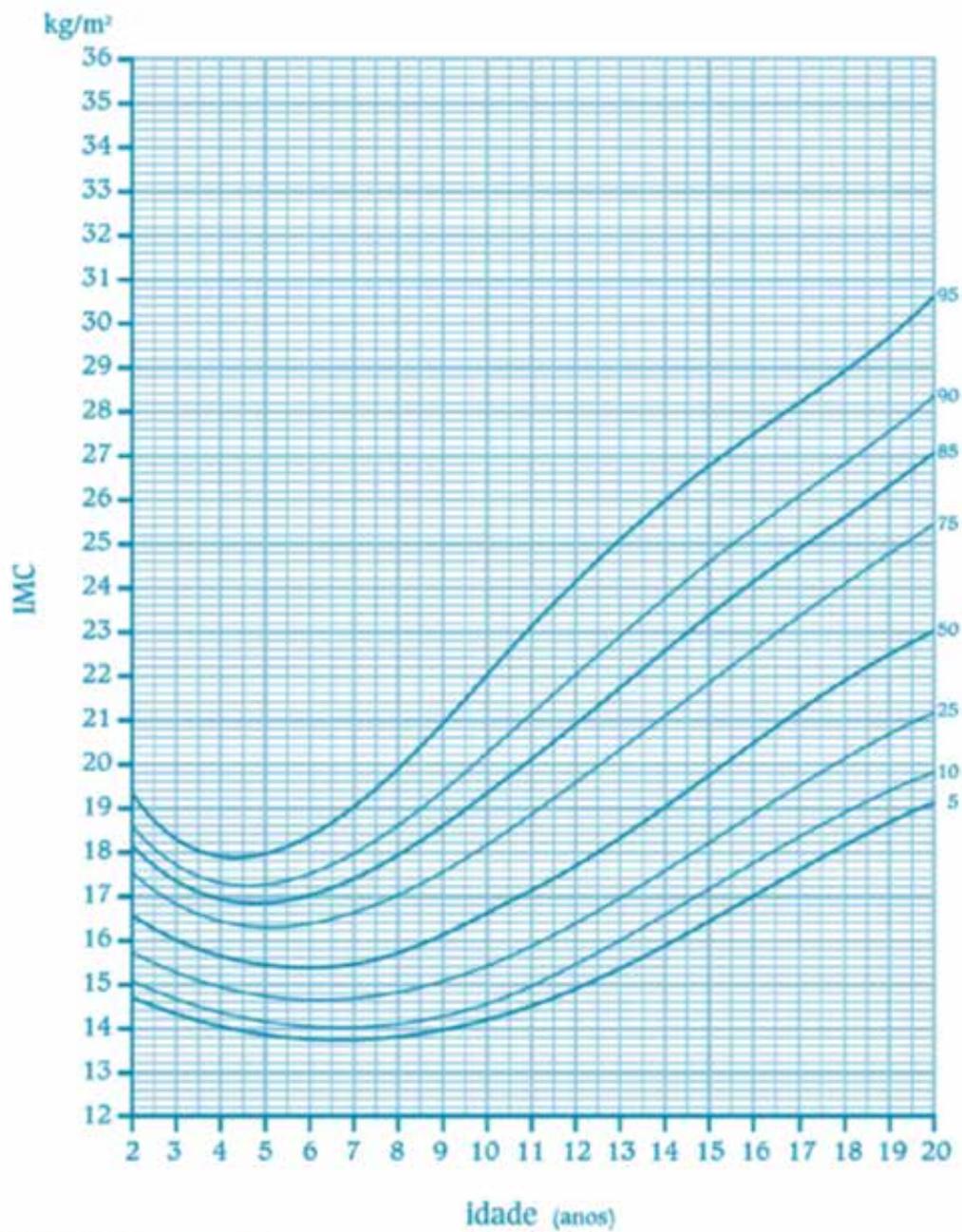
ANNEX C

BMI Percentile Table for the for the Male Gender

(Retrieved from Direcção-Geral da Saúde/ Directorate-General for Health, 2005)

RAPAZES

índice de massa corporal 2-20 anos



OBESIDADE > percentil 95

EXCESSO DE PESO > percentil 85 e < percentil 95