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DETERMINANTES DAS ESCOLHAS ALIMENTARES EM ADOLESCENTES PORTUGUESES COM HÁBITOS ALIMENTARES CONTRASTANTES: UMA ABORDAGEM QUALITATIVA

DETERMINANTS OF FOOD CHOICES AMONG PORTUGUESE ADOLESCENTS WITH CONTRASTING EATING HABITS: A QUALITATIVE APPROACH

DETERMINANTES DE LAS ELECCIONES ALIMENTARIAS EN ADOLESCENTES PORTUGUESES CON HÁBITOS ALIMENTARIOS CONTRASTANTES: ENFOQUE CUALITATIVO

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RESUMO

Introdução: Investigar sobre os fatores que determinam as escolhas alimentares, sobretudo na adolescência, é relevante uma vez que estas opções condicionam fortemente a saúde e tendem a persistir na idade adulta.
Objetivo: Identificar e caracterizar os fatores percecionados pelos adolescentes como determinantes das escolhas alimentares.
Métodos: Foi efetuado um estudo transversal em duas escolas, numa amostra de 358 adolescentes. De uma abordagem quantitativa, passou-se para uma abordagem qualitativa. Para o estudo quantitativo foram utilizados as escalas: EHA (escala de hábitos alimentares), IPAQ-SF (questionário internacional de atividade física), TAA-25 (teste de atitudes alimentares) e o GSQ (questionário de auto-eficácia geral). Para o estudo qualitativo, selecionaram-se subgrupos de hábitos alimentares mais e menos saudáveis, para uma abordagem do tipo grounded theory, com entrevista semiestruturada e codificação pelo método de Charmaz.
Resultados: Os fatores determinantes mais referidos (por ordem decrescente) foram a influência familiar, as preferências de gosto, os hábitos familiares, as regras de alimentação saudável e a disponibilidade. Os que foram referidos por um maior número de adolescentes foram a influência familiar e os hábitos familiares, a perceção de risco, o conhecimento sobre alimentação saudável e as preferências. Outros fatores referidos foram o autocontrolo, sentir-se bem ou mal, influência dos pares, sentir-se saciado ou com fome, desenvolver uma determinada tarefa, impulsividade, tempo disponível, humor/stress e custo. Alguns fatores assumem papel diferente consoante o grupo de estudo.
Conclusão: A família deve ser considerada como parte integrante das intervenções relacionadas com a educação para a saúde. Medidas administrativas, tomadas por escolas e agentes governamentais, podem facilitar as escolhas saudáveis, modulando o efeito de factores determinantes como o tempo disponível e a disponibilidade.

Palavras-chave: adolescentes; hábitos alimentares; escolhas alimentares; comportamentos alimentares; determinantes

ABSTRACT

Introduction: Investigating the factors that influence dietary choices, particularly during adolescence, is important, as these choices have a significant impact on health and tend to persist into adulthood.
Objective: To identify and characterize the factors perceived by the adolescents as determinants of food choices.
Methods: A cross-sectional study was conducted in two schools, based on a sample of 358 adolescents. From a quantitative approach, we moved to a qualitative approach. The quantitative study was used: EHA (eating habits scale), IPAQ (international physical activity questionnaire), TAA-25 (eating attitudes test), and the GSQ (general self-efficacy questionnaire). For the qualitative study, we selected subgroups with healthier and less healthy eating habits for a grounded theory approach, using semi-structured interviews and coding according to Charmaz's method.
Results: The determining factors that were more often mentioned (in decreasing order) were family influence, taste preferences, family habits, healthy eating rules, and availability. The ones that were mentioned by a bigger number of adolescents were family influence and family habits, risk perception, knowledge of healthy eating, and preferences. Other factors are mentioned, such as self-control, feeling well or bad, peer influence, feeling hungry or full, developing a task or not, impulsiveness, time available, humor/stress, and cost. Some factors take different perspectives in each group.
Conclusion: Family must be considered as an integral part of the interventions that are related to health education. Administrative measures, taken by schools and government agents, can make healthy choices easier, modulating the effect that determining factors such as available time and availability may have.

Keywords: adolescents; eating habits; food choices; eating behaviors; determinants

RESUMEN

Introducción: Es importante investigar los factores que determinan las elecciones alimentarias, sobre todo en la adolescencia, ya que estas opciones influyen considerablemente en la salud y suelen mantenerse en la edad adulta.
Objetivo: Identificar y caracterizar los factores percibidos por los adolescentes como determinantes de las elecciones alimentarias.
Métodos: Se realizó un estudio transversal en dos escuelas, a partir de una muestra de 358 adolescentes. De un abordaje cuantitativo se pasó a un abordaje cualitativo. Para el estudio cuantitativo se utilizaron las escalas: EHA (escala de hábitos alimentarios), IPAQ (cuestionario internacional de actividad física), TAA-25 (test de actitudes alimentarias) y el GSQ (cuestionario de autoeficacia general). Para el estudio cualitativo, se seleccionaron subgrupos con características opuestas, con hábitos más saludables Y menos saludables siguiendo un enfoque de tipo grounded theory, mediante entrevistas semiestructuradas y codificación según el método de Charmaz.
Resultados: Los factores determinantes que fueron mencionados con mayor frecuencia (en orden decreciente) fueron la influencia familiar, las preferencias gustativas, los hábitos familiares, las normas de alimentación saludable y la disponibilidad. Los que fueron mencionados por un mayor número de adolescentes fueron la influencia familiar y los hábitos familiares, la percepción del riesgo, los conocimientos sobre alimentación sana y las preferencias. También se mencionan otros factores, como el autocontrol, sentirse bien o mal, la influencia de los compañeros, sentirse hambriento o saciado, desarrollar una tarea o no, la impulsividad, el tiempo disponible, el humor/estrés y el coste. Algunos factores adoptan perspectivas diferentes en cada grupo.
Conclusión: La familia debe considerarse parte integrante de las intervenciones que se relacionan con la educación para la salud. Las medidas administrativas, adoptadas por las escuelas y los agentes gubernamentales, pueden facilitar las elecciones saludables, modulando el efecto que pueden tener factores determinantes como el tiempo disponible y la disponibilidad.

Palabras clave: adolescentes; hábitos alimentarios; elección de alimentos; conductas alimentarias; factores determinantes

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INTRODUCTION

Adolescence is characterized by significant physical, psychological, and social changes that influence the development of health-related behaviours, including eating habits. During this period, adolescents gain greater autonomy in their decision-making, which may be reflected in the way they select and consume foods.(Daly et al., 2022). As dietary patterns established during this stage tend to persist into adulthood, understanding the factors that influence these choices becomes particularly relevant from a health promotion perspective.(Moore Heslin & Mcnulty, 2023).

Consistent with this finding, several studies have sought to identify the determinants of adolescents' food choices, highlighting the influence of multiple individual, social, and environmental factors.

1. THEORETICAL FRAMEWORK

At the time of food purchase or consumption, a selection process takes place in which physiological, psychological, social, or cultural factors may contribute. These choices have a relevant influence on health, so the underlying causes need to be understood.

Eating behavior is influenced by physiological aspects associated with the growth process, interacting with socialization agents, affective dimensions, and mother-child-family dynamics. (Neumark-Sztainer et al., 2006). As individuals grow, especially during adolescence, a period marked by increased social interaction, food choices become more complex and depend on the interplay of multiple elements. (Moore Heslin & Mcnulty, 2023) .

It should be noted that the influences exerted on adolescents are often contradictory, leading to conflicts in decision-making. Therefore, it is important to identify which factors have the greatest impact on food choices. (Sohail et al., 2024). We can consider individual factors (age, sex, beliefs, mood), food- specific characteristics (texture, taste, nutritional content), and environmental influences (availability, family, culture) (Bauer et al., 2011; Larson & Story, 2009; Reicks et al., 2015). Several studies highlighted the significant influence of parents' habits on their children's eating habits. (Cardoso et al., 2015; Gaete et al., 2016; Reicks et al., 2015; Sohail et al., 2024).

Physical activity is generally associated with healthier dietary choices; however, it has also been linked to disordered eating behavior, particularly among females. (Yuan, 2010; Neumark-Sztainer et al., 1999; Neumark-Sztainer et al., 2006).

There is growing concern regarding food-related issues such as aesthetic standards, ideal body weight, and their health implications. Societal pressure related to appearance often contributes to the development of eating disorders, especially during adolescence. (Hogan & Strasburger, 2008; Marentes-Castillo et al., 2024) .

Certain intrinsic individual characteristics, such as general self-efficacy (the ability to manage challenging situations), have also been referred to as influencing food choices. (Lu et al., 2026; Marentes-Castillo et al., 2024)

This study aims to identify and characterize factors associated with food choices among Portuguese adolescents as well as to analyze the association between eating habits and biological, environmental, economic, and sociocultural factors. It was also intended to find the relative importance of each determinant.

2. METHODS

2.1. Participants

The sampling method was non-probabilistic, by convenience, comprising secondary school students from two schools in Coimbra, aged 14-18. All 14-year-olds made the 15 within two months. The data were collected in the year 2015. The principles of the Declaration of Helsinki were followed. The data collection and analysis were approved by the Ministry of Education entities, as well as each school principal. Participation in the research was voluntary. Each participant, parent, and educational tutor was informed of the study objective and context and provided their written informed consent.

A total of 18 adolescents (5 boys and 13 girls) met the criteria to be included in the group with more adequate habits (EHA ≥ 160), with a mean EHA score of 164 and a standard deviation of 3.556. For the group with less adequate habits (EHA ≤ 125), 35 adolescents (19 boys and 16 girls) met the criteria, with a mean EHA score of 112.26 and a standard deviation of 7.7.

However, it was not possible to conduct interviews with all the adolescents, mainly due to issues related to school schedule organization. Therefore, interviews were conducted within each extreme group (Group A, with more adequate, healthy habits, and Group B, with less adequate, less healthy habits) until data saturation was reached (that is, until only repeated references were obtained, with no new information emerging).

The participants gave a description of the household's eating habits, of their own eating habits, and were questioned about the differences between meals consumed at home, at school, and outside the school environment, and about the reasons underlying these choices. They were also questioned about the health risk (i.e., risk perceptions) associated with eating habits, decisions before the impulse to eat, and special situations at the time of the ingestion, and finally, about intentions of changing habits.

Coding was performed using the MaxQda software, by the content analysis method, according to the principles of grounded theory. (Charmaz, 2008).

2.2. Data collection

First, the eating habits of the 358 adolescents were assessed using the EHA scale (Marques et al., 2011). This is a *Likert* scale ranging from 1 (never) to 5 (always), generating scores that can be analyzed as total or individually. Items are organized into four

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dimensions: quality, quantity, variety, and adequacy. We excluded adolescents with a clinical history of eating behavior disturbances and/or with diet-related pathology (n = 4).
Physical activity levels were assessed using IPAQ-SF (International Physical Activity Questionnaire, short version), which classifies activity into standardized categories ranging from light to vigorous exercise.
To assess the risk of developing eating behavior disturbances, the TAA-25 scale (Pereira et al., 2008) was applied. This scale includes factors such as motivation for thinness, social pressure to eat, and bulimic behaviors.
The GSQ (Pais-Ribeiro & Psicossocial, 1995), adapted from the Self-Efficacy Scale of Sherer et al. (1982), was used to assess general self-efficacy. The primary factor for dividing participants into two groups was the EHA score, while the other measures (physical activity, eating attitudes, and self-efficacy) were used to further characterize participants and establish subgroups.
Two groups representing opposite patterns of eating habits were formed. These subsamples provided a qualitative approach rich in information about the determinants of food choices. Adolescents with the highest EHA scores (≥160; Group A: more adequate habits) and those with the lowest EHA scores (≤125; Group B: less adequate habits) were selected from the extremes of the sample distribution. Semi-structured interviews were conducted with these subgroups until data saturation was reached, as previously described. Based on the remaining scales (IPAQ, TAA, and GSQ), subgroups of adolescents with similar characteristics were identified, allowing the establishment of subgroups within study groups A and B (see Results section).

2.3. Statistical Analysis

Descriptive statistics were conducted using IBM Statistical Package for the Social Sciences, SPSS 24.0. Initially, descriptive statistics (means, standard deviations, and frequency distributions) were calculated for the scores obtained from the different scales used in the study. These analyses allowed the characterization of the results´distribution and provided the basis for defining and organizing the study groups and subgroups. The data for qualitative analysis were collected by individual semi-structured face-to-face interviews.

3. RESULTS

This work follows an earlier study with the same sample.(Cardoso et al., 2015), which studied the factor "habits of the household" that was identified as the most relevant. We administered the EHA questionnaire (possible variation: 40-200) to the 358 students (table 1).

Table 1 - Characterization of adolescents effectively integrated into the study groups (Cardoso et al, 2015)

		Group A (n=11)	Group B (n=17)	Total (n=28)
Age	14 years old	18,2%	23,5%	21,4%
	15 years old	27,3%	29,4%	28,6%
	16 years old	36,4%	29,4%	32,1%
	17-18 years old	18,2%	17,6%	17,1%
	Average	15,7	15,4	15,5
	Median	16	15	15,5
	Standard deviation	1,35	1,064	1,17
Sex	Girls	72,7%	41,2%	53,6%
	Boys	27,3%	58,8%	46,4%

Group A: adolescents with more healthy habits according with EHA score
Group B: adolescents with less healthy habits, accpording with EHA score

Through the EHA scale, we obtained scores between 86 and 172 (mean 137.3 ±13.85).
A total of 18 adolescents (5 boys; 13 girls) presented EHA≥160. There were 35 adolescents (19 boys; 16 girls) with EHA≤125. We found some different characteristics among adolescents in groups A and B, and so we subdivided according to data (from the application of all scales and corresponding cutoffs), making it possible the following grouping:

A- Adolescents with a high score of eating behaviors (EHA≥160); good physical activity pattern (moderate or high), divided into:
A1. good perception of self-efficacy and without a risk of an eating disturbance (8 students) or A2. with risk of pathology; reasonable self-efficacy perception (3 students)

B- Adolescents with low EHA score, inappropriate eating behaviors (EHA≤125), divided into:
B1. sedentary; without risk of pathology; all with low self-efficacy (6 students), or B2. with risk of pathology; good pattern of physical activity (3 students), or B3. good pattern of physical activity, without risk (8 students)

In group A, one student was slightly overweight (BMI = 25.0). In group B, one student was overweight (BMI = 27.7) and one student was slightly overweight (BMI = 24.8) (CDC, 2002)

Codification and reference frequency

The semi-structured interviews were carried out, and the references were counted by code (number of references) and by the number of students who referenced each code (Table 2).

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Table 2 - Frequency of references by code: total number of references in the interviews and number of students who mentioned them. In shaded, the number of students who referred and, in white color, the total number of references.

Code	Subcode	Subcategory	Total of interviews		By subgroup				
			Number of references (*)	Number of students who referred (**)	A1 * **	A2 * **	B1 * **	B2 * **	B3 * **
Vulnerability (role in health control)	Personal issues		16	9	9	1	2	0	2
					5	1	1	0	2
	Self-control and dificulty in resisting tempting foods		20	13	5	3	5	5	2
					4	2	3	3	1
	Perceived influence of food on well-beig/disease		8	6	5	2	0	0	1
					3	2	0	0	1
	Healthy eating rules/beliefs	Knowledge/information	46	23	12	3	7	9	14
					6	1	5	3	8
		Health concern	27	17	13	4	3	3	4
					8	2	2	2	3
		Weight concern	13	7	5	4	0	0	3
					3	2	0	0	2
		Risk perception	26	26	6	3	6	4	7
					6	3	6	4	7
Peers influence			14	11	4	1	6	1	2
					3	1	5	1	1
Hunger/saciety			18	17	3	3	4	2	6
					2	3	4	2	6
Family	Family habits		60	26	19	7	4	8	22
					12	2	3	2	8
	Family pressure		11	8	3	1	3	1	3
					3	1	1	1	2
Neophobia/neophilia			5	5	2	0	1	1	1
					2	0	1	1	1
Dynamics (active involvement in tasks) or leisure			30	21	7	4	6	4	9
					5	2	5	2	7
Cost			5	4	1	0	1	0	5
					1	0	1	0	2
Availability	Availability		43	21	9	4	5	5	20
					5	2	4	3	7
	Oportunity		32	17	0	7	11	5	9
					0	3	4	3	7
Food preferences	Palatability/taste preferences		60	22	25	4	13	4	14
					8	2	6	1	5
	Habits		15	10	5	5	2	0	3
					5	5	2	0	3
Humor/stress			16	11	9	2	1	0	3
					6	1	2	0	3
Available time			31	17	8	7	9	2	5
					3	3	5	2	4

The factors that the adolescents interviewed referred to more frequently were (in descending order of number of references): family influence, food preferences, knowledge of healthy eating rules, and availability. In terms of the number of participants, that is, by counting the number of adolescents who referred to each factor, we obtain, also in descending order: family influence and family habits, such as those referred to by a larger number of participants, as well as perceived risk, followed by knowledge of the rules of healthy eating and food preferences.

From the analysis of the reports obtained through the interview, it is observed that the factor with greater relevance in the adolescents' choices - household habits - is common to both groups (A- better habits; B- worse habits), to the detriment of other factors such as time available and food preferences based on the taste, these differing in the priority assumed between the two groups (A and B).

For each code, specific contexts were identified by grounded theory, based on the adolescents' reports.

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Table 3 - Determinants perceived by adolescents.

Vulnerability (role in health control)		**Verbatim (examples)**
Personal issues	Propensity for health problems /conditioning Stress Attempt and ability to control	(A1) "…. When I have allergies, it makes me want to eat." (B1) … when I am with my menstrual period, I am always eating."
Self-control and difficulty in resisting food-related temptations	No control Control strategies	(A1) "I have a very serious problem with chocolate, and when I'm studying, I think: -no, not chocolate, and I'm going to eat an apple and think that tastes like chocolate. Sometimes it works. " (B1) If I have it at home, I'll eat right away. If I don't have it, I buy it the next day, I really feel like it."
Perceived influence of food on well-being/disease	General wellbeing Well-being related to satiety	(A2) "I don't make great sacrifices, and I feel good." (B3) the food makes me feel more satisfied, more satiated ".
Healthy Eating Rules / Beliefs		**Verbatim (examples)**
Knowledge/information	Knowledge associated with effective action Knowledge and desire for change, yet without effective action	(A1) "I know all the dangers, and I try to control them." (B1) Eating at the mall is always plastic food, and it's unhealthy, but I like it, and I think it's normal."
Health concern		(A2) "I don't eat it because I know it's bad." (B1) "If it's a dessert, I can think of diabetes."
Concern about weight	Attempt to maintain a healthy body weight through effective strategies Desire to lose weight without implementing strategies	(A2) "To control my weight, I had to find a way to reduce the sweets (B3)" I liked to eat less. I'm trying to diet, and I can't."
Risk perception	Risk perception: associated / not associated with strategies No risk perception (absence of risk): feeling protected / belief in adequacy of one´s own habits/lack of concern.	(A1) The will ceased to give me… eating too many sweets, repeatedly, is very dangerous." (B1) I think I'm at risk because I eat a lot of sweets and a lot of crap (B1) I have a good body, even genetically. I have no predisposition…"
Peers influence	Friends' company limits access to the canteen and determines the location of the meal. Friends' company limits the food type /quality	(A1) A lot of people won't go from my class. Sometimes I go alone… (B1) Sometimes I feel like eating a candy, especially when I'm with my friends
Hunger/saciety	Hunger influences intake Hunger influences quality	(A1) because I don't feel like it, I have no appetite (B2) sometimes I eat bread… depending on hunger… or a cookie
Family (habits and family pressure)	Food availability Control and encouragement Wellbeing Parents' preferences as drivers of children's preferences. Difficulty managing the availability of healthy foods, according to different tastes Unhealthy family practices Lack of encouragement Unavailability at home Acceptance Parents, or at least one of them, encourage unhealthy behaviors	(A1) I eat various fruits that my mother prepares for me (A1) I feel good about not eating fried foods and high-fat foods, and my mom already knows that… at home, it's very rare (B1) I don't eat soup at dinner because I already ate at school, and my father doesn't prepare it either. (B3) My mother makes lots of sweets after the meal (B3) If there is any, I eat it. If not, I'll call my mom to buy it
Neophobia/neophilia	Novelty is attractive, without disregarding health considerations. Novelty is a very sporadic attraction. Novelty is attractive when the opportunity arises	(A1) Strangely, I choose things I don't usually eat. (B1) When I'm away from home, I go to eat those different dishes
Dynamics (active involvement in tasks) or leisure	Inertia: Being at home enhances thoughts and triggers eating impulses. Activity/tasks driving away the urge to eat. Studying. Leisure activities associated with weekends	(A2) On Sunday, I do nothing… and I simply feel like eating. (B2) On weekends, I remain seated on the couch, and may get a packet of cookies… I like to eat, eat, and eat…
Cost	Price limits both access to healthy choices (restaurant rather than fast food) and access to unhealthy choices.	(A1) is also cheaper, save a little (B1) The restaurants are not very cheap.
Availability		**Verbatim (examples)**
Availability	Food available/unavailable Unavailability with attempts to compensate	(A1) If there is soup, I prefer to eat soup and then something else (B1) I eat bread when there are no croissants
Oportunity	Motivated by visualization Inhibited temptation (accompanied by an attempt to resist) Uninhibited temptation (not accompanied by an attempt to resist)	(A2) When I feel like it, I really try to resist but sometimes it's hard. If it's a cake, I try to pick one less… (B1) Sometimes I feel like a kinder… I could forget, but if I see him for 10 minutes, I will eat or go get it.

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Food preferences		**Verbatim (examples)**
Palatability	Palatability	(A1) fast food just like once in a while, and it's not my favorite thing (B1) I rarely eat soup because I don't like soup or vegetables very much… (B3) I rarely eat soup; I don't like it much. When it's fish, I don't eat much, and then I'll eat crackers, milk… when it's meat, I eat like crazy.
Habits	Preferences associated with habitual choices	(A1) I usually choose things similar to what I usually eat (A1) I eat from time to time, but couldn't eat often. I'm not used to that kind of food (B3) I don't have breakfast, I'm used to it…
Humor/stress	Humor/stress mediates ingestion or loss of appetite Humor/stress mediates the type of food eaten	 A1) When I feel down. I use food to compensate (B3) Under stress, I even feel hungry.
Available time	Faster to ingest Reduced time to eat More time to eat	(A1) I eat more fruit and cereals, it's faster (B2) During the busiest week, I practically forget to eat, and when I do, it's the fastest

Several determinants were identified by grounded theory. Verbatim led to the identification of large categories (vulnerability, health beliefs, peers influence, hunger/saciety, family, neophobia/neophilia, dynamics, cost, availability, food preferences, humor/stress; available time), subdivided into subcategories.

4. DISCUSSION

The comparison between groups of adolescents with markedly contrasting eating patterns represents a new approach that highlights key differences and may help identify the most influential determinants of eating behavior.

The findings suggest that differences between adolescents with healthier and less healthy dietary habits are not primarily related to knowledge of healthy eating guidelines but rather to behavioral regulation mechanisms, social influences, and situational contexts. This observation has been reported in several studies. (Payán et al., 2017). Adolescents with healthier habits appeared more capable of translating health knowledge into daily practices through self-regulation strategies and supportive family environments. In contrast, adolescents with poorer habits were more frequently influenced by immediate cues, peer contexts, and emotional states.

Some adolescents reported personal health-related situations or experiences that influenced their food selection and intake. These references were more frequent among adolescents in groups A1 and A2, characterized by healthier eating habits. These adolescents appeared to demonstrate greater awareness of the relationship between food and health, which may have contributed to the adoption of healthier dietary choices. They also reported more structured self-control strategies motivated by health concerns, often implemented spontaneously. Similarly, these adolescents more strongly associate healthy food consumption with well-being, whereas adolescents with poorer eating habits tend to associate eating mainly with satiety. This difference may reflect a more integrated perception of food and health among adolescents with healthier habits, where the benefits of balanced eating extend beyond immediate physiological satisfaction. This pattern has also been described in previous studies, where positive psychological feedback from healthy eating reinforced the maintenance of good habits (Kye et al., 2016).

Health literacy was mainly expressed in contexts of health concerns (associated with risk perception) and weight perception. Knowledge did not always translate into action in the sense of healthy eating. (Devine et al., 2023). Also, at this level, adolescents in groups with healthier habits refer to concrete actions toward maintaining healthy habits and resistance to temptations. By contrast, adolescents in groups with less healthy habits expressed the intention to adopt healthier habits but experienced considerable difficulty in taking action. This gap between motivation and behaviour is commonly observed in adolescent health research and highlights the role of self-regulation skills in sustaining healthy dietary practices. (Mancone et al., 2024).

The lack of perception of risk by the B1 group (unhealthy food choices, sedentary, without risk of eating disturbances and presenting low self-efficacy) and a lower health concern, especially in the B3 group (similar to B1 but physically active), are likely to decrease motivation to follow healthy eating guidelines. Knowledge gaps and the perceived risk may influence self-control mechanisms as well as their level of commitment to healthy choices.

As in other studies, peer influence also emerges as relevant. (Devine et al., 2023). Adolescents prefer to eat in the company of friends. Thus, friends' choices, namely, meal locations, often influence individual decisions. Reports from friends regarding the quality of the food served in the canteen appear to act as a modulating factor, often discouraging the use of the canteen. In the sample studied, as in other previous studies, greater self-control was observed among adolescents in groups A1 and A2, of healthier habits who appeared to resist peer pressure more effectively. (Robinson & Higgs, 2012).

Family habits and family pressure emerge as the most relevant and modulatory factors as reported by other authors (Pedersen et al., 2015; Zuercher et al., 2011; Fu et al., 2021; Berge et al., 2013, 2023). Most studies characterize parental eating habits and practices and examine their association with children's eating behaviors, rather than, as in the present analysis, exploring parental practices as perceived by adolescents and the choices they subsequently make. Adolescents with healthier eating habits reported

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more adequate dietary practices within the family environment. The family context appeared to promote and reinforce appropriate food choices, often accompanied by monitoring and health-related concern. Notably, "control" was described as supportive supervision rather than as coercive or conflict-inducing pressure. These findings highlight the potential benefits of designing health education programs that consider both parents and the family environment (Ding et al., 2012). In the only case observed within Group A (better habits) in which less healthy choices were promoted, the adolescent, despite experiencing difficulties related to food availability, adopted an active role to create conditions that facilitated healthier options. Eating habits, learned in the family environment, tend to persist beyond the household context.

Differences in hunger regulation appear to contribute to variations in eating patterns among adolescents. Those with less healthy habits were more likely to respond to hunger with energy-dense snacks, suggesting that impulsive or convenience-driven eating may reinforce inadequate dietary behaviours. In contrast, adolescents with healthier habits appeared better able to manage hunger cues, indicating that self-regulation mechanisms may mediate the relationship between physiological signals and food choices. These observations align with prior research highlighting the role of appetite control and self-regulation in adolescent dietary behaviour. (Mancone et al., 2024; Rodgers et al., 2022). Differences in impulsivity also seem to have an effect. Adolescents with healthier habits described greater capacity to regulate impulses, whereas those with poorer habits often reported eating in response to immediate stimuli. Visual cues were also mentioned in group B2 as triggers for impulsive eating, generating a desire that needed immediate satisfaction. In Group B3, many adolescents described highly impulsive and spontaneous behaviors, where a stimulus directly prompted the immediate attempt to satisfy a desire.

No clear evidence of food neophobia was reported. Rather, the lack of familiarity with certain foods was described as inhibiting their consumption. The desire to try "new" foods was most often mentioned in relation to fast food and, for Group A1, also to particularly healthy foods. Thus, it represents a factor in reliance on others, particularly shaped by individual characteristics.

Specific activities were associated with food ingestion. Periods of rest and leisure, especially, appeared to trigger the consumption of certain foods, often those with higher caloric content. For example, one adolescent stated: "When I'm at home, doing nothing, it seems like I'm always eating." Such situations were reported more frequently during weekends.

Price appears to be a secondary determinant, often reinforcing prior choices. Naturally, the inability to afford certain foods or the need to save money can limit food selection.

Preferences for fast food were less frequently reported among adolescents in groups A1 and A2, whereas adolescents with poorer eating habits expressed stronger preferences for this type of food. Adolescents in the healthier groups also reported a greater preference for foods such as fish, soup, vegetables, and fruit.

All groups reported stress, anxiety, and mood as modulators of food consumption. This finding is also documented in other studies. (Kazmierski et al., 2022; Schneider-Worthington et al., 2022). Some adolescents noted a loss of appetite, but most described compulsive consumption of less healthy foods, such as chocolate. A teenager from Group A2 stated: "…when I am sad, I want lasagna; when I am not, I want fish." Foods most associated with stress are typically energy-dense and nutritionally poor, as reported in other studies (Errisuriz et al., 2016). This includes increased consumption of sweets, such as cookies and chocolate, as well as snacks and savory or high-fat foods like potato chips and lasagna.

Time availability influenced eating behavior in different ways. Some adolescents described long school recess periods as facilitating healthy food choices, while others indicated that they promoted fast-food consumption. The school canteen was often overlooked because it was perceived to require more time. Among adolescents with healthier habits, fruit consumption was described as quicker and easier, whereas those with less healthy habits reported it as more time-consuming, illustrating different perspectives.

DISCUSSION ACCORDING TO SOCIOCOGNITIVE THEORIES

The findings support sociocognitive models of health behaviour by illustrating how personal beliefs, perceived control, and social influences interact to shape adolescents' food choices. In particular, self-control and perceived risk appear to act as mediating mechanisms between knowledge and behaviour.

Some determinants appeared to affect both Groups A and B similarly. However, other determinants took on different meanings and translated into distinct behaviors, potentially identifying more specific factors influencing appropriate or inappropriate food choices.

Sociocognitive models, particularly the Health Belief Model, emphasize determinants such as self-efficacy, self-control, health concern, and risk perception (Glanz, 1997), all of which were identified in this study. Adolescents' sense of well-being, personal characteristics, health concerns, risk perception, and knowledge of healthy eating guidelines (health literacy) align with the Health Belief Model as factors guiding individual decisions. Adolescents with healthier habits demonstrated greater health concern and took effective actions to maintain healthy behaviors.

Those perceiving a real health risk, based on their knowledge, were more careful in their food choices. Adolescents with healthier habits experienced pleasure both from satiety and from overall well-being. In contrast, adolescents with less healthy habits associated pleasure primarily with satiety and palatability, making it easier for them to make poorer choices when peers did the same.

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Social norms, an integral part of sociocognitive models, depend on the influence of peers and family (Glanz, 1997). In the study sample, both influences were important, particularly family habits. Self-control, as perceived and reported by several adolescents, aligns with the Theory of Planned Behavior and the Theory of Rational Action. Attitudes, mediated by adolescents' evaluations of pros and cons, social information and pressure, and perceived control, were important determinants of food choices. Environmental or community conditions influenced choices indirectly, mediated by these personal and social factors.
Overall, adolescents with healthier habits demonstrated greater self-regulation and more effective strategies for managing their eating behaviors.
We present a diagram about the influence of several determinants identified on the adolescent eating behavior (fig 1).

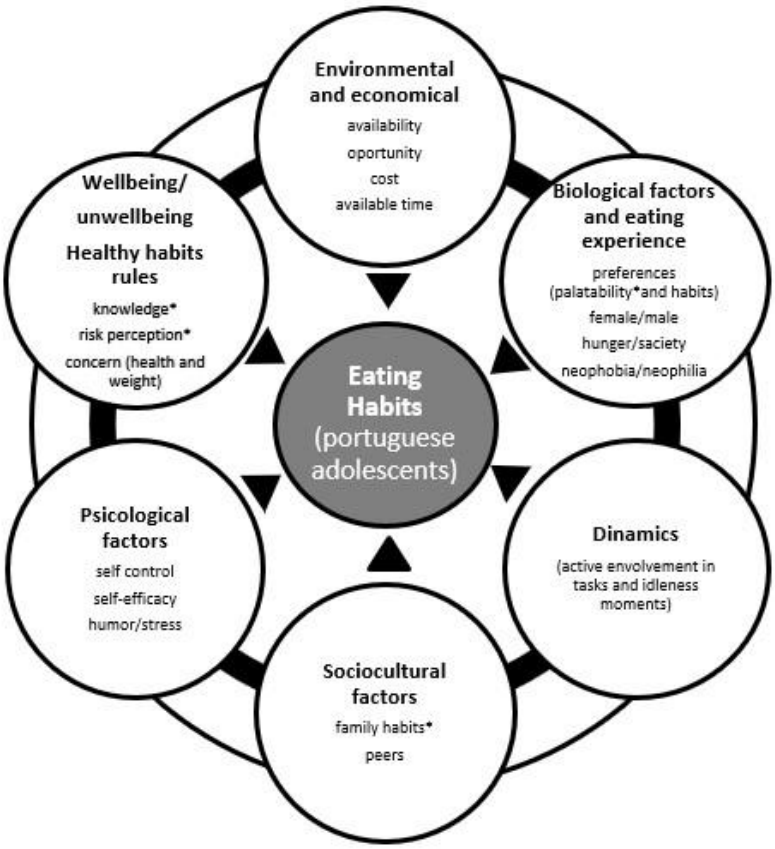

Figure 1 - Determinants identified by adolescents. Interactions network. Eating habits of adolescents are dependent on biological factors and eating experience, economic and environmental factors, psychological and sociocultural factors, sense of wellbeing, and health literacy (* referred to more often).

CONCLUSION

As observed in the results, multiple factors may influence adolescents' food choices. Biological, psychological, economic/environmental, and sociocultural factors, along with sensations of well-being or discomfort, knowledge of healthy eating rules, and, depending on these, perceptions of risk and concern about health and weight, all play important roles. Among these, family habits, food palatability, knowledge/information, and risk perception appeared particularly relevant.
This is a cross-sectional study and so does not allow an evolutionary analysis of the phenomenon. There is considerable difficulty in obtaining precise and reliable records, particularly regarding the consumption of certain foods, as the study relied on self-reports rather than objective measures, due to the inherent challenges of collecting this type of data. Nevertheless, the study adopts an exploratory approach and can be considered a contribution to future research.
Food selection is a complex process involving multiple physiological, psychological, cultural, and social interactions, making it difficult to develop a comprehensive and fully explanatory study. The present study offers avenues for further investigation, as the qualitative interviews allowed adolescents to express their perceptions according to their own priorities, without imposing predefined evaluations of specific factors.
Complementary data on parental practices and parenting styles would further strengthen the study. The current perspective was limited to adolescents' perceptions and did not allow cross-validation with parental reports. Given the importance of family habits,

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a more detailed assessment of the family environment, including parents' educational level, health literacy, and perceptions of their children's eating behaviors, would be valuable.

The use of a convenience sample limits the generalizability of the findings. While this study provides an overview of factors influencing food choice, it does not assess differences across specific foods or food groups. Nevertheless, the findings offer important perspectives for designing more effective health education interventions.

AUTHORS´ CONTRIBUTION

Conceptualization, S.C. and O.S.; data curation, S.C., O.S. and C.N.; formal analysis, S.C., O.S. and C.N.; investigation, S.C.; methodology, S.C. and O.S.; project administration, S.C.; supervision, O.S., C.N. and I.L.; validation, S.C. and O.S.; visualization, S.C. and O.S.; writing – original draft, S.C.; writing – review & editing, S.C., O.S., C.N. and I.L.

CONFLICT OF INTERESTS

The authors declare no conflict of interests.

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