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Original Article

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Determining psychological aspects of food behavior in children and adolescents with overweight or obesity

Aspectos psicológicos determinantes do comportamento alimentar em crianças e adolescentes com sobrepeso ou obesidade

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Abstract

Overweight and obesity are conditions resulting from eating behaviors determined by the action of a multiplicity of factors inherent to the subject`s functionality as an integrated bio-psycho-social system. **Research objective:** Studying psychological aspects that determine eating behavior in overweight or obese children and adolescents. **Participants:** 50 children and adolescents diagnosed with overweight/obesity, aged between 7 and 18 years, and another 50 with equivalent sociodemographic characteristics, which constitute the control group defined by weight and BMI criteria within standardized parameters. **Methodological instruments:** Clinical-psychological interview; sociodemographic questionnaire; Eating Behavior Questionnaire (EBQ). **Results:** Children and adolescents with overweight/obesity, compared to those in the control group, show significantly higher BMI and values of the "external food intake" dimension, with statistically significant differences. In the dimensions "food restriction" (less expressive) and "emotional food intake" (more expressive), the statistical differences are not significant, as to the number of inducers involved, but relate to the intensity or frequency of action. **Conclusions:** In overweight and obese children and adolescents, eating behavior was induced by psychological aspects of a sensory and cognitive-emotional nature in conjunction with probable concern and deficient willpower in situations and circumstances, whose condition required restriction of the amount and types of food eaten, concerning eating habits and style. Eating behavior, in the perspective of psychological dependence, involves processes of emotional immersion, cognitive colonization, motivational submission, and volitional subsidization.

Keywords: Eating behavior; Overweight; Child obesity.

Resumo

Sobrepeso e obesidade são condições resultantes do comportamento alimentar determinado pela ação de uma multiplicidade de fatores inerentes à funcionalidade do sujeito como sistema biopsicossocial integrado. **Objetivo da investigação:** Estudar aspectos psicológicos determinantes do comportamento alimentar em crianças e adolescentes com sobrepeso ou obesidade. **Participantes:** 50 crianças e adolescentes com diagnóstico de sobrepeso / obesidade com idades compreendidas entre 7 e 18 anos e outros 50 com caraterísticas sociodemográficas equivalentes, que constituem o grupo de controle definido pelo critério de peso e IMC dentro dos parâmetros da norma. **Instrumentos metodológicos:** Entrevista clínico-psicológica; questionário sociodemográfico; questionário do comportamento alimentar (QCA). **Resultados:** As crianças e adolescentes com sobrepeso/obesidade, comparativamente ao do grupo de controle, evidenciam IMC e expressividade de valores da dimensão "ingestão alimentar externa" mais elevados, sendo as diferenças estatisticamente significativas. Nas dimensões "restrição alimentar", menos expressiva, e "ingestão alimentar

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emocional", mais expressiva, as diferenças estatísticas não são significativas, quanto à quantidade de indutores envolvidos, mas são quanto à intensidade ou frequência de ação. **Conclusões:** Nas crianças e adolescentes com sobrepeso e obesidade o comportamento alimentar foi induzido por aspectos psicológicos de natureza sensorial e cognitivo-emocional em conjugação com provável preocupação e força de vontade deficitários em situações e circunstâncias, cuja condição exigia restrição da quantidade e tipos de alimentos ingeridos, no que concerne aos hábitos e estilo alimentar. O comportamento alimentar, na perspectiva de dependência psicológica, envolve processos de imersão emocional, colonização cognitiva, submissão motivacional e subsidiação volitiva.
Palavras-chave: comportamento alimentar; sobrepeso; obesidade infantil**.**

Introduction

The overweight or obese individual is part of a biopsychosocial system, integrated by multiple factors from different natures, whose structural and functional complexity operates at various levels and dimensions, consisting of aspects and components.[1,2,3,4]

The causes of overweight and obesity stem from a multitude of factors such as genetics, environmental factors, social conditions, economic pressures, family lifestyles, or other health problems. However, other factors enhance excess weight, one of the most relevant being unhealthy eating behaviors. Eating habits and sedentary lifestyle are mainly responsible for the increase in the prevalence of childhood obesity; therefore, prevention should focus on promoting healthy eating and physical activity.[5,6]

In Portugal, in the space of a decade, according to data from the 5th phase of COSI Portugal (Child Nutrition Surveillance System of the Ministry of Health) there was a decrease in excess weight in children, which in 2008 were 37.9% and in 2019 were 29.6%. However, the COSI (Childhood Obesity Surveillance Initiative), although confirming the decrease in the prevalence of overweight and childhood obesity in Portugal, does not eliminate the need to maintain the concern to monitor eating habits in the country; because it is recorded that 40% of teenagers drink soft drinks daily, half consume less than recommended vegetables and more than 20% consume sugar above recommended levels. Data from the same organization reveal that the prevalence of childhood obesity increased with age: 15.3% of 8-year-olds are obese, including 5.4% severely obese; value which is 10.8% in children aged 6 years (2.7% severe obesity).[7]

Currently, there is unanimity that obesity is a chronic disease with a multifactorial etiology, involving genetic, psychological, social, cultural, and environmental aspects, whose comorbidities affect the quality of life and imply risks to the health of patients; therefore, the therapeutic approach must also be based on a multidisciplinary perspective. In obesity, the relationship between the various elements that configure it is dynamic and simultaneous; hence, fragmented therapeutic approaches run the risk of being ineffective.[8,9]

The eating behavior that leads to overweight and obesity arises from the media influence that promotes the consumption of inappropriate foods, on the one hand, and, on the other, an ideal thinness pattern; the liberal economy based on marketing and advertising that encourages consumerism; the interests of the unhealthy food industry; the complexity of the family relationships involved, social discrimination, the subjective difficulties of each one, among others.[10,11,12]

Child and adult obesity has increased so significantly that some authors consider it an epidemic and a public health problem.[10,12,13,14,15] In addition to being a public health problem,

it is also a social issue, due to the stigma attributed to people with excess weight.[16] In 5% of cases of childhood obesity the etiology is endogenous, arising from genetic and neuroendocrine factors, but in 95% of cases, the origin is exogenous, being determined by external factors of various order: early affective weaning, sedentary routines, and scarce physical activity, hypercaloric nutritional nutrition and dysfunctional family dynamics.[17] It is estimated that 25% of children and 80% of overweight or obese adolescents remain obese in adulthood.[18] Childhood obesity juvenile causes psychosocial complications in the lives of individuals, and may affect self-esteem, due to stigmatization, difficulty in accepting body self-image, feeling that of failure, inferiority, and the experience of bullying situations.[19] The impact of obesity on mental health refers to emotional changes of anxiety, depression, irritability, fear, anger, sadness, self-esteem, negative body image, and suffering psychic associated with bullying. Significant levels of stress, related to anxiogenic symptoms, shyness, excessive fears, and social rejection, cause low self-esteem,[20,21] negative self-concept resulting from negative self-perception, and physical stigmatization, resulting from derogatory games.[22]

Adolescent obesity is often associated with dissatisfaction with body image and bullying.[23,24] The perception and attitude of children who recognize that they are overweight, especially when it is due to being the target of bullying at school and home, interferes with their daily life, in the development of physical activities, in social relationships, and mental health.[25]

Mental health issues in obesity are predominantly: stress, anxiety, and depression, which almost always result from body dissatisfaction, negative self-image perception, low self-esteem, and pejorative association with body aesthetic standards, presenting often as risk factors to trigger anxious and depressive reactions.[26] Also in overweight children and adolescents, depressive and anxiety symptoms are the most prevalent, but other aspects of a psychological and psychosocial nature such as temperament, stress as a responsible factor by the increase in the cholesterol level, maladaptive coping, and psychosocial risk contexts are also factors that exert a negative influence. In the prevention of childhood overweight and obesity, there are suggestions from authors to pay more attention to issues related to maternal health, considering that this is an influential factor in child development and, consequently, also in issues related to childhood obesity.[27]

A sedentary lifestyle is a habitually recurrent behavior in adolescents, being a risk factor for obesity and contributing to reduced calorie burning and accumulation of body fat due to daily routines that go through a deficit in physical activities and mastery of activities such as watching television and video games. In addition, the lack of family support and low affective and emotional support negatively interfere in the treatment and psychosocial coping with obesity; the difficulty of parents in denying their children excess food at mealtimes and in implementing measures that lead to healthier eating contributes to weight gain and the risk of comorbidities.[28,29]

The literature reveals the difficulty of family members to understand and understand obesity in adolescent children, by themselves, parents and grandparents, suffering from a similar situation, making it harmful in the adoption of adequate strategies to face the problem; hence, it is recommendable to implement health education measures to achieve changes in family patterns.[20,21,29]

In terms of intervention, instead of control and prevention strategies, through prescriptive, vertical, and blaming programs, prevention actions are proposed based on the logic of shared responsibility.[16]

A possible aspect of influencing the inefficiency of treatments for childhood obesity is the distorted perception of parents about their children's excess weight.[30] Interventions that do not involve parents are less effective.[14,31] It is important to involve the family as a whole, listen to children and parents and understand the relationships established in the family system because eating behavior is learned. Children's narratives are not very different from those of parents. There is a tendency for obesity to repeat itself between generations, and the family environment and the family's eating habits are determining factors in this process.[32] Content analysis of the narratives of overweight children and their parents reveals five thematic categories: meaning of food, social perception of overweight people, the influence of overweight children in daily life, the relationship with health professionals, and the reasons for non-adherence to treatment.[11]

To understand childhood obesity and think of more effective interventions, one must consider the meaning attributed to obesity, family relationships, socioeconomic conditions, and all the elements that surround the phenomenon. Therefore, one should focus on the person and not obesity.[11]

Childhood obesity takes on the contours of chronicity, resulting from the excessive accumulation of adipose mass from birth to the end of childhood, causing damage to health; since being overweight, although it causes disorders that are not fatal, significantly compromise the future quality of life. In addition, excess weight at school age tends to extend throughout the development process, having disastrous consequences for health in adulthood.[33]

The success in addressing overweight/obesity when implementing new intervention strategies depends particularly on the knowledge held about the behavioral and psychosocial determinants of the subjects to whom the action is directed.[34]

People's attitudes and eating behaviors are the results of the process of socialization and development; therefore, they are traditionally learned within the family, are influenced by peers, citizenship experiences, knowledge obtained at school, and information conveyed by the media.[35] Naturally, the act of eating is a biological process, but it is the culture that determines how human beings behave and make their food choices.[36,37] Therefore, what one eats and the amount of food eaten is largely influenced by cultural heritage, attitudes, and family practices;[38] however, there are changes in eating behavior in childhood that result from difficulties in integrating into the social environment, with psychological manifestations such as anxiety, depression, low self-esteem, distortion of the perception of body image and others.[39,40,41]

Furthermore, when society institutes ideal body image standards, stigmas of being “fat” arise, with children feeling inferior to others; hence obesity can be seen as a condition for stigmatization, exclusion, and social discrimination.[42,43,44,45]

Children and adolescents with or at risk of having eating disorders show inadequate attitudes towards food intake and food restriction; for example, binge eating episodes and compensatory behaviors due to the inability to adequately control and manage the food intake process.[43,46,47]

The determinants of eating behavior are not based exclusively on endogenous mechanisms of a biological nature, it is important to understand the subjective experience of appetite and preferences for specific foods. Appetite regulation is associated with the subject's state of satiety, with the participation of both endogenous biological and psychological mechanisms and also exogenous mechanisms of an environmental nature.[48] There is a close relationship between the categories of appetite and satiety, which is visible in the

analysis of food and beverage selection, motivation to ingest, individual preferences and desires, caloric consumption, involving feelings of hunger and satiety, as well as various cognitive and emotional factors in the appetite regulation process; this is evidenced by the scheme and description of the satiety cascade, resulting in a significant part of the recurrent pattern of eating behavior.[48,49]

Prevention and intervention strategies in the context of childhood obesity should not be limited to changing eating habits, it should be a dynamic process of building a new lifestyle, always taking into account aspects involving issues related to health, the physical, psychological and social well-being of the subjects.

Understanding the development of appetite in childhood can be an important issue in terms of clarifying the paths that lead to weight gain throughout life.[34,48,50]

The existence of a multiplicity of phenomena, related to eating behavior and reported at different levels of functioning of the subject of the action, refers to the attempt to systematize characteristics, aspects, and dimensions involved in the problem of overweight and obesity. Strictly at the level of psychological functionality, and taking the systemic-integrative theoretical conception of the human psyche as guidelines,[4] its is understood that eating behavior in the context of overweight and obesity can be addressed in the plan of changes operated within the cognitive dimensions, emotional, motivational and volitional, whose alterations configure the development of a typology of dependence, in which processes of emotional immersion, cognitive colonization, motivational submission, and volitional subsidization will be involved.

Therefore, the research aims to study psychological aspects that determine eating behavior, responsible for overweight and obesity in children and adolescents.

Materials and methods

Sample and type of study

A sample consisting of participants who were referred by general and family medicine physicians or by pediatricians to a pediatric consultation within the scope of obesity for being overweight, which in part of the subjects falls under childhood obesity; for this reason, they began to have a medical follow-up in clinics located in the Health Region of Lisbon and Vale do Tejo, to control the factors that could eventually be at the origin of the problem.

Control group participants were randomly selected as long as they met the following criteria: Not being overweight; having age, education, and other sociodemographic characteristics identical to those of the experimental group.

Ethical issues were safeguarded by collecting informed and informed consent for each participant individually from the participant, their parents, and the doctor who followed them in the consultation; in the case of the control group, consent involved the participant and their parents. The investigation was carried out in the scope of private and non-public institutions, such as private offices and clinics that provide services to the community; therefore, in addition to the free and informed consent given by the various interveners mentioned above, it also had the consent and permission of the respective entities, whose administrative and clinical directions analyzed the process and gave a favorable ethical opinion, in line with what is usually deliberated in the commissions. of ethics.

Participants

Table 1. Sociodemographic characterization and clinical condition of the participants

Characteristics	Groups	Diagnosis of overweight / obesity	Control group
Participants	Total	50	50
	Male	19 (38%)	18 (36%)
	Female	31(62%)	32 (64%)
Age range		7 – 18 years	8 – 18 years
Age group	7 – 10 years	25 (50%)	12 (24%)
	10 – 14 years	20 (40%)	20 (40%)
	14 – 18 years	5 (10%)	18 (36%)
Marital Status: Single		50 (100%)	50 (100%)
Education	1st cycle: 2nd, 3rd and 4th year	21 (42%)	12 (24%)
	2nd cycle: 5th and 6th year	10 (20%)	14 (28%)
	3rd cycle: 7th, 8th, and 9th year	18 (36%)	16 (32%)
	Secondary: 10th, 11th and 12th year	1 (2%)	8 (16%)
Mass Body Índex	BMI Range	22,60 – 40,34	18,5 – 26,30
	BMI 18 – 20	0 (0%)	34 (68%)
	BMI 20 – 25	2 (4%)	12 (24%)
	BMI 25 – 30	32 (64%)	4 (8%)
	BMI 30 – 35	12 (24%)	0 (0%)
	BMI 35 – 40	4 (8%)	0 (0%)

Characterization and type of study

The investigation consisted of a quantitative study of quasi-experimental typology with the implementation of a comparative approach between two groups: the experimental and the control.

The objective of the investigation is to study the determinant psychological characteristics of eating behavior in overweight/obese children and adolescents, having motivated the following working hypothesis - the eating behavior of overweight or obese children and adolescents is determined by factors of a psychological nature sensory and cognitive-emotional.

Research design

In the period between March and June 2020, research participants were identified and referenced. After this, in the same period, contact was made with the participants and their parents to obtain informed and informed consent. Data were collected in the period between June and November 2020 at different times according to the availability of clinics, participants, and their parents. The methodological instruments were applied individually and in the presence of the researcher, who remained in permanent communicative interaction with the participant from the beginning to the end of the session, clarifying the instructions, questions in which the participant showed doubts about understanding and the response scales in terms of objectifying values.

Inclusion and Exclusion Criteria

The inclusion criteria that guide the selection of research participants consist of having a diagnosis of overweight or obesity, BMI corresponding to the diagnosis, not suffering from other pathologies, in particular from the psychiatric field, experimental group, and absence of overweight or obesity and other pathologies, BMI within the normal parameters, in the control group.

Procedures

After having been explained to the participant, the steps of the evaluation process, the session begins. First, the socio-demographic questionnaire was

applied, proceeding to the collection of socio-demographic data. Next, the eating behavior questionnaire was applied, instructing the participant to give a qualitative answer of "yes" or "no" if the attitude or behavior itself is reported in the corresponding statement. Next, the participant is asked to attribute the frequency or intensity with which the respective behaviors are present. Finally, a semi-structured interview is conducted with the participant, oriented to obtain clinical, psychological, and psychosocial information about themselves to help them better understand something that had not been made clear in the answers to the questionnaires.

Methodological tools

Calculation of Body Mass Index (BMI)

In childhood, nutritional status is assessed based on body composition and growth parameters, with malnutrition defined as a deficit and obesity as excess body fat. There are several methods or instruments to measure body mass, but anthropometry is the only universal method applicable in clinical practice because it is neither expensive nor invasive, available to access the weight and composition of the human body, reflecting such important factors as health, nutrition, risk, and survival.[51] In this sense, one of the most reasonable indicators is the BMI (Body Mass Index), which has been associated with increased blood pressure, the profile of susceptibility to lipoprotein, diabetes non-insulin-dependent, and atherosclerotic lesions.[52] In studies on growth, overweight boys and girls were found to have an increased risk of obesity-associated morbidity compared to thin adolescents.[53] In another study that followed children from birth to 21 years of age, it has been shown that early AR (Recovery of Adiposity) is significantly associated with a higher BMI and skinfold subscapular at the age of 21 years.[54]

Thus, based on the measurements of weight in kilograms and height in meters, carried out in all participants, the Body Mass Index (BMI) was calculated by applying the Quetelet formula: BMI = Kg/m^2.[55]

Clinical-psychological interview

Clinical typology interview in semi-structured format oriented to psychological aspects related to the subject's functionality in the various dimensions of his life. The use of the interview in this format is intended to obtain information relevant to the investigation and to deepen the specificities of the participant's psychic, family, social, and community functionality in the face of eating behavior and to address some of the insufficiencies, characteristics of structured instruments such as closed questionnaires.

Socio-demographic Questionnaire

Questions aimed at collecting information on categories such as age, education, family status, weight, height.

Eating Behavior Questionnaire (EBQ)

A questionnaire consisting of 33 statements about eating behavior, whose answer consisted of ticking "Yes" or "No" in agreement with the respective statement. The questionnaire also often called the "Dutch Eating Behavior Questionnaire" or "Dutch Eating Behavior Questionnaire (DEBQ)" was created in 1986[56] and 2008,[57] to address the behaviors of restriction of food intake, external intake, and emotional intake. Later, V. Viana and S. Sinde, (2003)[58,59] translated and validated the "Dutch Eating Behavior Questionnaire (D.E.B.Q.)" for the Portuguese population. The version assesses 3 dimensions: Food Restriction – 10 statements; External Ingestion – 10 affirmations and Emotional Ingestion – 13 affirmations. The "Food Restriction" dimension is oriented to detect attitudes and behaviors assumed by the respondent that consciously aim to restrict the amount of food ingested at meals. The "External Ingestion" dimension is aimed at detecting external stimuli and situations that trigger food intake, including the intake of larger

quantities than necessary. The “Emotional Intake” dimension aims to detect food ingestion behaviors motivated by certain emotional states, predominantly by emotions and negative sign feelings; it is like a form of compensation in which food intake makes the subject feel better, or at least reduces the negative emotion or feeling he is experiencing at that moment or period.

In this version of the questionnaire, the authors who validated it for the Portuguese population used the 5-point Likert scale (1 – “Never”; 5 – “Very Frequent”). In this concrete investigation, practically the same semantic structure of the questions was maintained, with some adjustments having been made to simplify the respondents' understanding, mainly of children in the 1st cycle in which the command of the written Portuguese language still reveals certain difficulties.

However, in the version of the EBQ used, after the respondent has responded with "Yes" or "No" to the respective statement, he is asked to assign an intensity or frequency value that he thinks corresponds to the strength with which this type of inducer exerts on his behavior towards food intake. The intensity or frequency scale implemented was from 0 to 5 points, where 0 corresponds to the absence of intensity or never, 1 to the existence of weak or rarely intensity, 2 to light intensity, greater than weak and less than average or sometimes, 3 corresponds to medium intensity or several times, 4 to the very significant or frequent intensity and 5 to strong or very frequent intensity.

Results

Table 2 below shows the values obtained by the overweight/obese childhood group and the control group. The values entered refer to the body mass index (BMI) and the three dimensions of the eating behavior questionnaire (EBQ): food restriction, external intake, and emotional intake. In each of these three dimensions, four indicators are reported: the amount of “yes” and the amount of “no” that participants from both groups indicated; the integral intensity, which is the sum of the intensities indicated in the totality of the statements of the respective dimension; the average intensity, which is the average obtained, resulting from the division of the integral sum of intensities by the number of questions constituting the respective dimension, marked with a “yes” answer.

Table 2. Determinants of eating behavior in children and adolescents with overweight/ childhood obesity and control group.

Groups / Categories	Overweight/ Childhood Obesity		Control Group		Differential	Criterion t Student	Level statistical significance p <
	M	SD	M	SD			
Body Mass Index (BMI)	29,21	3,87	19,60	2,93	9, 60	14,95	0,000
Eating Restriction: quantity “Yes”	2,82	3,23	3,08	3,00	-0,46	-0,72	0,472
Eating Restriction: quantity “No”	7,18	3,37	6,92	3,00	0,26	0,39	0,693
Eating Restriction: Full Intensity	5,70	8,39	7,84	8,58	-2,14	-1,26	0,211
Eating Restriction: Average	1,13	1, 15	2,21	1,61	-1,08	-3,99	0,000

Intensity							
External food intake: quantity "Yes"	7,20	2,85	5,04	2,27	2,16	3,99	0,000
External food intake: quantity "No"	2,80	2,85	4,96	2,27	-2,16	-3,99	0,000
External food intake: Full Intensity	25,86	15,95	16,24	12,00	9,62	3,40	0,001
External food intake: Average Intensity	3,19	1,26	2,97	1,14	0,22	0,96	0,341
Emocional food intake: quantity "Yes"	4,58	3,80	3,68	3,71	0,90	1,08	0,284
Emocional food intake: quantity "No"	8,42	3,91	9,32	3,71	-0,90	-1,14	0, 259
Emocional food intake: Full Intensity	14,44	14,58	8,54	10,89	5,90	2,25	0,029
Emocional food intake: Average Intensity	2,50	1,48	2,15	1,59	0,34	1,07	0,287

From the results shown in table 2, it appears that the body mass index (BMI) between the group of participants diagnosed with childhood overweight or obesity and the control group, consisting of participants, who are about the norm, presents statistically significant differences. significant ($p < 0.000$), the values being much more expressive when the participants are overweight or obese in childhood. It is important to specify that, according to the BMI references in the overweight / obesity group, about 50% of the participants fall under the overweight diagnosis and another 50% fall under the obesity diagnosis, considering that 18% have a BMI between 29 and 30; hence, it can be incorporated in obesity, joining the 32% with values clearly above 30.

In the "Eating Restriction" dimension of the Eating Behavior Questionnaire (EBQ) the average of "yes" answers is approximately 3/10, that is, they are only considered to agree, among the 10 statements, that few are the ones that lead them. to do something specific to restrict the amount of food eaten, with significant similarity in both groups and, therefore, there is no statistically significant difference either ($p < 0.472$). On the other hand, the amount of "no" to statements related to food restriction behavior is 7/10, in both groups, verifying the absence of statistically significant differences ($p < 0.693$).

The full intensity of the "Eating Restriction" dimension, which consists of the sum of the intensities attributed by the participants to the statements answered with "yes", is not very different in both groups and, therefore, there are no statistically significant differences ($p < 0.211$). However, the mean intensity, which is the mean of the intensities obtained by the participants in the statements answered with "yes", already presents a statistically significant difference between the group of overweight/obese participants and the control group ($p < 0.000$). The absence of a statistically significant difference in the integral intensity and existence in the average intensity is explained by the high dispersion of values relative to the integral intensity, the dispersion being attenuated when an integral sum of intensities is transformed into an average of these intensities in the same participant.

Although there is a similarity in the values obtained by both groups in the investigation, there is a slightly greater expressiveness in the control group regarding the dimension "Eating Restriction"; this explains that there is greater, albeit slight, concern, and care to be taken in the control group, about avoiding food intake in certain situations.

In the dimension "External Food Intake" the average of "yes" answers is 7/10 and "no" 3/10 of the statements in the group of overweight or obese participants and 5/10 for "yes" and " no" in the control group, with a statistically significant difference ($p < 0.000$) in both cases.

The full intensity of the dimension "External Food Intake" is more expressive in the group of overweight/obese participants, with a statistically significant difference compared to the control group ($p < 0.001$). However, the mean intensity is substantially identical in both groups of the investigation, and the difference is not statistically significant ($p < 0.341$). In this case, the average of the intensities per participant seems to standardize the value, making it very close in both groups, and, therefore, the difference is not significant. As for the full intensity, with more questions answered with "yes" in the group of overweight participants, even if the intensity attributed to each statement is the same in both groups, the difference turns out to be significant.

In the dimension "Emotional Food Intake" the average of answers "yes" is 4.5/13 and "no" is 8.5/13 in the group of overweight participants and "yes" 3.6/13 and " no" 9.4/13 in the control group, with no statistically significant difference ($p < 0.284$) for "yes" and ($p < 0.259$) for "no".

The full intensity of the "Emotional Food Intake" dimension is more expressive in the group of overweight/obese participants, almost twice as much as in the control group, the difference being statistically significant ($p < 0.029$). However, the average intensity, although more expressive in the overweight group, the difference is small compared to the control group; therefore, it is not statistically significant ($p < 0.287$). The explanation for this phenomenon of statistical differentiation between full intensity and average intensity is the same adopted in the "External Food Intake" dimension.

Discussion

In this investigation, the body mass index (BMI) presents itself as an important diagnostic reference; first in the differentiation of overweight and obese children and adolescents and, secondly, as an indicator of the possible existence of inadequacies in eating behavior. The use of information collected in the context of the interview and clinical-psychological observation infers that all participants in the overweight/obese group had eating behavior inappropriate for their age, style, and daily eating routine, taking into account their nutritional needs and the reality of your life. Parents' complaints about their children's behaviors are frequent, such as eating in secret, repeating the ration, eating too much with the meal, throughout the day devouring packets of cookies, preferences for foods rich in fat and carbohydrates; even sulking and even offending those who refuse to allow them to carry out their food intentions, saying, sometimes with anger and hatred, "you just want me to starve, starve me to death". Often, food disagreement between parents and children is a reason to generate emotional tension in interpersonal relationships and family functionality. However, there are cases in which the conflict over the children's eating behavior does not exist, because the parents consider it normal, that they were also like that and are doing well; that wanting to control more food and the amount ingested is overzealous by health professionals.

According to the investigations of several authors, taking into account the theories of eating behavior, the body mass index correlates positively with the dimension "Food Restriction".[60]It means when there is a higher BMI, the tendency is for there to be behaviors oriented towards food restriction; probably because they are aware at a certain stage of life that they have been making mistakes and exaggerations in the food sphere and that they should adopt measures to correct their eating habits and style.

The lack of a statistically significant difference in the "Food Restriction" dimension indicates that, in qualitative terms, both in the overweight and obesity group participants and in the control group, psychological predisposition, attitudes, and behaviors oriented to food restriction, that is, to avoid or reduce the amount of food eaten, they are scarce, except in one situation or another. The frequency or full intensity attributed by the participants to the statements answered with “yes” is not different in both groups, with no statistically significant differences.

There is a similarity in both qualitative and quantitative expression between values obtained by both groups of the investigation, although a slightly greater expressiveness is noted in the control group. This explains why children and adolescents in the control group show, although slight, greater concern and care about avoiding food intake in certain situations.

The awareness and respective adequate perception of being in transgression regarding their eating behavior in the face of different situations and circumstances of healthy life are required from subjects whose organic structure is already overweight or obese, and not exactly from those in which this condition does not exist. Naturally, children and adolescents whose eating behavior is adequate to maintain a healthy lifestyle, and who do not have any negative indicators related to overweight or obesity, do not need to make any volitional effort to restrict food intake, have concerns specific, nor promote the change of attitudes and behaviors about the feeding activity.

Therefore, the results obtained by overweight or obese children and adolescents in the “Food Restriction” dimension indicate the existence of a deficit of adequate awareness and probably of a distorted perception of their eating behavior; processes that promote the possibility of forming sociopsychological representations and incongruent and dissonant attitudes with food intake situations, concerning a healthy lifestyle. The reinforcement and crystallization of attitudes and socio-psychological representations of eating behavior, incongruent with healthy lifestyles, are favorable terrain for the installation of inappropriate psychic predispositions that encourage the continuity of transgressive eating behaviors given the real needs of the subjects who are dependent on them. Weakness or absence of psychological conditions to effect food control and restriction required by healthy living indicators corroborated by the results obtained in the dimension “External Food Intake”.

The statistically significant differences found in the "External Food Intake" dimension, in the statements answered with "yes" and "no", between the groups of participants involved in the investigation, indicate that children and adolescents diagnosed with overweight or obesity have a propensity for the behavior of food intake triggered by external stimuli related to the psychophysical sensory properties of the products, but also by situations of a psycho-cultural nature that update the desires or needs in the internal functional structure of the subject of the action as a bio-neuro-physio-psycho-sociocultural system. [2.4.61]

The statistically significant difference in the full intensity of the "External Food Intake" dimension, with greater expressive bias in the group of overweight / obese participants, demonstrates the driving force of the psychological images and representations exerted on the eating behavior of the subject of the action awakened and updated by power attractiveness of the sensory properties of the products and the personal meaning and psycho-socio-cultural value acquired. Phenomena and mechanisms in a way scientifically supported by investigations developed in the scope of the regulation of eating

behavior based on the characteristics, processes, and functions of appetite and satiety as systemic entities.[48,49]

The mean intensity calculated in this dimension did not obtain statistically significant differentiation because it reduces the determination of the value in a very small interval, thus the numerical difference is not sufficiently expressive; it can also be explained based on the defense mechanisms of your "ego" in an evaluation situation, trying not to recognize the true strength that the stimulus has in you, selecting low values, which end up coinciding with those assigned by the participants of the control.

In the dimension “Emotional Food Intake” the answers “yes” and “no” to the statements, by both groups of the investigation, did not reach statistically significant differences. The explanation is related to the fact that this dimension is made up of statements whose inducers of eating behavior are specific emotional states (boredom, irritation, depression, anger, and others) and in addition to being just some people in which uncontrolled food intake is triggered by experiencing a specific emotional state and the typology of the emotional state also varies from person to person. Under these conditions, the number of statements is reduced, being reduced to no more than 4 in some participants, being in most of them reduced to zero; because in these the most likely induction is related to external food intake factors.

Consequently, due to the high variability of choice of the inducing emotional state, and even absence, the dispersion is also quite high and, therefore, the existence of a differential value is not enough for a statistically significant difference to appear. However, the full intensity in the dimension “Emotional Food Intake” is more expressive in the group of overweight/obese participants, almost twice as much as in the control group, the difference being statistically significant, but in the average intensity, it is not.

The qualitative analysis of the attribution of intensity to the force that the respective inductor exerts on the subject of the action and the comments he makes about the stimulating condition, reveals that in the overweight/obesity group participants, there are a few that the emotional state experienced in certain moments triggers inappropriate eating behaviors characterized by a voracious tendency of food intake, and this induction typology has practically no expression in the control group, only a few report that in some situations of stress, saturation or boredom, they may resort to eating certain foods, such as chocolate and other sweets, instrumentally in very specific situations; for this reason, they end up assigning some value of intensity, but not being a current practice and leaving no traces that indicate recurrent repetition.

Although there are no statistically significant differences between the groups in this investigation, regarding the dimension "emotional food intake", inappropriate eating behavior, given the surrounding situations, induced and triggered by specific emotional states is present in several participants of the overweight / obesity group; phenomenon confirmed by other authors who showed that there are people in which the inner experience of certain emotional states, usually of negative connotation, such as stress, boredom, saturation, irritation, depression, indignation, anger, fury, hatred and others, induce inappropriate eating behaviors, in addition to other types of inappropriate behavior in the face of surrounding situations and circumstances.[39,40,41]However, obesity, as an object of the perception of the carriers themselves, can also trigger mental health problems, whose manifestations are often anxiety and depression, resulting in , almost always from body dissatisfaction, negative self-image, low self-esteem.[20,21,26] Therefore, childhood and adult obesity is

considered a public health problem,[10,13] but also a social one, due to the stigma attributed to people who are overweight.[16]

To understand childhood obesity and think of effective interventions, one must consider all the elements that involve the phenomenon and focus attention on the person instead of obesity.[11]

Childhood obesity causes damage to health, and disorders caused by excess weight significantly compromise the future quality of life.[33]

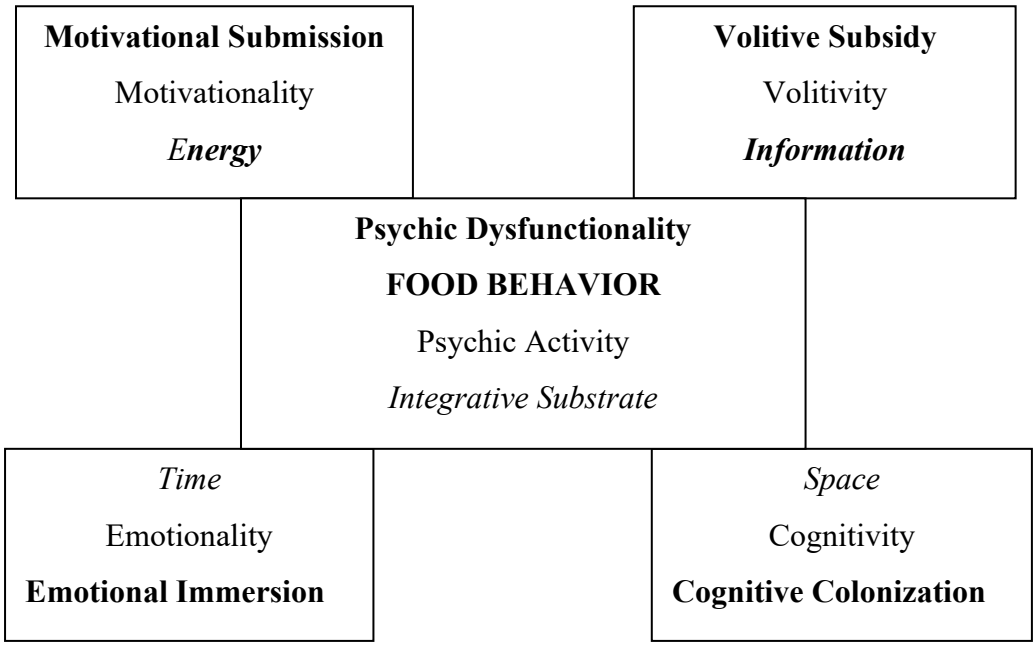
The success of intervention strategies in overweight/obesity depends particularly on knowledge about the behavioral and psychosocial determinants of the subjects to whom the action is directed.[34]

The act of eating is a biological process, but what determines how human beings behave and make their food choices is culture.[36,37] The determining aspects of eating behavior are not based exclusively on endogenous mechanisms of a biological nature; hence the importance of understanding the subjective experience of appetite and preferences for specific foods. Appetite regulation is associated with the subject's state of satiety, with the participation of both endogenous biological and psychological mechanisms, as well as exogenous mechanisms of a social, cultural, and environmental nature.[48] Therefore, the determining aspects of eating behavior may encounter refer to various levels of functionality of the bio-neuro-physio-psycho-socio-cultural system, refer to various dimensions of inner activity, involving various spheres and structural components.[4]

In an attempt at a systemic-integrative theoretical conceptualization of the psychic functionality of eating behavior in the condition of overweight or obesity, only the psychological level, the dimension of psychic activity and spaces relating to consciousness, the cognitive, emotional, motivational, and volitional spheres will be reported, the components of the functional structure of the psychic activity involved in the nosological entity “overweight” or “obesity” and, when possible, also the control-regulatory and reflexive-adaptive vectors.[4]

In the functional activity of the subject at the psychic level, which is involved in the process of formation, development, consolidation, and maintenance of the entities "overweight" and "obesity" as "dependence" a relevant role assume the cognitive, emotional, motivational and volitional spheres, which at first enjoy full functional autonomy to "dependence", but as eating behavior becomes progressively inadequate, there is the immersion of emotions, the colonization of cognitive functioning, the submission of motivations, enhancing more and more the inappropriate motivation, to the subsidization of volitional processes so that their action becomes hostage to dependence, contributing to subsidize its development in the sense of becoming a functional structure of the subject's psychic activity more and more installed, gaining consistency and mastery of the personal and even social life of subjects with the “obesity” condition. In this process, a relevant role is played by the “awareness” dimension, which assesses and grants greater or lesser acceptance of the condition. Furthermore, on the systemic-integrative level of the personality/individuality dimension, involving the articulatory participation "consciousness", the vectorial action performed by the integral functions of reflexivity, controllability, regulation, and adaptability of the bio-neuro-psycho-socio system is also important. -cultural.[4]

Figure 1. Systemic-integrative conception of eating behavior in obesity.



As the emotional, cognitive, motivational, and volitional components of psychic activity show signs of dysfunctionality, at the psychic, psychosocial, sociocultural, behavioral level, involved in the changes in eating behavior that make it inappropriate, we advance into the territory of dependence, in psychologic terms -social-behavioral, revealing itself externally in the product that is overweight and obesity.

In this investigation, the BMI indicates the existence of overweight or obesity resulting, in large part, from inappropriate eating behavior, which may be anchored in psychic activity and dysfunctional attitudes reflected in the way the subject's control and regulate their food restriction actions, determined by the awareness of committing exaggerations, and food intake determined by exciting sensory and emotional factors that update their strength based on the direct perception of certain foods and their properties or representations or memories, formed, developed and consolidated through habits, uses, and customs and traditions inherent to their sociocultural condition.

Therefore, the results of the investigation may guide the development of psychological actions that promote the correction of eating behavior and also preventive educational strategies.

Conclusion

Overweight/obese research participants had eating behavior inappropriate for their age, nutritional needs, and lifestyle.

The identical food restriction behavior between participants in the overweight/obesity group and the control group infers the absence of psychological predispositions and attitudes to avoid or reduce the amount of food eaten. Therefore, the values obtained by overweight or obese children and adolescents in the “Eating Restriction” dimension result from the deficit of adequate awareness and probably from a distorted perception of their eating behavior.

Overweight or obese children and adolescents are prone to food intake behaviors triggered by external stimuli related to the psychophysical sensory properties of the products, but also by psycho-cultural situations that update the desires or needs in the internal functional structure of the subject of the action as a bio-neuro-physio-psycho-sociocultural system.

Emotional inducers of eating behavior differ from person to person and only have an effective action in some of these people; therefore, high variability of the inducing emotional state and large dispersion explain the absence of a statistically significant difference. However, in the overweight / obesity group, there are a few participants in which the emotional state experienced at certain times triggers inappropriate behaviors aimed at unnecessary food intake.

Inappropriate eating behavior leading to overweight or obesity, in light of the systemic-integrative conception of psychic functionality, results from progressive changes operated within the system that involve processes of emotional immersion, cognitive colonization, motivational submission, and volitional subsidization, and may with the internship time and habituation come to be established in the condition of dependence and alter the action of the control-regulatory and reflexive-adaptive vectors.

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