Chapter 172

Childhood obesity and its complications

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ABSTRACT

Introduction: Childhood obesity is a disease described by excessive accumulation of fat in infants and children. It is given when the Body Mass Index (BMI) is above the recommended for your age. The prevalence of obesity has grown significantly in recent decades in both developed and developing countries. Objective: Therefore, the aim of this study is to analyze the main causes of childhood obesity, as well as to describe the factors associated with this pathology. Methodology: This is a Literature Review study. For the survey of articles in the literature, a search was conducted in the following database: Virtual Health Library. The following descriptors were used to search the articles: pediatric obesity and overweight AND associated factors AND cause and its combinations in Portuguese. Results: The prevalence of obesity in children and adolescents largely reflects the most recent changes in eating patterns and physical inactivity. Urbanization, globalization, increased income, increase in durable consumer goods, among others, contributed to a set of lifestyle changes that directly affected the increase in overweight and obesity in children and adolescents. Associated with overweight is the risk factor for other chronic diseases that, happening at such an early stage of life, may predispose individuals still very young to preventable diseases and complications. Type 2 diabetes mellitus, systemic arterial hypertension, dyslipidemia, gastroesophageal reflux disease, osteoarthritis, orthopedic and postural problems, certain types of cancers in later life, social adjustment problems and depression are some of the diseases associated with childhood obesity. Conclusion: Prevention is the most efficient measure for the control of childhood obesity. Therefore, public health policies associated with educational measures and strategies that promote the incorporation of healthy habits are of great importance.

Keywords: Pediatric Obesity, Overweight, Associated Factors, Cause.

1 INTRODUCTION

Childhood obesity is a disease described by excessive accumulation of fat in infants and children. It is given when the Body Mass Index (BMI) is above the recommended for your age. The prevalence of obesity has grown significantly in recent decades in both developed and developing countries (NASCIMENTO et al., 2016).

In Brazil, approximately one third of children between five and nine years of age are overweight. Among male and female adolescents, the prevalence is 21.7% and 19.4%, respectively (NASCIMENTO et al., 2016).

Overweight and childhood obesity are diseases of complex etiology, usually due to a combination of genetic, behavioral, socioeconomic and demographic factors (FÁVARO et al., 2019). Obese or overweight children have greater viability to develop several diseases throughout their lives, such as type 2 diabetes mellitus , systemic arterial hypertension, dyslipidemia and metabolic syndrome, which increase the risks of heart disease, osteoporosis and cancer (MENDES et al., 2015).

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The control of childhood obesity becomes necessary, since its predominance can result in the early development of chronic diseases that will continue until adulthood, thus decreasing the quality of life and causing a high cost in health care (ESKENAZI et al., 2018). Therefore, overweight and obesity have worried health professionals due to the increasing prevalence of increasingly early prevalence.

Thus, the aim of this study is to analyze the main causes of childhood obesity, as well as to describe the factors associated with this pathology.

Considering the relevance of the theme addressed (public health problem), this study is justified by promoting knowledge about the factors that cause childhood obesity, as well as ways to avoid the problem by promoting a healthy lifestyle, since childhood.

2 METHODOLOGY

This is a literature review study. For the survey of articles in the literature, a search was conducted in the following database: Virtual Health Library. The following descriptors were used to search the articles: pediatric obesity and overweight AND associated factors AND cause and its combinations in Portuguese.

The inclusion criteria defined for the selection of articles were: articles published in Portuguese; articles that portrayed the theme related to the review; published and indexed in that database in the last 10 years.

The exclusion criteria defined for the selection of articles were: articles that were not in The Portuguese language; articles that did not portray the theme related to the review; articles published and indexed in that database prior to 2011.

The analysis and synthesis of the selected studies were carried out descriptively, making it possible to observe, count, describe and classify the data, in order to gather the knowledge produced on the theme explored in the review.

The final sample of this review consisted of 7 scientific articles, selected by the inclusion and exclusion criteria previously established.

3 FINDINGS

Characteristics of the revised articles:

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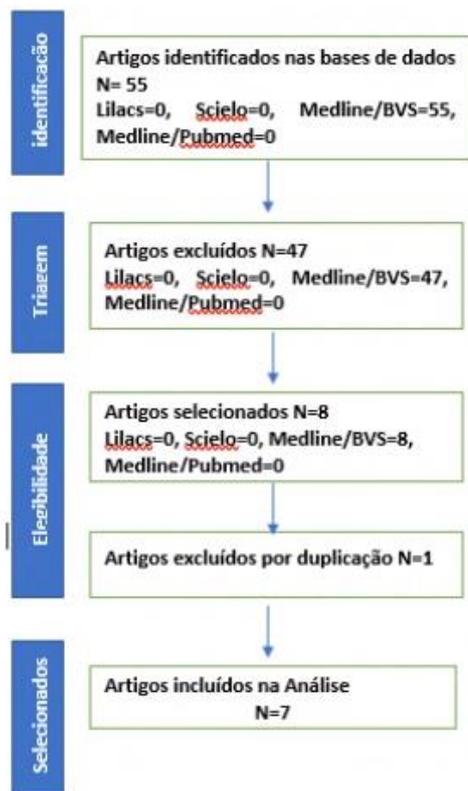
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Figura 1 – Fluxograma de identificação e seleção das publicações de acordo com o PRISMA Statement.

Of the 55 articles on Childhood Obesity and its complications, published in the period 2011 - 2021, initially identified, 7 were included in this review. In addition, the selected articles were published mostly in (Portuguese Language) in Journals such as Cadernos de Saúde Pública...

The study design (quantitative) was the majority (100% of the articles) and the interview was the predominant method.

Table 1. Characteristics of the articles included in the review.

Author, year and approach	Subject and sample (n) of the study	Study objectives	Data Source and Methods Used	Findings
KUHN-SANTOS, Renata Cavalcante et al. 2019 Quantitative	N=544	To evaluate the nutritional status of children with low birth weight (LBW) and possible associations with independent maternal variables, gender and neonatal history.	Database + interview	Short stature was observed; overweight and obesity in 6.2%, 8.6% and 12.3% of the children evaluated, respectively. The presence of short stature in the students was associated with maternal height < 150 cm (OR = 6.94; IC95% 2.34–20.6). Overweight/obesity in children with LBW was independently associated with the mother's overweight/obesity (OR = 2.40; CI95% 1.44–4.01) and males (OR = 1.77; IC95% 1.06–2.95). One fifth of the students with LBW were overweight, which was associated with the current maternal nutritional condition and the male gender; short stature was associated with maternal height.
FÁVARO, Thatiana Regina et al. 2019 Quantitative	n= 454	To estimate the magnitude of the prevalence and risk of overweight and overweight in children under ten years of the Xukuru ethnic group of Ororubá, and to evaluate socioeconomic	Field research + interview	The prevalence of overweight was 7.7% and an overweight risk of 24.2%. The chances of overweight and overweight are higher in children < 2 years, and children of obese mothers are more likely to be overweight. The prevalence of overweight risk was 97% higher when compared to households without fixed income. The findings suggest that the Xukuru are going through an accelerated process of nutritional transition, with a

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		and demographic factors.		paradoxical situation to which other indigenous peoples in Brazil are exposed.
ESKENAZI, Ednalva Maria de Sousa et al. 2018 Quantitative	n= 355	To evaluate the relationship between socioeconomic factors and overweight in public schoolchildren in the municipality of Carapicuíba (SP, Brazil).	Questionnaire + physical examination	Overweight and obesity rates of 26.7% and 10.8% were observed at five years, and 21.8% and 8.9% at 12 years, respectively. The rates observed in the five-year group were lower, while those observed in the 12-year group were higher than the national indices. In the five-year group, the number of rooms in the homes of obese children was significantly higher than that of children with eutrophy (p=0.016); in the 12-year-old group, BMI was positively correlated with maternal education (r=0.163; p=0.040).
PINTO, Renata Paulino; NUNES, Altacílio Aparecido; MELLO, Luane Marques de. 2016 Quantitative	n= 505	To determine the prevalence of overweight and obesity in schoolchildren between 10 and 16 years of age and its association with dietary and behavioral factors.	Field research + interview	Overweight was observed in 30.9% of the students: 18.2% overweight and 12.7% obese. There was no association between weight changes and eating/behavioral habits in bivariate and multivariate analyses. However, gender associations were found. Consuming sweets [PR=0.75 (0.64-0.88)] and soft drinks daily [PR=0.82 (0.70-0.97)] were reported habits by 273 (54.1%) children, less frequently by boys. Daily lunch was a slightly more observed habit among boys [PR 1.11 (1.02-1.22)]. Physical activity ($\geq$3 times/week) was more reported by boys and the measures of association revealed twice as much physical activity in this group [PR=2.04 (1.56-2.67)], when compared to that of girls. About 30% of boys and 40% of girls said they did not perform activities with energy expenditure in free periods, and boys were 32% less idle than girls [PR=0.68 (0.60-0.76)].
NASCIMENTO, Melissa Maria Romero et al. 2016 Quantitative	n= 297	To evaluate the perception of parents or caregivers about health-related quality of life (HRQol) of overweight/obese children/adolescents and the possible factors associated with this perception.	Questionnaire	Parents of overweight/obese children/adolescents attributed lower HRQoL scores to their children in the following domains: physical function (p < 0.01; d = 0.49), self-esteem (p < 0.01; d = 0.38), emotional impact of parents (p < 0.05; d = 0.29), family cohesion (p < 0.05; d = 0.26), summary of the physical score (p < 0.05; d = 0.29) and summary of the psychosocial score (p < 0.05; d = 0.25). In the multiple regression models, the variables with the greatest contribution to the variation of HRQoL scores were: in the physical function domain, impact on parents' time (ß = 0.23; p < 0.05); self-esteem, nutritional status (ß = −0.18; p ≤ 0.01); emotional impact on parents, impact on parents' time (ß = 0.31; p < 0.05); family cohesion, behavior (ß = 0.30; p < 0.05).
BREVIDELLI, Maria Meimei et al. 2015 Quantitative	n= 107	To verify the prevalence and factors associated with overweight and obesity among adolescents from a public school in Campinas, São Paulo.	Questionnaire + physical examination	The sample was characterized with a predominance of women (n=65, 60.7%) with 16.5 years on average and family income between 2 and 4 minimum wages (n=53, 49.5%). The prevalence of overweight and obesity was 18 (16.8%) and 9 (8.4%), respectively. It is noteworthy that 62 (58%) always omitted a meal, 54 (50.5%) always fed watching television and 56 (52.3%) did not practice physical activity outside school. Trying and not being able to diet was associated with overweight and obesity, and curvy self-image was associated with obesity.
MENDES, Raquel Cristina et al. 2015 Quantitative	n= 60	To verify the prevalence and factors associated with overweight and body mass index (BMI) of schoolchildren.	Questionnaire + physical examination	The prevalence of overweight, eutrophy and low weight identified by BMI/age was 21.6% (p=13), 76.7% (p=46) and 1.7% (p=1), respectively. Overweight was independently associated with maternal obesity (p=0.004). A direct association was found between BMI and maternal obesity (p=0.02), ingestion of breads (p=0.03) and chips (p=0.08) and an inverse association between BMI and yogurt intake (p=0.007) and ice cream (p=0.09).

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4 DISCUSSION

Obesity is a condition recognized as multifactorial etiology, including in its causes organic, environmental, behavioral, psychosocial and socioeconomic factors.

Among the risk factors for childhood obesity and adolescence are the fact of having obese parents, the influence of the media, sedentary lifestyle, inadequate nutrition, genetic factors, socioeconomic status, among others (BREVIDELLI et al., 2015).

The prevalence of obesity in children and adolescents largely reflects the most recent changes in eating patterns and physical inactivity. Urbanization, globalization, increased income, increase in durable consumer goods, among others, contributed to a set of lifestyle changes that directly affected the increase in overweight and obesity in children and adolescents (FÁVARO et al., 2019). In addition, the conveniences offered by the modern world, such as television sets, cordless phones, video games, computers, remote control, among others, have helped reduce energy expenditure (BREVIDELLI et al., 2015). The main behavioral cause is sedentary lifestyle, characterized by more hours per day of permanence in front of the tecnologia as leisure activities, associated with the ease of access to industrialized foods, rich in sugars and fats, and fast foods (MENDES et al., 2015).

It is also noteworthy the high relationship of the family environment with the child's condition. Parents' obesity is a consolidated determinant of childhood obesity. In fact, much of the BMI variability can be granted to genetic, environmental and behavioral interactions since the intrauterine period. The environment is considered particularly important, especially the family member, because parents (or caregivers) exert a relevant influence on the food, social and economic environment of children in the first years of life, which are determining factors for childhood obesity (FÁVARO et al., 2019).

Studies suggest that the increase in obesity levels coincides with the improvement of the country's economy and income, as is the case in Brazil (FÁVARO et al., 2019). According to the national index, the increase in family income is related to overweight in the urban Brazilian population; the greater purchasing power allows access to industrialized foods with high energy content, which, associatedwith the decrease in the practice of physical exercises, have contributed to the increase in obesity rates. Therefore, socioeconomic status interferes with food availability and access to information, as well as may be related to certain patterns of physical activity, thus constituting an important factor associated with the occurrence of obesity in childhood and adolescence (ESKENAZI et al., 2018).

It is afact that the eating habits of children and adolescents have undergone several alterations, with increasing the reduction in the intake of fruits and vegetables and the high consumption of goodies, soft drinks and lipids, which has contributed to the increase in overweight (MENDES et al., 2015).

Associated withoverweight is the risk factor for other chronic diseases that, happening at such an early stage of life, may predispose individuals still very young to preventable diseases and complications. Type 2 diabetes mellitus, systemic arterial hypertension, dyslipidemia, gastroesophageal reflux disease, osteoarthritis, orthopedic and postural problems, certain types of cancers in later life, problems of social

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adjustment and depression are some of the diseases associated with childhood obesity (PINTO; NUNES; MELLO, 2016).

The literature suggests that overweightchildren and children have increasingly presented serious health problems that imply their quality of life. These complications may appear in childhood and adolescence, but they will certainly be present in adulthood. In addition, nutritional alterations in adolescence can affect body perception and satisfaction, self-image and self-esteem, causing psychosocial disorders (BREVIDELLI et al., 2015).

Thus, studies indicate as a solution the implementation of healthy life habits, such as the practice of physical exercises and adequate nutrition, avoiding industrialized products. In view of this, guidelines for the prevention of future diseases should be initiated as soon as possible, respecting individual differences and preferences, avoiding future complications and ensuring a better quality of life.

5 CONCLUSION

Prevention is the most efficient measure for the control of childhood obesity. Therefore, it is of great importance public health policies associated with educational measures and strategies that promote the incorporation of healthy habits, such as the practice of physical exercises and the inclusion of fruits, vegetables and vegetables in the family diet, ensuring better quality of life in the present and in the future.

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2010

REFERENCES

BREVIDELLI, Maria Meimei et al. Prevalência e fatores associados ao sobrepeso e obesidade entre adolescentes de uma escola pública. **Revista Brasileira em Promoção da Saúde**, v. 28, n. 3, p. 379-386, 2015.

ESKENAZI, Ednalva Maria de Sousa et al. Fatores Socioeconômicos associados à obesidade infantil em Escolares do município de Carapicuiba (SP, BRASIL). **Rev. bras. ciênc. saúde**, p. 247-254, 2018.

FÁVARO, Thatiana Regina et al. Excesso de peso em crianças indígenas Xukuru do Ororubá, Pernambuco, Brasil: magnitude e fatores associados. **Cadernos de Saúde Pública**, v. 35, p. e00056619, 2019.

KUHN-SANTOS, Renata Cavalcante et al. Fatores associados ao excesso de peso e baixa estatura em escolares nascidos com baixo peso. **Ciência & Saúde Coletiva**, v. 24, p. 361-370, 2019.

MENDES, Raquel Cristina et al. Fatores associados ao excesso de peso e ao índice de massa corporal em três escolas de Itaúna-MG. **Rev Med Minas Gerais**, v. 25, n. 1, p. 30-6, 2015.

NASCIMENTO, Melissa Maria Romero et al. Percepção dos pais acerca da qualidade de vida relacionada à saúde de crianças e adolescentes com excesso de peso. **Jornal de Pediatria**, v. 92, p. 65-72, 2016.

PINTO, Renata Paulino; NUNES, Altacílio Aparecido; MELLO, Luane Marques de. Análise dos fatores associados ao excesso de peso em escolares. **Revista Paulista de Pediatria**, v. 34, p. 460-468, 2016.

Themes focused on interdisciplinarity and sustainable development worldwide V.01 - **Childhood obesity and its complications**

2011