

Eating self- efficacy in overweight and obese children and adolescents: integrative review of instruments

Autoeficácia alimentar em crianças e adolescentes com sobrepeso ou obesidade: revisão integrativa de instrumentos

Autoeficacia alimentaria en niños y adolescentes con sobrepeso u obesidad: revisión integradora de instrumentos

Victor Manuel Tegoma Ruiz¹

ORCID: 0000-0003-3886-443X

Rayanne Branco dos Santos Lima¹

ORCID: 0000-0002-6287-4606

Kamila Ferreira Lima¹

ORCID: 0000-0002-4554-3178

Mariana Cavalcante Martins¹

ORCID: 0000-0001-8234-8980

Lorena Pinheiro Barbosa¹

ORCID: 0000-0002-8006-7517

Mônica Oliveira Batista Oriá¹

ORCID: 0000-0002-1483-6656

¹Universidade Federal do Ceará. Fortaleza, Ceará, Brazil.

How to cite this article:

Ruiz VMT, Lima RBS, Lima KF, Martins MC, Barbosa LP, Oriá MOB. Eating self- efficacy in overweight and obese children and adolescents: integrative review of instruments.

Rev Bras Enferm. 2022;75(5):e20210301.
<https://doi.org/10.1590/0034-7167-2021-0301>

Corresponding author:

Rayanne Branco dos Santos Lima
E-mail: rayannebranco@gmail.com



EDITOR IN CHIEF: Dulce Barbosa
ASSOCIATE EDITOR: Carina Dessotte

Submission: 09-08-2021 **Approval:** 05-11-2022

ABSTRACT

Objective: To describe the characteristics of instruments to assess eating self-efficacy in overweight and obesity in children and adolescents. **Methods:** Methods: Integrative literature review, conducted in May 2020, in six databases (PubMed; Web of Science; Scopus; CINAHL, ADOLEC, and PsycINFO) with the following search strategy: Self-efficacy and (Overweight OR Obesity) and (Child* OR Adolescent). **Results:** The inclusion of thirty-five articles and twenty-one instruments was applied to children 6 to 9 years old (n=2), adolescents 10 to 19 years old (n=9), and children and adolescents 7 to 18 years old (n=10). The instruments have 4 to 30 items and vary from two to five dimensions, the most frequent being "healthy eating" and "physical activity." **Conclusion:** There are different reliable instruments designed to assess eating self-efficacy in adolescents and children, indicating the importance of this construct for preventing and controlling obesity and overweight.

Descriptors: Self-Efficacy; Technology; Pediatric Obesity; Overweight; Nursing Methodology Research.

RESUMO

Objetivo: Descrever as características dos instrumentos para avaliação da autoeficácia alimentar no sobrepeso e na obesidade em crianças e adolescentes. **Métodos:** Revisão integrativa da literatura, realizada em maio de 2020, em seis bases de dados (PubMed; Web of Science; Scopus; CINAHL, ADOLEC e PsycINFO) com a seguinte estratégia de busca: *self-efficacy* and (*Overweight OR Obesity*) and (*Child* OR Adolescent*). **Resultados:** Incluíram-se 35 artigos e 21 instrumentos aplicados às crianças de 6 a 9 anos (n=2), em adolescentes de 10 a 19 anos (n=9) e em crianças e adolescentes de 7 a 18 anos (n=10). Os instrumentos têm de 4 a 30 itens e variaram de duas a cinco dimensões, sendo as mais frequentes "alimentação saudável" e "atividade física". **Conclusão:** Existem diferentes instrumentos confiáveis destinados à avaliação da autoeficácia alimentar do público adolescente e infantil, o que sinaliza a importância desse construto para prevenção e controle da obesidade e sobrepeso.

Descritores: Autoeficácia; Tecnologia; Obesidade Pediátrica; Sobrepeso; Pesquisa Metodológica em Enfermagem.

RESUMEN

Objetivo: Describir características de instrumentos para evaluación de la autoeficacia alimentaria en el sobrepeso y obesidad en niños y adolescentes. **Métodos:** Revisión integradora de la literatura, realizada en mayo de 2020, en seis bases de datos (PubMed; Web of Science; Scopus; CINAHL, ADOLEC y PsycINFO) con la siguiente estrategia de búsqueda: *self-efficacy* and (*Overweight OR Obesity*) and (*Child* OR Adolescent*). **Resultados:** Incluidos 35 artículos y 21 instrumentos aplicados en niños de 6 a 9 años (n=2), en adolescentes de 10 a 19 años (n=9) y en niños y adolescentes de 7 a 18 años (n=10). Los instrumentos tienen de 4 a 30 ítems y variaron de dos a cinco dimensiones, siendo las más frecuentes "alimentación saludable" y "actividad física". **Conclusión:** Hay diferentes instrumentos confiables para evaluación de la autoeficacia alimentaria del público adolescente e infantil, que señala la importancia de ese folleto para prevención y control de obesidad y sobrepeso.

Descriptores: Autoeficacia; Tecnología; Obesidad Pediátrica; Sobrepeso; Investigación Metodológica en Enfermería.

INTRODUCTION

Obesity is a growing problem in the global population, configuring as one of the main factors for generating multiple diseases and other health problems. Among them, we highlight hypertension, hyperlipidemia, and diabetes, which influence the rise in disability and the risk of premature death, affecting the quality of life and generating increased personal and public spending for control and prevention⁽¹⁾; currently, these issues have been a significant risk factor for complications of COVID-19⁽²⁾.

The problem is no different in the pediatric public since the World Health Organization (WHO) has estimated that more than 340 million children and adolescents are overweight or obese. That represents a health challenge in this growing population and changes resulting from the typical transition of life phases, which can be decisive for health in adulthood, especially in developing countries⁽³⁾.

Considering that obesity is a multidimensional problem involving genetic, endocrine, environmental, social, psychological, and psychiatric factors and behavioral change is essential for reducing the issue, self-efficacy is a vital construct to be evaluated. Albert Bandura defined it as the belief or confidence a person has in their own ability to complete a particular task or solve a problem⁽⁴⁾. Self-efficacy has been identified as a predictor of success in treatments related to eating behavior that improve the quality of the diet and allow health professionals to understand the behavior, which can be the basis for developing weight prevention and control strategies⁽⁵⁾.

On the other hand, low self-efficacy in coping with obesity may develop losses in self-esteem, socio-behavioral patterns, and academic performance. A study with female adolescents revealed an association between low self-efficacy in dealing with obesity to negative self-perceptions about academic accomplishment. Participants reported they would feel more confident in participating in classes if they were thinner⁽⁶⁾. In this sense, that illustrates how self-efficacy can represent an opportunity to identify behaviors that help or limit the possibility of change in the intention of health behavior regarding disease control, considering personal, social, and environmental influences that interfere with people's actions⁽⁵⁾.

Self-efficacy is a measurable and modifiable factor of human behavior. Thus, identifying instruments that measure the construct "self-efficacy of children and adolescents," both for prevention and control of overweight and obesity, becomes relevant. Reliable instruments that can provide quality information to health professionals and researchers who deal with this public periodically must be investigated.

OBJECTIVE

This study will describe the characteristics of the instruments available in the literature for assessing eating self-efficacy to prevent and control overweight or obesity in children and adolescents.

METHODS

Ethical aspects

This study was conducted based on secondary studies available in databases, which do not require submission to the Research Ethics Committee.

Design of study

An integrative literature review was carried out, which corresponds to a method of knowledge synthesis and incorporation of the applicability of study results into practice⁽⁷⁾. This review analyzed articles that used instruments to assess eating self-efficacy in the prevention of overweight and obesity in children and adolescents, following these steps: identification of the subject and elaboration of the guiding question; literature search, with inclusion and exclusion criteria; definition of the information to be extracted from the selected studies; data collection; evaluation with critical analysis of the studies included in the review; discussion of results; and presentation of the integrative review⁽⁷⁾. The guidelines of the Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) oriented the conduct of this study⁽⁸⁾.

Study protocol

The guiding question was developed using the PICO strategy, as follows: P (population) - children and adolescents with overweight or obesity; I (intervention) - instruments that assessed self-efficacy; C (comparison) - there was no comparison; O (outcomes or results) - construct of self-efficacy to prevent overweight and obesity. Thus, the research question was, "What are the instruments available to assess self-efficacy in preventing overweight and obesity in children and/or adolescents?" It was adopted the age range of 0 to 19 years, as classified by the World Health Organization: a child is a person who is up to 9 years old, and an adolescent is someone at the chronological limit between 10 and 19 years old⁽⁹⁾.

The search occurred in May 2020 in the following databases: Scopus; Cumulative Index to Nursing and Allied Health Literature (CINAHL); National Library of Medicine and National Institutes of Health (PubMed/Medline); Web of Science; American Psychological Association (PsycINFO); and ADOLEC. We used the terms in the Health Science Descriptors (DeCS) with their equivalence in the Medical Subjects Headings (MeSH). With the help of Boolean operators AND and OR, the search strategy was "Self-efficacy AND Overweight OR Obesity AND Child* OR Adolescent," which was invariably entered in each database.

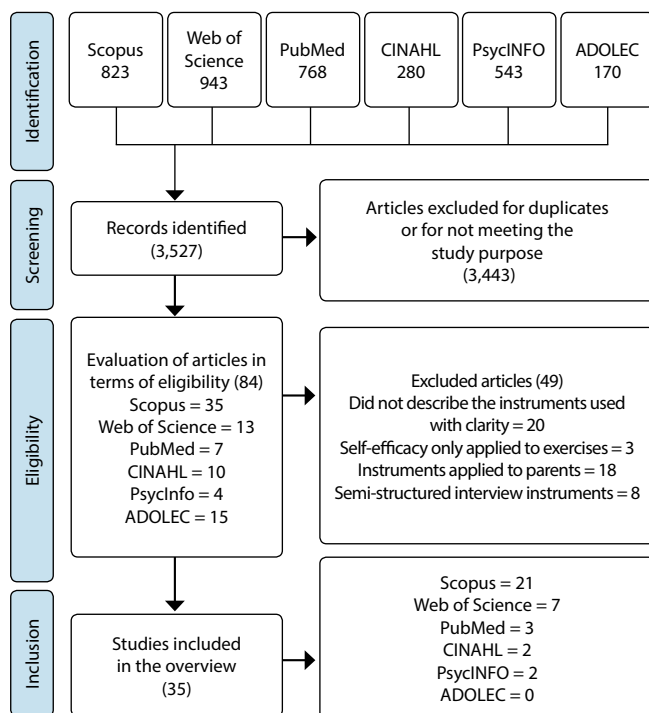
It included primary studies with quantitative, observational, and experimental approaches, without language restriction, without delimitation of publication period, and that used self-efficacy instruments to assess children and adolescents in the prevention of overweight or obesity. It excluded secondary studies, clinical practice guides, book chapters, papers, dissertations, theses, editorials, theoretical reflections, and abstracts published in annals of events.

Data analysis

After the search strategy, the titles and abstracts were read, applying the selection criteria. Duplicate articles among the databases or those that did not meet the review purpose were excluded. Eligible articles were read in their entirety by two reviewers independently. A third reviewer was consulted in case of doubts and disagreements to reach a consensus.

The focus of data extraction was the psychometric instrument of eating self-efficacy used in each reviewed study. An instrument was adapted⁽¹⁰⁾ containing 12 items to enable data extraction: authors; year of publication; the country where the study was conducted; the purpose of the study; nutritional status of study participants; age range of the investigated public; the language of the instrument; psychometric characteristics of the instrument; the form of application (self-reported or interview); the number of items; the dimensions of the instrument; and sample items. It is noteworthy that, to obtain all this information, it was sometimes also necessary to consult the article to develop the instrument, which was easily located through the references of the reviewed studies.

For better analysis and understanding of the text, we divided the instruments into three categories according to the intended age group: 1. children; 2. adolescents; and 3. Children and Adolescents. This categorization also guided the discussion of the results, besides the literature contribution on relevant aspects that came up from the further findings of this study.



Source: Adapted from Moher et al⁽⁹⁾.

Figure 1 – Flowchart of the process of identification, selection, and inclusion of studies, prepared according to the PRISMA recommendation, Brazil, 2020

RESULTS

In the 35 articles included in this review, 21 different instruments for assessing overweight and obesity were found, published between 2001 and 2019, with an increase in publications related to eating self-efficacy in children and adolescents in the last five years (n = 18). The instruments were employed in research carried out in the United States of America - USA (n = 19), Korea (n = 5), Iran (n = 3), Canada (n = 2), Mexico (n = 2), United Kingdom (n = 2), Australia (n = 1), and South Africa (n = 1), where different

intervention studies (n = 20) and observational studies were conducted (n = 15).

Because of the amount of scientific evidence available, the 21 instruments were categorized as it is shown in Chart 1. The data extraction classified the participants' nutritional status to whom the instruments were applied in N - Normal; OW - Overweight; and O - Obesity. Most instruments were applied to the male and female populations (n = 17).

While analyzing the general characteristics of the 21 identified instruments, it was verified that the number of items varied from 4 to 30 questions; 19 instruments presented a Likert-type response pattern (ranging from 3 to 10 response options); one used a dichotomous scale, and another did not present information about those data.

Of the 21 instruments identified, 9 have different dimensions (from two to five), and the others did not provide that information in the articles. Among the most studied dimensions in the instruments were "healthy food choice" (six instruments) and "physical activity" (five instruments). To a lesser extent, the following dimensions also appeared: "negative emotions", "availability", "social pressure", "physical discomfort", "positive activities", "eating habits", "surrounding environment leading to overeating", "negative emotions leading to overeating", "decrease consumption of foods with low nutritional contribution", and "elimination of emotional eating".

When checking the reliability coefficient, according to Cronbach's alpha of the instruments evaluated, it ranged from 0.47 to 0.94, with 17 instruments reporting a value higher than 0.7, while 3 had a value lower than 0.7, and only one did not mention results on reliability.

DISCUSSION

This review identified a significant number of reliable instruments to verify self-efficacy in preventing and controlling overweight and obesity in children and adolescents. Thus, there was an interest in integrating this construct in studies that aim to improve nutritional status from the early stages of life since the usage of these tools has increased in the last five years. The predominance of studies developed in the United States shows the concern of researchers with obesity. In this country, 42.4% of people are obese, of which 13.7 million are children and adolescents⁽⁴⁷⁾. That reflects health and social security costs: for example, in Brazil, spending reached 1.39 billion reais in 2018⁽¹⁾.

The categorization of the findings determined a more significant number of instruments available for children as young as six years old and in adolescents (ten instruments)⁽²²⁻⁴⁶⁾. However, the application of these instruments is more frequent in children eight years and older^(11,15,44-46).

Although the instruments do not distinguish the items by age groups, it was noticed that those exclusively applied to children proved to be slightly shorter in their response options⁽¹¹⁻¹²⁾ compared to those applied only to adolescents⁽¹³⁻²¹⁾. That reveals that the tools used in children should consider developmental cognitive factors to allow the understanding of the items and coherent response, avoiding interpretation or response biases. In recent years, obtaining instruments with few items has been a trend in instrument adaptations, which denotes the pursuit of facilitating the application⁽⁴⁸⁾.

Chart 1 - Assessment instruments of eating self-efficacy, according to the age group in which they were applied, Brazil, 2020

Category 1 - Assessment of eating self-efficacy in children						
Instruments	Items/ Dimensions/ Scoring Method/ Example	Authors/Countries	Age	Gender	Nutritional status	Cronbach's Alpha
Food Self-efficacy	Items: 8. Dimensions: not described	Story et al., 2001 ⁽¹¹⁾ USA	8	M and F	N/OW/O	0.64
Knowledge, Self-efficacy, and Behavior Questionnaire	Items: 12. Dimensions: not described	De Villiers et al., 2016 ⁽¹²⁾ South Africa	7.6 ± 0.6*	M and F	N/OW/O	0.75*
Category 2 - Assessment of eating self-efficacy in adolescents						
Efficacy for healthy food	Items: 4. Dimensions: not described	Muturi et al., 2018 ⁽¹³⁾ USA	11 to 15	M and F	Not described	0.74
Efficacy for healthy eating	Items: 4 Dimensions: not described	Muturi et al., 2018 ⁽¹³⁾ USA	11 to 15	M and F	Not described	0.60
†Self-efficacy to eat healthy	Items: 7 Dimensions: not described	Bruening et al., 2010 ⁽¹⁴⁾ USA	14 to 20	M and F	Not described	0.84
Nutritional Self-efficacy	Items: 7 Dimensions: not described	Bagherniya et al., 2015 ⁽¹⁵⁾ Iran	12 to 15	F	OW/O	> 0.70
‡After School Student Questionnaire	Items: 12 Dimensions: 2 (eight items for self-efficacy by choosing a healthy diet and four for physical activity)	Whittemore et al., 2013 ⁽¹⁶⁾ USA	14 to 17	M and F	N/OW/O	0.70, diet; 0.82, physical activity
‡Self-efficacy in eating or physical activity	Items: 10 Dimensions: 2 (six items for eating self-efficacy and four for physical activity)	Ha et al., 2016 ⁽¹⁷⁾ USA	10.7	M and F	N/O	0.80
Perceived self-efficacy in dietary life	Items: 16 Dimensions: not described	Park, 2011 ⁽¹⁸⁾ Korea	-	F	N/OW	0.843
Dietary self-efficacy	Items: 18 Dimensions: 4 (five items about eating habits; four about food selection; six about influences that promote overeating; and three about negative emotions leading to overeating)	Chae et al., 2018 ⁽¹⁹⁾ Korea	16 to 19	M and F	N/OW/O	0.87
		Chae et al., 2010 ⁽²⁰⁾ Korea	16	M and F	N/OW/O	0.86
The Weight Efficacy Life-style Questionnaire (WEL) – Applied to children	Items: 20 Dimensions: 5 (negative emotions, availability, social pressure, physical discomfort, and positive activities)	Ievers-Landis et al., 2016 ⁽²¹⁾ USA	13 to 18	M and F	O	0.70 a 0.90
Category 3 - Assessment of eating self-efficacy in children and adolescents						
‡Self-efficacy for healthy eating	Items: 9 Dimensions: 2 (five items for healthy eating and four items for physical activity)	Maximova et al., 2015 ⁽²²⁾ Canada	9 to 13	M and F	N/OW/O	0.69, diet; 0.84, physical activity
Self-efficacy for healthy dietary behaviors	Items: 7 Dimensions: not described	Rosemond et al., 2015 ⁽²³⁾ USA	9 to 12	M and F	Not described	0.82*
‡Self-efficacy for Health Eating and Physical Activity (SE-HEPA)	Items: 16 Dimensions: 2 (eight items for self-efficacy in choosing healthy food and eight items for physical activity)	Schroeder et al., 2019 ⁽²⁴⁾ USA	9 to 12	M	O	> 0.70
The dietary self-efficacy	Items: 10 Dimensions: not described Options of answer: 5 (from “1 - I’m sure I can’t” to “5 - I’m sure I can”) Example of item: not described (participants were asked to rate how they trusted they could limit high-fat foods)	Maynard et al., 2017 ⁽²⁵⁾ United Kingdom	7 to 13	M and F	N/OW/O	Not described
		Maynard et al., 2009 ⁽²⁶⁾ United Kingdom	10 to 12	M and F	N/OW/O	Not described
Dietary self-efficacy	Items: 11 Dimensions: not described	O’Dea, Wilson, 2006 ⁽²⁷⁾ Australia	6 to 18	M and F	N/OW/O	0.87 a 0.90

To be continued

Chart 1 (concluded)

Category 3 - Assessment of eating self-efficacy in children and adolescents						
Instruments	Items/ Dimensions/ Scoring Method/ Example	Authors/Countries	Age	Gender	Nutritional status	Cronbach's Alpha
<i>Autoeficacia alimentaria saludable</i>	Items: 13 Dimensions: not described	Morales-Ruán et al., 2014 ⁽²⁸⁾ Mexico	10 to 13	M and F	OW/O	0.478
Child Dietary Self-Efficacy Scale (CDSS)	Items: 15 Dimensions: not described Options of answer: 3 ("Not sure" to "I'm sure"; total score from -15 to +15) Example of item: How sure are you...? - to choose healthy, low-fat, low-calorie foods?	Miri et al., 2019 ⁽²⁹⁾ Iran	13 to 18	M and F	OW	0.82 a 0.87*
		Walpole et al., 2013 ⁽³⁰⁾ Canada	10 to 18	M and F	O	0.85 (0.84)
		Goldschmidt et al., 2014 ⁽³¹⁾ USA	7 to 12	M and F	OW	0.83
		Mockus et al., 2011 ⁽³²⁾ USA	7 to 12	M and F	OW	0.82 a 0.87*
		Chen, Kwan, 2016 ⁽³³⁾ USA	7 to 12	M	OW/O	0.82 a 0.87*
		Chen et al., 2015 ⁽³⁴⁾ USA	7 to 12	Not described	OW/O	0.82 a 0.87
		Chen et al., 2009 ⁽³⁵⁾ USA	8 to 10	M and F	N/OW/O	0.82 a 0.87
		Chen et al., 2011 ⁽³⁶⁾ USA	12 to 15	M and F	N/OW	0.82 a 0.87
		Chen et al., 2017 ⁽³⁷⁾ USA	13 to 18	M and F	OW	0.82 a 0.87*
		Kim et al., 2016 ⁽³⁸⁾ Korea	7 to 12	M and F	OW/O	0.84 (0.82 a 0.84)
The Weight Efficacy Lifestyle Questionnaire (WEL) – Applied to children and adolescents	Items: 20 Dimensions: 5 (Negative emotions, availability, social pressure, physical discomfort, and positive activities)	Glasofer et al., 2013 ⁽³⁹⁾ USA	12 to 17	M and F	N/OW/O	0.83 to 0.94*
		Doaei et al., 2019 ⁽⁴⁰⁾ Iran	12 to 16	M	N/OW/O	0.83 to 0.94*
		Miri et al., 2017 ⁽⁴¹⁾ Iran	12 to 18	M and F	N/OW/O	0.83 to 0.94*
		Quinlan et al., 2009 ⁽⁴²⁾ USA	9 to 18	M and F	OW/O	0.94
		Walpole et al., 2013 ⁽³⁰⁾ Canada	10 to 18	M and F	O	0.83 (0.70 to 0.90)
		Lloyd-Richardson et al., 2012 ⁽⁴³⁾ USA	13 to 16	M and F	O	0,90
Self-efficacy for Diet	Items: 19 Dimensions: not described	Sherrill-Mittleman et al., 2009 ⁽⁴⁴⁾ USA	8 to 10	F	N/OW/O	0.82 (0.86)
		Stockton et al., 2009 ⁽⁴⁵⁾ USA	8 to 10	F	N/OW/O	0.82 (0.86)
<i>Inventario de Autoeficacia para actividad física, alimentación saludable y controle de peso</i>	Items: 30 Dimensions: 4 (self-efficacy to increase physical activity; to decrease intake of foods with low nutritional contribution; to choose healthy foods and weight control; and to eliminate emotional eating)	Gómez-Peresmitré et al., 2019 ⁽⁴⁶⁾ Mexico	8 to 10	M and F	Not described	0.90

Nutritional status: N – Normal; OW– Overweight; e O – Obesity. Gender: M – Male; e F – Female. * Data extracted from other studies indicated by the author. † Instrument remained in the review because it includes adolescents between 14 and 19 years old. ‡ Two-dimensional instruments evaluated independently.

Self-efficacy instruments aim to measure the self-reported belief about how well an individual feels able to perform specific tasks successfully, regardless of gender. Thus, the articles reviewed suggest the use in children and adolescents of both genders, meeting the experts' recommendations who are using self-efficacy instruments⁽⁴⁹⁾. However, based on the investigative practice, it may be interesting to analyze data resulting from self-efficacy instruments by gender since some authors indicated differences between those groups⁽⁴⁹⁻⁵⁰⁾.

Observing the participants' nutritional status in the reviewed studies we verified that the instruments were applied to children and/or adolescents with overweight and obesity^(15,21,24,28,30) and participants with appropriate weight^(11-12,16-18,20,22,25,36). In both situations, identifying levels of self-efficacy is important because it is predictive of both weight loss and the beginning of performance and weight control and maintenance behaviors; and when reaffirmed, it potentiates healthy behavior⁽⁵¹⁾.

In this sense, health promotion appears as a promising perspective for studies on eating and nutrition, considering that the National Health Promotion Policy stipulates that healthy eating, associated with physical activity, is the foundation of health promotion actions, besides being a strategic measure in addressing nutritional deficiencies⁽⁵²⁾. Upon recognizing that aspect, it was determined that the dimensions most used in the instruments referred to the choice of healthy foods and physical activity^(16-17,19,22,24,46), possibly because these elements become interconnected in maintaining weight and suitable body mass.

However, some instruments analyzed in this study are multidimensional, which allows a broader perspective of eating self-efficacy behavior. We observed dimensions that included issues like food availability, social pressure, physical discomfort, eating habits, negative emotions, decreased consumption of foods with low nutritional contribution, and elimination of emotional eating^(21,39-43).

The multidimensionality presented in the instruments corresponds to the mechanisms for developing self-efficacy (1. Self-experience; 2. Vicarious experience; 3. Emotional states; and 4. Verbal persuasion). Especially in the third mechanism, people judge their abilities according to their emotional states, interpreting their tension, anxiety, and depression as signs of difficulties in personal coping⁽⁵³⁾. Analyzing these aspects may contribute to establishing more accurate assessments of obesogenic behavior, offering health professionals more opportunities to implement strategies that contribute to weight maintenance or reduction through an individual self-efficacy evaluation, and/or establishing group strategies based on the most deficient dimensions found in the population⁽⁵⁴⁾.

Another aspect identified was the application of the instruments analyzed, especially in intervention studies^(12,16,23-24,26-30,33-38,44,46). Such designs emphasize using reliable measurement instruments, aiming to reduce measurement biases and facilitate the replication of the intervention in other contexts. Usually, an instrument's most evaluated measurement properties are validity and reliability. In this study, we were able to assess the reliability of the instruments included. That reliability refers to the degree an instrument allows reproduction and consistency of results when applied on different occasions⁽⁵⁴⁾. Therefore, the reliability demonstrated by the different instruments in this review suggests their usage in other contexts.

In this sense, the findings of this study can assist researchers and health professionals, especially nurses, in assessing pediatric self-efficacy to prevent and control overweight and obesity. These instruments may help identify non-health promoting behaviors that influence self-efficacy, especially those tools that evaluate it multidimensionally. Understanding how social pressures impact the lives of children and especially adolescents has become

increasingly necessary since this population has a biological and social need to be part of a group and be accepted by it. Cognitive performance tends to be reduced when someone is discontent with their image because of being overweight or obese⁽⁵⁵⁾. Therefore, strategies aimed at intervening in the self-efficacy of this public are urgent, not only to reduce overweight and obesity but also to deal with the emotional and social conflicts arising from this health problem. Furthermore, there should be more strategies to address this issue with parents and caregivers.

None of the 21 instruments studied have been adapted and validated to be applied in Brazil, which shows the lack of studies on the subject. At the same time, it opens a myriad of opportunities of new research for researchers interested in this field. These instruments should be adapted for other cultures to investigate the usefulness for different populations, considering the sociocultural characteristics and expanding the scope of specific groups; moreover, such adaptation is economically and scientifically more viable in times of scarce resources in science funding.

Study limitations

What is noteworthy is that this research was limited to describing the instruments found in the literature used to assess self-efficacy in children and adolescents in the prevention and control of overweight and obesity. Therefore, it did not evaluate the articles' methodological quality or the measurement instruments.

Contributions to the field of Nursing

In this review, we listed and analyzed the instruments used in clinical practice and research that assess pediatric patients' self-efficacy. Thus, it provides subsidies for expanding the benefit of the tools and might motivate translation and cultural and clinical adaptation studies.

CONCLUSION

This study verified the significant existence of instruments assessing eating self-efficacy, especially from 8 years of age; they were mainly from English-speaking countries. The number of tools validated to be applied in adolescents was higher than in children. There were unidimensional, bidimensional, and multidimensional tools that evaluated the consumption of healthy food and the practice of physical exercises. However, some presented emotional and behavioral dimensions, which allow a more comprehensive evaluation of the factors that interfere with eating self-efficacy in this population. The instruments, in general, were valid and reliable, which motivates adaptation to other languages and contexts, including Brazil.

REFERENCES

1. Nilson EAF, Andrade RCS, Brito DA, Oliveira ML. Custos atribuíveis a obesidade, hipertensão e diabetes no Sistema Único de Saúde, Brasil, 2018. *Rev Panam Salud Pública*. 2020;44:e32. <https://doi.org/10.26633/RPSP.2020.32>
2. Mohammad S, Azir R, Al Mahri S, Malik SS, Haji E, Khan AH, et al. Obesity and COVID-19: what makes obese host so vulnerable? *Immun Ageing*. 2021;18(1):1-10. <https://doi.org/10.1186/s12979-020-00212-x>

3. World Health Organisation (WHO). Informe de la comision para acabar con la obesidad infantil 2016 [Internet]. Geneva: WHO; 2016 [cited 2020 Apr 27]. Available from: https://apps.who.int/iris/bitstream/handle/10665/206450/9789243510064_spa.pdf;jsessionid=46697C68A80402DCA4D855D243BCAA35?sequence=1
4. Bandura, W. Freeman RL. Self-efficacy: the exercise of control. Springer; 1999.
5. Quelly SB. Developing and testing adapted measures of children's self-efficacy, intentions, and behaviors associated with childhood obesity. *Child Health Care*. 2018;47(1):67–82. <https://doi.org/10.1080/02739615.2016.1275637>
6. Kim J, Son WM, Headid RJ, Pekas EJ, Noble JM, Park SY. The effects of a 12-week jump rope exercise program on body composition, insulin sensitivity, and academic self-efficacy in obese adolescent girls. *J Pediatr Endocrinol Metab*. 2020;33(1):129–37. <https://doi.org/10.1515/jpem-2019-0327>
7. Souza MT, Silva MD, Carvalho R. Revisão integrativa: o que é e como fazer. *Reme Rev Min Enferm*. 2010;8(1):102–6. <https://doi.org/10.1590/s1679-45082010rwl1134>
8. Moher D, Liberati A, Tetzlaff J, Altman DG, Altman D, Antes G, et al. Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. *PLoS Med*. 2009;6(7):e1000097. <https://doi.org/10.1371/journal.pmed.1000097>
9. World Health Organization (WHO). Physical status: the use and interpretation of anthropometry [Internet]. World Health Organization technical report series, v.854. Geneva: WHO; 1995[cited 2020 Apr 27]. 452 p. Available from: <https://apps.who.int/iris/handle/10665/37003>
10. Nepomuceno E, Silveira RCCP, Dessotte CAM, Furuya RK, Arantes EDC, Cunha DCPT, et al. Instruments used in the assessment of expectation toward a spine surgery: an integrative review. *Rev Esc Enferm USP*. 2016;50(4):656–63. <https://doi.org/10.1590/S0080-623420160000500017>
11. Story M, Stevens J, Evans M, Cornell CE, Juhaeri, Gittelsohn J, et al. Weight loss attempts and attitudes toward body size, eating, and physical activity in American Indian Children: relationship to weight status and gender. *Obes Res*. 2001;9(6):356–63. <https://doi.org/10.1038/oby.2001.46>
12. De Villiers A, Steyn NP, Draper CE, Hill J, Gwebushe N, Lambert EV, et al. Primary school children's nutrition knowledge, self-efficacy, and behavior, after a three-year healthy lifestyle intervention (HealthKick). *Ethn Dis*. 2016;26(2):171. <https://doi.org/10.18865/ed.26.2.171>
13. Muturi N, Kidd T, Daniels AM, Kattelmann KK, Khan T, Lindshield E, et al. Examining the role of youth empowerment in preventing adolescence obesity in low-income communities. *J Adolesc*. 2018;68(Sept):242–51. <https://doi.org/10.1016/j.adolescence.2018.08.001>
14. Bruening M, Kubik MY, Kenyon D, Davey C, Story M. Perceived barriers mediate the association between self-efficacy and fruit and vegetable consumption among students attending alternative high schools. *J Am Diet Assoc*. 2010;110(10):1542–6. <https://doi.org/10.1016/j.jada.2010.07.001>
15. Bagherniya M, Sharma M, Mostafavi F, Keshavarz SA. Application of social cognitive theory in predicting childhood obesity prevention behaviors in overweight and obese Iranian Adolescents. *Int Q Community Health Educ*. 2015;35(2):133–47. <https://doi.org/10.1177/0272684X15569487>
16. Whittemore R, Jeon S, Grey M. An internet obesity prevention program for adolescents. *J Adolesc Heal*. 2013;52:439–47. <https://doi.org/10.1016/j.jadohealth.2012.07.014>
17. Ha SA, Lee SY, Kim KA, Seo JS, Sohn CM, Park HR, et al. Eating habits, physical activity, nutrition knowledge, and self-efficacy by obesity status in upper-grade elementary school students. *Nutr Res Pract*. 2016;10(6):597. <https://doi.org/10.4162/nrp.2016.10.6.597>
18. Park DY. Utilizing the Health Belief Model to predicting female middle school students' behavioral intention of weight reduction by weight status. *Nutr Res Pract*. 2011;5(4):337. <https://doi.org/10.4162/nrp.2011.5.4.337>
19. Chae SM, Kim MJ, Park CG, Yeo JY, Hwang JH, Kwon I, et al. Association of weight control behaviors with body mass index in Korean adolescents: a quantile regression approach. *J Pediatr Nurs*. 2018;40:e18–25. <https://doi.org/10.1016/j.pedn.2018.01.021>
20. Chae S-M, Kwon I, Kim C-J, Jang J. Analysis of weight control in Korean adolescents using the transtheoretical model. *West J Nurs Res*. 2010;32(4):511–29. <https://doi.org/10.1177/0193945909355996>
21. levers-Landis CE, Kneifel A, Giesel J, Rahman F, Narasimhan S, Uli N, et al. Dietary intake and eating-related cognitions related to sleep among adolescents who are overweight or obese. *J Pediatr Psychol*. 2016;41(6):670–9. <https://doi.org/10.1093/jpepsy/jsw017>
22. Maximova K, Khan MKA, Austin SB, Kirk SFL, Veugelers PJ. The role of underestimating body size for self-esteem and self-efficacy among grade five children in Canada. *Ann Epidemiol*. 2015;25(10):753–9. <https://doi.org/10.1016/j.annepidem.2015.07.009>
23. Rosemond TN, Blake CE, Jenkins KA, Buff SM, Moore JB. Dietary improvements among African American youth: results of an interactive nutrition promotion program. *Am J Health Educ*. 2015;46(1):40–7. <https://doi.org/10.1080/19325037.2014.977409>
24. Schroeder K, Allen J Van, Dhurandhar E, Lancaster B, Heidari Z, Cazenave K, et al. Riding into Health: A Case Study on an Equine-Assisted Childhood Obesity Intervention. *Int J Environ Res Public Health*. 2019;16(23):4835. <https://doi.org/10.3390/ijerph16234835>
25. Maynard M, Baker G, Harding S. Exploring childhood obesity prevention among diverse ethnic groups in schools and places of worship: Recruitment, acceptability and feasibility of data collection and intervention components. *Prev Med Reports*. 2017;6:130–6. <https://doi.org/10.1016/j.pmedr.2017.02.019>
26. Maynard MJ, Baker G, Rawlins E, Anderson A, Harding S. Developing obesity prevention interventions among minority ethnic children in schools and places of worship: The DEAL (DiEt and Active Living) study. *BMC Public Health*. 2009;9(1):480. <https://doi.org/10.1186/1471-2458-9-480>

27. O'Dea JA, Wilson R. Socio-cognitive and nutritional factors associated with body mass index in children and adolescents: possibilities for childhood obesity prevention. *Health Educ Res.* 2006;21(6):796–805. <https://doi.org/10.1093/her/cyl125>
28. Morales-Ruán MC, Shamah-Levy T, Amaya-Castellanos CI, Salazar-Coronel AA, Jiménez-Aguilar A, Alejandra A-CM, et al. Effects of an intervention strategy for school children aimed at reducing overweight and obesity within the State of Mexico. *Salud Publica Mex.* 2014;56(2):113. <https://doi.org/10.21149/spm.v56s2.5175>
29. Miri SF, Javadi M, Lin C-Y, Griffiths MD, Björk M, Pakpour AH. Effectiveness of cognitive-behavioral therapy on nutrition improvement and weight of overweight and obese adolescents: a randomized controlled trial. *Diabetes Metab Syndr Clin Res Rev.* 2019;13(3):2190–7. <https://doi.org/10.1016/j.dsx.2019.05.010>
30. Walpole B, Dettmer E, Morrongiello BA, McCrindle BW, Hamilton J. Motivational interviewing to enhance self-efficacy and promote weight loss in overweight and obese adolescents: a randomized controlled trial. *J Pediatr Psychol.* 2013;38(9):944–53. <https://doi.org/10.1093/jpepsy/jst023>
31. Goldschmidt AB, Best JR, Stein RI, Saelens BE, Epstein LH, Wilfley DE. Predictors of child weight loss and maintenance among family-based treatment completers. *J Consult Clin Psychol.* 2014;82(6):1140–50. <https://doi.org/10.1037/a0037169>
32. Mockus DS, Macera CA, Wingard DL, Peddecord M, Thomas RG, Wilfley DE. Dietary self-monitoring and its impact on weight loss in overweight children. *Int J Pediatr Obes.* 2011;6(3–4):197–205. <https://doi.org/10.3109/17477166.2011.590196>
33. Chen J-L, Kwan M. Short-term efficacy and correlates of change in health weight management program for Chinese American Children. *Clin Pediatr (Phila).* 2016;55(5):463–9. <https://doi.org/10.1177/0009922815592608>
34. Chen JL, Kwan M, Liu K, Yu F. The feasibility and efficacy of healthy weight management program for low income Chinese American overweight and obese children in a primary care Clinic. *J Pediatr Nurs.* 2015;30(6):821–8. <https://doi.org/10.1016/j.pedn.2015.01.026>
35. Chen JL, Weiss S, Heyman MB, Lustig RH. Efficacy of a child-centred and family-based program in promoting healthy weight and healthy behaviors in Chinese American children: a randomized controlled study. *J Public Health (Bangkok).* 2009;32(2):219–29. <https://doi.org/10.1093/pubmed/fdp105>
36. Chen JL, Weiss S, Heyman MB, Cooper B, Lustig RH. The efficacy of the web-based childhood obesity prevention program in Chinese American Adolescents (Web ABC Study). *J Adolesc Heal.* 2011;49(2):148–54. <https://doi.org/10.1016/j.jadohealth.2010.11.243>
37. Chen JL, Guedes CM, Cooper BA, Lung AE. Short-term efficacy of an innovative mobile phone technology-based intervention for weight management for overweight and obese adolescents: pilot study. *Interact J Med Res.* 2017;6(2):e12. <https://doi.org/10.2196/ijmr.7860>
38. Kim HS, Park J, Park K, Lee MN, Ham OK. Parent involvement intervention in developing weight management skills for both parents and overweight/obese children. *Asian Nurs Res (Korean Soc Nurs Sci).* 2016;10(1):11–7. <https://doi.org/10.1016/j.anr.2015.07.006>
39. Glasofer DR, Haaga DAF, Hannallah L, Field SE, Kozlosky M, Reynolds J, et al. Self-efficacy beliefs and eating behavior in adolescent girls at risk for excess weight gain and binge eating disorder. *Int J Eat Disord.* 2013;46(7):663–8. <https://doi.org/10.1002/eat.22160>
40. Doaei S, Gholamaliadeh M, Karimi E, Kalantari N, Jarrahi AM. Self-efficacy in Weight Management and Anthropometric Indices in Tehran Male Adolescents. *Nutr Food Sci Res.* 2019;6(3):17–22. <https://doi.org/10.29252/nfsr.6.3.17>
41. Miri SF, Javadi M, Lin C-Y, Irandoost K, Rezazadeh A, Pakpour AH. Health related quality of life and weight self-efficacy of life style among normal-weight, overweight and obese Iranian adolescents: a case control study. *Int J Pediatr.* 2017;5(11):5975–84. <https://doi.org/10.22038/ijp.2017.25554.2173>
42. Quinlan NP, Kolotkin RL, Fuemmeler BF, Costanzo PR. Psychosocial outcomes in a weight loss camp for overweight youth. *Int J Pediatr Obes.* 2009;4(3):134–42. <https://doi.org/10.1080/17477160802613372>
43. Lloyd-Richardson EE, Jelalian E, Sato AF, Hart CN, Mehlenbeck R, Wing RR. Two-Year follow-up of an adolescent behavioral weight control intervention. *Pediatrics.* 2012;130(2):e281–8. <https://doi.org/10.1542/peds.2011-3283>
44. Sherrill-Mittleman DA, Klesges LM, Lanctot JQ, Stockton MB, Klesges RC. Measurement characteristics of dietary psychosocial scales in a Weight Gain Prevention Study with 8- to 10-year-old African-American girls. *Health Educ Res.* 2009;24(4):586–95. <https://doi.org/10.1093/her/cyn059>
45. Stockton MB, Lanctot JQ, McClanahan BS, Klesges LM, Klesges RC, Kumanyika S, et al. Self-perception and Body Image Associations with Body Mass Index among 8-10 year old African American Girls. *J Pediatr Psychol.* 2009;34(10):1144–54. <https://doi.org/10.1093/jpepsy/jsp023>
46. Gómez-Peresmitré G, Platas-Acevedo S, Pineda-García G. Programa de autoeficacia hacia hábitos saludables para la prevención de la obesidad en escolares mexicanos. *Rev Psicol Clínica con Niños y Adolesc.* 2019;6(1):44–50. <http://doi.org/10.21134/rpcna.2019.06.1.6>
47. Skinner AC, Ravanbakht SN, Skelton JA, Perrin EM, Armstrong SC. Prevalence of obesity and severe obesity in US children, 1999-2016. *Pediatrics.* 2018;141(3). <https://doi.org/10.1542/peds.2017-3459>
48. Julião M, Antunes B, Santos A, Sobral MA, Albuquerque S, Fareleira F, et al. Adapting the Portuguese dignity question framework for adolescents: ages 10–18. *Palliat Support Care.* 2020;18(2):199–205. <https://doi.org/10.1017/S1478951519000798>
49. Tulloch H, Heenan A, Sweet S, Goldfield GS, Kenny GP, Alberga AS, et al. Depressive symptoms, perceived stress, self-efficacy, and outcome expectations: predict fitness among adolescents with obesity. *J Health Psychol.* 2020;25(6):798–809. <https://doi.org/10.1177/1359105317734039>
50. García Puello F, Herazo Beltrán Y, Sánchez Guette L, Barbosa Villa EJ, Coronado Rodríguez ADC, Corro Rueda EA, et al. Autoeficacia hacia la actividad física en escolares colombianos. *Retos.* 2020;38(38):390–5. <https://doi.org/10.47197/retos.v38i38.73878>

51. Singh HKG, Chee WS, Hamdy O, Mechanick JI, Mun Lee VK, Barua A, et al. Eating self-efficacy changes in individuals with type 2 diabetes following a structured lifestyle intervention based on the transcultural Diabetes Nutrition Algorithm (tDNA): a secondary analysis of a randomized controlled trial. *PLoS One*. 2020;15(11):1–17. <https://doi.org/10.1371/journal.pone.0242487>
 52. Victorino SVZ, Shibukawa BMC, Rissi GP, Higarashi IH. Promoção da Saúde: adesão municipal às ações de combate ao sobrepeso e obesidade infanto-juvenil. *Rev Bras Ativ Física Saúde*. 2019;24:1–8. <https://doi.org/10.12820/rbafs.24e0102>
 53. Bandura A. Swimming against the mainstream: the early years from chilly tributary to transformative mainstream. *Behav Res Ther*. 2004;42(6):613–30. <https://doi.org/10.1016/j.brat.2004.02.001>
 54. Echevarría-Guanilo ME, Gonçalves N, Romanoski PJ. Propriedades psicométricas de instrumentos de medidas: bases conceituais e métodos de avaliação - Parte I. *Texto Contexto Enferm*. 2017;26(4):1–11. <https://doi.org/10.1590/0104-07072017001600017>
 55. Martin A, Booth JN, Laird Y, Sproule J, Reilly JJ, Saunders DH. Physical activity, diet and other behavioural interventions for improving cognition and school achievement in children and adolescents with obesity or overweight. *Cochrane Database Syst Rev*. 2018;2018(3). <https://doi.org/10.1002/14651858.CD009728.pub4>
-