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REVIEW

Sense of coherence, parenting stress and child feeding practices: systematic review

Sentido de coherencia, estrés de la crianza y prácticas de alimentación infantil: revisión sistemática

Senso de coerência, estresse parental e práticas de alimentação infantil: revisão sistemática

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Abstract

Introduction: Mothers with a low sense of coherence make fewer healthy eating decisions, present greater parenting stress and a greater frequency of coercive feeding practices, associated with a higher risk of overweight-obesity in pre-school children. **Objective:** To review and analyze published studies on the relationship of sense of coherence, parenting stress, and infant feeding practices among mothers of preschool children. **Methodology:** A systematic review of 10 studies published between 2016 and 2021 located in PubMed, Ebsco host, Springer link, Elsevier, and Google Academic databases was performed. The following descriptors were used: sense of coherence, parenting stress, child feeding practices, feeding behavior. Selection criteria used: articles with correlational, cross-sectional, longitudinal, systematic review and meta-analysis design based on Preferred Reporting Items for Systematic Reviews and Meta-Analyses. **Results:** 60% of the studies evaluated parenting stress and child feeding practices and child feeding practices

and child body mass index, 20% of the studies evaluated sense of coherence and healthy behaviors and 20% evaluated sense of coherence and child feeding practices and parenting stress respectively. Sense of coherence and parenting stress were found to be predictors of coercive child feeding practices associated with obesity in preschool children. **Conclusions:** Sense of coherence and parenting stress are predictors of coercive child feeding practices. Studies are suggested to evaluate the association of the three variables, and to evaluate the mediating effect of parenting stress on the sense of coherence and child feeding practices.

Keywords: Sense of Coherence; Psychological Stress; Child Rearing; Child Nutrition; Preschool-Age Children (DeCS).

Resumen

Introducción: Madres con bajo sentido de coherencia toman menos decisiones alimentarias saludables, presentan mayor estrés de la crianza y mayor frecuencia de prácticas de alimentación coercitivas, asociadas a mayor riesgo de sobrepeso-obesidad en preescolares. **Objetivo:** Revisar y analizar estudios publicados de la relación del sentido de coherencia, estrés de la crianza y prácticas de alimentación infantil en madres de preescolares. **Metodología:** Revisión sistemática de 10 estudios publicados entre 2016 a 2021 localizados en bases de datos PubMed, Ebsco host, Springer link, Elsevier y Google académico, con descriptores: sense of coherence, parenting stress, child feeding practices, feeding behavior, empleando criterios de selección: artículos con diseño correlacional, trasversal, longitudinal, revisión sistemática y metaanálisis en base a Preferred Reporting Items for Systematic reviews and Meta-Analyses. **Resultados:** 60 % de los estudios evaluó estrés de la crianza y prácticas de alimentación infantil y prácticas de alimentación infantil e índice de masa corporal del hijo, 20 % sentido de coherencia y conductas saludables y 20 % sentido de coherencia y prácticas de alimentación infantil y estrés de la crianza respectivamente. Se encontró que el sentido de coherencia y estrés de la crianza son predictores de prácticas de alimentación infantil coercitivas asociadas a obesidad en el preescolar. **Conclusiones:** El sentido de coherencia y el estrés de la crianza son predictores de prácticas de alimentación infantil coercitivas. Se sugiere realizar estudios que evalúen la asociación de las tres variables y evaluar el efecto mediador del estrés de la crianza entre el sentido de coherencia y prácticas de alimentación infantil.

Palabras clave: Sentido de Coherencia; Estrés Psicológico; Crianza del Niño; Nutrición del Niño; Preescolar (DeCS).

Abstrato

Introdução: Mães com baixo senso de coerência tomam menos decisões alimentares saudáveis, apresentam maior estresse parental e maior frequência de práticas alimentares coercitivas, associadas a maior risco de sobrepeso-obesidade em pré-escolares. **Objetivo:** Revisar e analisar estudos publicados sobre a relação entre senso de coerência, estresse parental e práticas de alimentação infantil em mães de pré-escolares. **Metodologia**: Revisão sistemática de 10 estudos publicados entre 2016 e 2021 localizados no PubMed, host Ebsco, link Springer, bancos de dados Elsevier e Google acadêmico, com descritores: senso de coerência, estresse parental, práticas de alimentação infantil, comportamento alimentar, usando critérios de seleção: artigos com

delineamento correlacional, transversal, longitudinal, revisão sistemática e metanálise. **Resultados:** 60% avaliaram estresse parental e práticas de alimentação infantil, e práticas de alimentação infantil e índice de massa corporal da criança, 20% senso de coerência e comportamentos saudáveis, 20% senso de coerência com práticas de alimentação infantil e estresse parental. Verificou-se que o senso de coerência e o estresse parental são preditores de práticas coercitivas de alimentação infantil associadas à obesidade na pré-escola. **Conclusões:** O senso de coerência e o estresse parental são preditores de práticas coercitivas de alimentação infantil. Sugere-se a realização de estudos que avaliem a associação das três variáveis e avaliar o efeito mediador do estresse parental entre o senso de coerência e as práticas de alimentação infantil.

Palavras-chave: Senso de Coerência; Estresse Psicológico; Educação Infantil; Nutrição da Criança; Pré-Escolar (DeCS).

Introduction

On a global level, overweight and obesity are linked to numerous deaths, and are defined as an abnormal or excessive accumulation of fat caused by an energy imbalance between calories consumed and calories expended, which can be detrimental to health [(1)]. Worldwide, the number of infants and young children aged 0 - 5 years who are overweight or obese was 41 million in 2016, and it is estimated that by 2025 the number will increase to 70 million [(2)]. Recently, the Centers for Disease Control and Prevention (CDC) [(3)] reported that children are five times more likely to have obesity in adulthood if they are overweight or obese between the ages of three and five years, and that this condition increases the probability of premature deaths, disabilities, heart disease, insulin resistance, musculoskeletal disorders, some types of cancer, and psychological effects [(4)].

Preschool age is a critical period of development with respect to weight and related behaviors [(5)], in addition, children are unable to choose the foods they eat and have limited ability to understand the long-term consequences of their behavior [(6)], so the primary preschool caregiver is in a unique position to influence the child's behaviors and habits. Furthermore, it has been found that women make healthier dietary decisions related to energy intake, sucrose, fruits, vegetables, cereals and sweets when they have a high sense of coherence (SOC) [(7)], which is defined as the ability to

perceive stressful/problematic situations as understandable, manageable and meaningful in order to cope with them and select an appropriate coping style [8]. It has also been found that children of mothers with higher levels of sense of coherence have less frequent intake of high-sugar foods or beverages [9] and school-aged children of mothers with a low sense of coherence have been associated with an irregular eating pattern, characterized by more frequent consumption of energy-rich foods and a less frequent intake of nutrient-rich foods [10].

On the other hand, an association was found between a low sense of coherence and high levels of parenting stress [11], i.e. stress arising from the demands imposed by parenting tasks (e.g. knowledge, skills and social support), involving behavioral, cognitive and affective components in relation to the parenting role itself [12], which could also affect the family feeding environment [13]. Alternatively, significant positive effects have been reported between parenting stress and Z-scores (number of standard deviations from the percentile reference mean) over the Body Mass Index (BMI) in children [14], as well as an increase in the use of controlling [15] and indulgent [16] feeding practices, which are employed to influence the child's food intake such as coercing the child to eat, using food as a reward, restricting food selection, and the use of food to appease hunger [17]. In addition, a relationship has been found between the sense of coherence and parental feeding practices, which has a significant, direct and negative effect when they are controlling feeding practices (restriction and pressure to eat), it has also been reported that a high sense of coherence is related to a lower maternal body mass index [18].

This suggests that analyzing the sense of coherence, parenting stress and parental feeding practices could help to better explain overweight and obesity in preschoolers. Addressing these variables will allow the nursing professional to broaden the knowledge of the phenomenon based on the need to use the current evidence available to provide quality health care to preschool age children.

Therefore, the objective was to review and analyze published studies on the relationship between the sense of coherence, parenting stress and parental feeding practices among mothers of preschool children, since no reviews were found that include these three variables.

Methodology

This systematic review was based on the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) list of 27 items [19]. First, a previous review of the literature was carried out in accordance with the proposed objective of the present review, which followed the following parameters: (P) patient or problem of interest, (I) main intervention to be considered (therapeutic, preventive, diagnostic, risk exposure, etc.), (C) comparison intervention, and (O) outcomes when assessing the patient, intervention, comparison, results, and study design (PICO). The clinical question was structured as: (P) mothers of preschool children, (I) relationship between parenting stress and sense of coherence (original articles), (C) mothers with overweight or obese children, (O) maternal infant feeding practices.

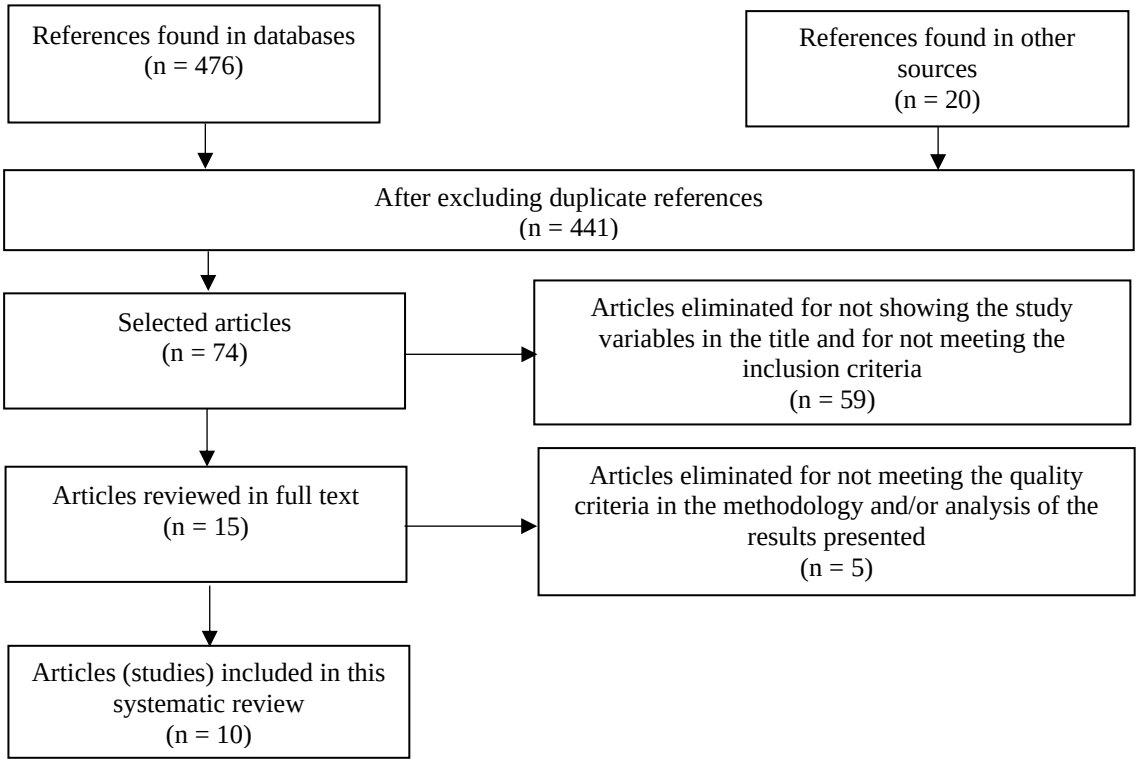
The review included articles related to the topic of interest published in the period from 2016 to 2021 whose participants included mothers of preschool-age children, published in English, Portuguese, and Spanish. Inclusion criteria were: a) studies assessing the correlation of at least two of the variables of interest (sense of coherence, parenting stress and parental feeding practices) among mothers of preschool children, and b) correlational, cross-sectional or longitudinal study designs, systematic reviews and meta-analyses. The electronic databases used for the search were: PubMed, EBSCO host (Medline, Health Source, Nursing/Academic edition, Medic Latina, CINAHL), Ovid, Springer Link, Elsevier, Scielo, in addition to the Academic Google search engine. Keywords were selected according to DeCS and Medical Subject Headings (MeSH) health

science descriptors: sense of coherence (sentido de coherencia), parental stress, (estrés de la crianza), feeding behavior (comportamiento alimentario), child feeding practices, (prácticas de alimentación infantil), and healthy feeding practices (prácticas saludables de alimentación). For a more sensitive search, the Boolean operators "AND", "OR" and "NOT" were used, as well as truncation operators.

For the selection of the studies, the keywords, Boolean and truncation operators were used in the selected databases, duplicate references were eliminated, then the articles that included in the title any of the variables of interest for this review were selected from the databases, then the articles were evaluated and those that did not meet the inclusion criteria were excluded. Subsequently, the full text of the selected studies was evaluated using the questions of the Critical Appraisal Skills Programme Español (CASPe) guide [20] by reviewing the clarity and congruence between the sections of the articles.

A total of 476 studies were found in the databases, of which 35 were excluded because they were duplicate references, of the remaining 441 studies 74 were selected because their titles contained the variables of interest for this review, 59 were eliminated because they did not meet the established inclusion criteria, so the remaining 15 articles were evaluated in full text, of which 6 were eliminated because they did not meet the quality criteria regarding methodology and/or analysis of the results presented, and finally, 10 articles (studies) were included for this systematic review (Figure 1).

Figure 1. PRISMA diagram (21) used for the selection of the articles included in the systematic review. 2010.



Source: prepared by the authors.

Results

Ten articles were selected to answer the research question of this systematic review. Thirty percent of the articles were conducted in the United States of America, 20 % in Sweden [11, 18], and 10 % in Canada, Turkey, Poland, Germany, and Portugal, respectively. The total sample of the selected articles (studies) was 7,253 mothers/fathers of preschool children.

30% of the studies [9, 18, 22] assessed the relationship between the sense of coherence and child feeding practices and healthy behaviors using the 13-item sense of coherence scale [9, 18] and the 26-item family sense of coherence scale [22]. One study [18] found influence of sense of coherence on mother's BMI (β= -.19, p < .001), restrictive feeding (β= -.157, p= .001) and pressure to eat (β= - .184 p < .001), in addition to indirect effect of sense of coherence and restrictive feeding mediated

by concern (β= -.041, p < .05). Researchers [9] reported that children of mothers with a greater sense of coherence were more likely to not consume snacks with added sugar (p= .001) and a lower frequency of intake of sugar-sweetened foods or beverages (OR= 1.29; p= .046; 95% CI); similar results [22] emphasize sense of coherence as a predictor of healthy childhood behaviors (food consumption and physical activity), (β= .32, p< .001).

10% of the articles [11] included sense of coherence and parenting stress, reporting significant and negative correlation in mothers during their pregnancy, two months after birth and at one year of the child's life (r= -.40, -.49 and -.64, respectively), in addition to higher parenting stress (2.8, SD = .58) after one year compared to the mean (2.5, SD = .54) of those with low sense of coherence, whose common characteristics were being single women, not born in Sweden, under 25 years of age, with low education level and smokers.

Parenting stress and child feeding practices variables were included in 30% of the studies [14, 23, 24], showing that stressed mothers use restrictive infant feeding practices (β= .155, p < .009; β= .165, p= . 012) [14, 23] and that female gender of the child indicated prediction of parenting stress on pressure to eat (β= .204, p< .001), restrictive feeding (β= .102, p= .046), and vigilance (β= .159, p= .003), as well as parenting stress and overeating mediated by pressure to eat (β= -.032, p= .022, 95% CI) [14]. Researchers [24] proposed to evaluate as a whole the overall stress, parenting stress, sleep quality, and depression, which predicted pressure to eat (β= .37, p< .01) and restrictive feeding (β= .47, p< .01).

Thirty percent of the studies [25 to 27] evaluated child feeding practices and child BMI, it was found the use of authoritarian child feeding practices in mothers of overweight and obese children, which were predictors of child weight (authoritarian child feeding practices (β= 1. In addition to a relationship between restriction and higher percentiles of the child's BMI (r= .41, p< .01) [26].

Table 1. Studies included in the review. 2021. (n = 10)

Author/Year	Design	Sample	Instrument	Results
Eli, et al. (2016) [18]	Cross-sectional	565 mothers of preschool children	Sense of Coherence -13 Items (α= .89). Child Feeding Questionnaire (α= .63 - .84)	Direct, negative and significant effect of Sense of Coherence (SOC) on restriction (β= -.157, p= .001) and pressure to eat (β= - .184, p< .001), significant indirect effect on concern-mediated by restrictive feeding (β= -.041, p< .05). The higher the maternal BMI, the lower the Sense of Coherence score. (β= -.19, p< .001).
Speirs, et al. (2016) [22]	Cross-sectional	321 mother-preschool child dyads	Familiar Sense of Coherence (FSOC) 26 Items (α= .87) Healthy And Unhealthy Child Behaviors 16 Items Checklist	Higher levels of FSOC were statistically significantly associated with the practice of healthy behaviors in children (β= .32, p< .001).
Swyden, et al. (2017) [23]	Longitudinal	285 mothers of preschool children	Child Feeding Questionnaire (CFQ) (α= .70 -.92) Depression Anxiety Stress Scale Short Form (DASS-21) (α= .88 - .95)	Relationship between maternal stress and concern about infant weight with the use of restrictive practices (p≤ .001), and was higher as the child's age increased (β= .155, R^2= .02, p< .009); mothers with severe and very severe stress used more restrictive practices (p= .03).
Hildingsson (2017) [11]	Longitudinal	2562 mothers	Sense of Coherence -13 Items Swedish Parenting Stress Questionnaire 34 items (α= .81)	Sense of Coherence was statistically significantly negatively correlated with parenting stress in pregnancy, two months after birth and at one year of child's life (r= -.40, -.49 and -.64, respectively), the lower the Sense of Coherence, the greater the parenting stress. Women with low Sense of Coherence reported higher parental stress (2.8, SD= .58) after one year compared to the mean (2.5, SD = .54).
Elyasi, et al. (2018) [9]	Cross-sectional	378 mother-preschool child dyads	Sense of Coherence -13 Items Oral Health Behavior Form	Children of mothers with higher Sense of Coherence were more likely to not consume snacks with added sugar or to consume them less than once a day (p= .001). There was an association between consumption of sugary foods and Maternal Sense of Coherence (OR= 1.29; p=.046; 95% CI), the higher the Sense of Coherence, the lower the intake of sugary foods.

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Melis, Selcuk. (2018) [25]	Cross-sectional	122 mother-preschool child dyads	Child Feeding Questionnaire (CFQ) (α= .79-.89) Parenting Styles and Dimensions Questionnaire (PSDQ) (α=.65-0.75)	Predictors of child weight were maternal BMI (β= .13, p< .05, OR= 1.14), pressure to eat (β= -0.83, p< .01, OR= .44), authoritarian practices (β= 1.55, p< .01, OR= 4.71).
Liszewska, et al. (2018) [26]	Longitudinal	526 mother/father-child dyads	Comprehensive Feeding Practices Questionnaire (α= .77- .79)	Higher levels of restriction at age 4 were related to higher BMI percentiles (β=.41, p< .01).
Eichler, et al. (2019) [27]	Longitudinal	1512 mother/father-child between 2 and 12 years old dyads	Child Feeding Questionnaire (CFQ) (α= .71-.91)	Child zBMI predicted restrictive feeding at follow-up at all ages except 4 and 5 years (β= .102 - .199, p< .05). Food as a reward at age 4 predicted child zBMI at age 5 (β= .058, p= .025). At all ages the zBMI at baseline predicted pressure to eat at follow-up (β= -.114 - -.234, p< .01), except between 3 and 4 years. Monitoring at 5 years predicted BMI at 6 years (β= .050, p= .033).
Gouveia, et al. (2019) [14]	Cross-sectional	726 mother/father-child between 7 and 18 years old dyads	Portuguese version of the Parental Stress Scale (α= .81) Portuguese version of the Child Feeding Questionnaire (α= .72- .93) Portuguese version of the Interpersonal Mindfulness in Parenting Scale (α= .86)	Statistical relationship between parenting stress and restrictive feeding (β= .165, p= .012). Most relationships were in females; parenting stress and pressure to eat (β= .204, p< .001), restrictive feeding (β= .102, p= .046), and monitoring (β= .159, p= .003), parenting stress and overeating through pressure to eat (β= -.032, p= .022, 95% CI).
Jang, et al. (2019) [24]	Cross-sectional	256 mother/Father -preschool child dyads	Feeding Strategies Questionnaire (Feeding Environment Subscale, α= .65) Child Feeding Questionnaire (α= .70- .73) Parenting Stress (Perceived Stress Scale, α= .62; Parenting Stress Scale, α= .87; Pittsburgh Sleep Quality Index; Epidemiological Studies Depression Scale, α= .77)	General stress was 20.1 (SD= 5.3) and parenting stress was 37.5 (SD= 10.2), indicating moderate stress. The SEM revealed that general stress and parenting stress in conjunction with sleep quality and depression predicted pressure to eat (β= .37, p< .01) and restrictive feeding (β= .47, p< .01).

Source: prepared by the authors.

Discussion

The literature reviewed shows that sense of coherence (SOC) is associated with childhood obesity, as one-third of the reviewed studies found a relationship of sense of coherence and coercive and controlling child feeding practices; furthermore, low scores of sense of coherence were related to higher levels of parenting stress, which is also related to the use of controlling child feeding practices.

Also included in this review were articles demonstrating a positive relationship between the use of controlling feeding practices and higher BMI percentiles of preschool-age children, mostly in female children. Likewise, it is highlighted that forced feeding favors childhood overweight [28] and that unhealthy eating behaviors, such as the intake of pizza, soft drinks, sweets, hamburgers, mashed potatoes and junk food are increased with lower levels of sense of coherence [7]. The literature shows that there is a relationship between a low sense of coherence and parenting stress, which affects the family eating environment and physical activity [13], and among the consequences of maternal stress on children's health is an increased risk of overweight and obesity [29]. A possible explanation for the positive significant effect of parenting stress on the child's BMI is that when parents are overwhelmed with the demands and difficulties arising from child-rearing they may use coercive child feeding practices and may miss their children's satiety and other emotional cues [14].

It is important to point out that coercive controlling child feeding practices [30] are different according to developmental stages and among children of the same family, age, sex, feeding behavior and weight of the child, and there is a greater use of these coercive practices when the mother does not believe that the child is capable of self-controlling its feeding [31]. Thus, the literature suggests that using coercive child feeding practices compromises children's eating habits, in addition to modifying the physical and social environment of the household [32]. In addition,

these practices employed may be affected by parenting stress, for example, parents who experience higher levels of parenting stress use more controlling child feeding practices and provide less healthy foods to their children [14]. Among the limitations of this systematic review is that the studies reviewed have used different objectives and designs, and no evidence has been found that addressed the overall relationship of the variables of interest, neither in the context of the Hispanic population nor in the population of Latin American countries.

Conclusions

A lower sense of coherence is associated with the use of coercive child feeding practices and higher maternal BMI; a high level of sense of coherence is associated with better health behaviors and lower consumption of high-sugar foods in children. Likewise, the association between parenting stress and coercive child feeding practices was identified, and these same practices are related to a higher weight of the child at preschool age. At the time of this review, no evidence was found of any studies linking sense of coherence, parenting stress and child feeding practices in mothers of preschool children.

Further research is recommended to analyze the association of sense of coherence with maternal-child variables such as parenting stress, child feeding practices, and child nutritional status, as there appears to be a connection between them that may be predictive of preschool-age children's BMI. This work permits to update and expand nursing knowledge by including possible etiological variables on overweight and obesity in preschool children in order to contribute to improve and, if necessary, design timely interventions to reduce the phenomenon of childhood overweight and obesity at the first level of care. For future research, anthropometric measurement of the children is recommended, since in one study it was found that the mother self-reported her own and her child's weight status; and it is also recommended to evaluate parenting stress with a specific scale

for this variable, since one study considered sleep levels, general stress, social support, and depression symptoms.

Conflict of interest

The authors state that there is no conflict of interest.

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