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The Effects of Parenting Style and Feeding Style on Child Weight

Status: A Systematic Review
(TITLE)

BY

Rahaf A Alahmadi

THESIS

SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
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CHARLESTON, ILLINOIS

2019
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I HEARBY RECOMMEND THAT THIS THESIS BE ACCEPTED AS FULFILLING
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Abstract

Childhood obesity is a global health concern. According to the World Health, prevalence of obesity decupled in the last four decades, where 124 million children and adolescents are now considered obese (“Commission on Ending Childhood Obesity”, 2019).

Organization Interactions between parenting styles and feeding styles play a critical role in the development of a child's lifestyle habits, which may impact their weight status. The purpose of this study was to identify how parenting and feeding styles impact a child's weight status. A systematic review of the literature, guided by *The Academy of Nutrition and Dietetics Evidence Analysis Manual* protocol, was conducted using three electronic databases. Inclusion criteria included: Children aged between 2-12 years, child weight status in BMI (kg/m^2), and parenting and feeding style descriptions. Nine studies were selected based on the inclusion criteria. The results showed that authoritarian, permissive, and neglectful parenting styles were linked to higher BMI in children, which may be explained by the lack of self-control that accelerates to excessive food consumption. The authoritative parenting style was linked to lower child weight status. Culture also influenced the relationship between parenting style and the child's weight. The results suggest that the use of a more authoritative style of parenting that focuses on identifying and following on a child's hunger and satiety cues may aid in moderating a child's weight status. Interventions from health professionals should involve teaching families about modeling healthy behaviors, building and reinforcing positive attitudes towards healthy eating, and exercising self-control in food consumption.

Key words: Parenting style, feeding style, child weight status, childhood

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Chapter 1

Introduction

Overview of the Topic

Childhood obesity is an ever-growing concern in the United States and other developed countries. While there has been a minimal decrease in obesity among U.S children in the past year (Ludwig, 2018), the rate of obesity among children aged 2 to 19 years old has tripled since the 1980's with a current overall steady increase in trend (Ahima & Lazar, 2013; Flegal, Ogden, Yanovski, Freedman, Shepherd, Graubard, & Borrud, 2010; Hales, Carroll, Fryar & Ogden, 2017). According to a recent study where 50% of the participants were African American, 86% (n= 20) of the subjects had high BMI and adiposity ranges that classified them as either overweight or obese (Flegal, et al., 2010). Overall, the lack of physical activity, poor dietary habits, and genetic predisposition are among the multiple causes attributed to the increased rate of obesity (Ianotti & Wang, 2013; Ogden, Carroll, Kit, & Flegal, 2014). Therefore, continual effort to lessen childhood obesity is still warranted.

Obesity can lead to a host of health problems, including an increased risk of hypertension, cardiovascular disease, and diabetes among many younger-aged children. The elevated number of children who are overweight or obese is related to the increased number of cases of hypertension during childhood (Manios, Karatzi, Protogerou, Moschonis, Tsirimiagou, Androustos, & Chrousos, 2018). Studies also show that a high BMI (greater than the 85% percentile) during childhood correlates with a similar or higher BMI in the future (Janicke, 2013; Ogden, Freedman, & Hales, 2018; Pulgaron,

2013). Children who maintain a healthy BMI during their childhood can ensure better outcomes for their health and weight status later in life.

As the nutritional gatekeepers for their households, parents play a pivotal role in their children's nutritional status with parenting style being postulated as having an impact on their child's weight status. Parenting styles (authoritarian, authoritative, permissive, and neglectful) are defined by the level of involvement and responsiveness a parent may exhibit in various interactions with their child (Braden, Rhee, Peterson, Rydell, Zucker, & Boutelle, 2014).

The parent's influence on a child's eating behavior is a key factor in the development of obesity in children (Williams, Helsel, Griffin, & Liang, 2017). Parents are a primary influencer of their children's eating habits as children are likely to model their parents' positive habits, choices, and behaviors. Therefore, professionals are highly encouraged to include parents in interventions focused on their child's weight status and positive eating behaviors (Van Ryzin & Nowicka, 2013).

Ineffective parenting styles can result in lessening children's attention to their hunger and satiety cues and instill unhealthy food choices. These negative outcomes may influence the development of obesity in the future. If the effect of parenting style on feeding practices in children can be understood, future efforts to intervene and improve children's and families' eating habits can be much more effective. Evidence of progress in this regard can be seen with mealtime coaching being used by parents to instill healthier eating habits in children, or an intervention using only parents with seemingly effective results (Best, Goldschmidt, Mockus-Valenzuela, Stein, Epstein, & Wilfley, 2016; Janicke, 2013; Shinn, Timmer, & Sandoz, 2017).

Purpose of the study

The purpose of this systematic review was to identify how different characteristics of parenting style impact children's weight status. The overarching goal of this study was to examine the relationship between different parenting and feeding styles and how they can affect child weight status.

Research Questions

How does parental style affect their children's feeding behaviors, food choices and weight status?

How does the parenting of feeding behavior affect their children's feeding behaviors and weight status?

Significance of the Study

Understanding how parenting styles impact the feeding styles can assist health professionals in the development of nutrition educational opportunities for children and families. With the rise in childhood obesity, effective interventions to help combat childhood obesity is important in the education of families about healthy eating choices. If a link is found between parenting styles and childhood BMI, then professionals could use this evidence and relevant conclusions to design educational opportunities and interventions for both parents and children.

Operational Terms and Definitions

The following definitions guided this research:

Authoritarian Parenting Style: A parenting style that is low in responsiveness to the child's needs, but high in the demandingness of the parent towards the child (Boots, Tiggeman, Corsini & Mattiske, 2015).

Authoritative Parenting Style: A parenting style that is high in both responsiveness and demandingness (Boots, et al., 2015).

Body Mass Index (BMI): a measure of body to fat ratio based on the relationship between height and weight (Ianotti & Wang, 2013).

Feeding Style: The specific practices of behaviors used by parents to directly influence their children's eating behaviors (Shloim, Edelson, Martin, & Hetherington, 2015).

Parenting Style: The act of parenting is the way parents interact with their child, particularly regarding how responsive, sensitive, and demanding parents are during their interactions with their child (Boots, et al., 2015)

Permissive Parenting Style: A parenting style that is high in responsiveness and low demandingness (Boots, et al., 2015)

Neglectful Parenting Style: A parenting style that is low in both responsiveness and demandingness. This is also referred to avoidant or uninvolved parenting. (Boots, et al., 2015)

Chapter 2

Methodology

For this review, three steps were followed for the quantitative analysis of the studies. First, a search was conducted through three databases to select relevant studies, the studies were sorted through a process of exclusion and inclusion for further analysis. The final selection of studies was used for this systematic review. The quality of the selected studies was also assessed using guidelines provided by the Academy of Nutrition and Dietetics (AND) *Evidence Analysis Library Manual* (Academy of Nutrition and Dietetics, 2012).

Study Identification and Distillation

To procure the studies for this systematic review, three databases (CINAHL, PsycInfo, and Academic Search Complete) were utilized. The search terms “parenting styles,” “parenting feeding styles,” and “child weight” were included in the search within articles to identify those that contained any of these words. Furthermore, the studies were limited to publications between January 2008 through March 2018. The list of studies was further distilled based on subject matter relevance. For distillation, exclusion and inclusion criteria were used to identify relevant studies. Inclusion criteria were: (1) publication between January 2008 to March 2018 in a peer-reviewed journal with full-text provided by the database; (2) subjects were children between the ages of 2-12 years; (3) the child’s weight was a study outcome; and (4) parenting and feeding styles were factors or variables within the study. Study exclusion criteria were: (1) publication prior to 2008; (2) subjects who were younger than 2 years of age or older than 12 years of age; (3) study outcomes did not include the child’s weight; and (4) parenting and feeding

styles were not factors or variables in the study. These criteria were selected because this study aimed to determine the relationship between parenting style and childhood obesity. The selection criteria enable the control of any other factors that may influence the data, thereby enhancing the accuracy of the data analysis. Finally, the articles were reviewed for any discrepancies or complications that might conflict with the inclusion or exclusion criteria.

Data Synthesis and Analysis

For the purposes of this review, data extracted from the selected studies were used for the overall analysis. The data included the first author's last name, year of publication, the area where the study was conducted, the duration and design of the study, whether the investigation was a review, the age of the participants, parental style, and outcomes of the study. Each study was abstracted and critically reviewed noting similarities and differences in the parenting styles and how those styles are correlated with the child's weight status.

The quality of the studies was assessed through guidelines provided by the *Academy of Nutrition and Dietetics (AND) Evidence Analysis Library Manual* (Academy of Nutrition and Dietetics, Chicago, 2012). The manual sets forth guidelines on how resources should be organized and graded for a systematic review. A systematic approach including a scoring strategy was used to determine whether the studies were relevant and valid for the review.

Relevancy.

Based on the *AND Evidence Analysis Library* protocol to be considered relevant for this study, the study content was evaluated by asking the following questions:

“(1) Would implementing the intervention or procedure (if successful) result in improved outcomes for the population covered? (2) Is the focus of the intervention or topic a common issue for the practice of dietetics? (3) Is the intervention feasible for implementation?”

If the answers to these questions were yes after the critical review of the study, then the article was considered relevant for the systematic review.

Validity.

Ten factors provided by the *AND Evidence Analysis Library Manual* (2012) were incorporated: (1) Research Question Stated (2) Selection Clear of Bias (3) Study Groups Comparable (4) Withdrawals Discussed (5) Blinding Used (6) Intervention Described (7) Outcomes Defined (8) Statistical Analysis Appropriate (9) Conclusions Supported by Results and (10) unlikely Bias. A response of “Yes” to any of these criteria would result in 1 point being added to the overall quality score (with 10 as the maximum score). These scores were also used to determine the median and average quality. To be considered valid, 6 or more “yes” responses were needed. In addition, Questions 2, 3, 6, and 7 had to be “yes”. Otherwise, the study would be considered “neutral” and “not exceptionally strong”.

Chapter 3

Results and Discussion

Description of the Studies Reviewed

After the initial search, 66 articles were found. Further refinement removed duplicate articles (n=5), studies with children younger than 2 or older than 12 years of age (n=16), studies not in the full text (n=12), did not address the weight of the child (n=4), studies that were a systematic review (n=7), and did not include parental feeding styles (n=3). From the 18 articles in the third phase, those which did not specify changes in weight status of children (n=3) and included children younger than 2 or older than 12 years of age (n=2), studies that were a systematic review (n=3) were excluded. Also, two articles were eliminated due to being duplicate studies. After the remaining articles were reviewed thoroughly by the researcher, a total of nine articles were included in the systematic review. The overall selection process is outlined in Figure 1.

The descriptive characteristics of the included studies are included in Table 1. The population of subjects tested within the studies were approximately 1,781 individuals. Of these individuals, the average age range of the children was between 5 and 9.9 years of age. Eight studies were conducted in the United States (Boutelle, Cafri & Crow 2012; Cachelin, Thompson, & Phimphasone, 2014; Cardel, Willig, Dulin-Keita, Casazza, Beasley, & Fernández, 2012; Hennessy, Hughes, Goldberg, Hyatt, & Economo, 2012; Johnson, Welk, Saint-Maurice, Ihmels, 2012; Momin, Chung, & Olson, 2013; Parks, Kazak, Kumanyika, Lewis, & Barg, 2016; Rhee, Kickstein, Jelalian, Boutelle, Seifer, & Wing, 2015) and one in Taiwan (Tung & Yeh, 2013). The common objective of these studies was to discover how parental feeding styles influenced a child's weight status.

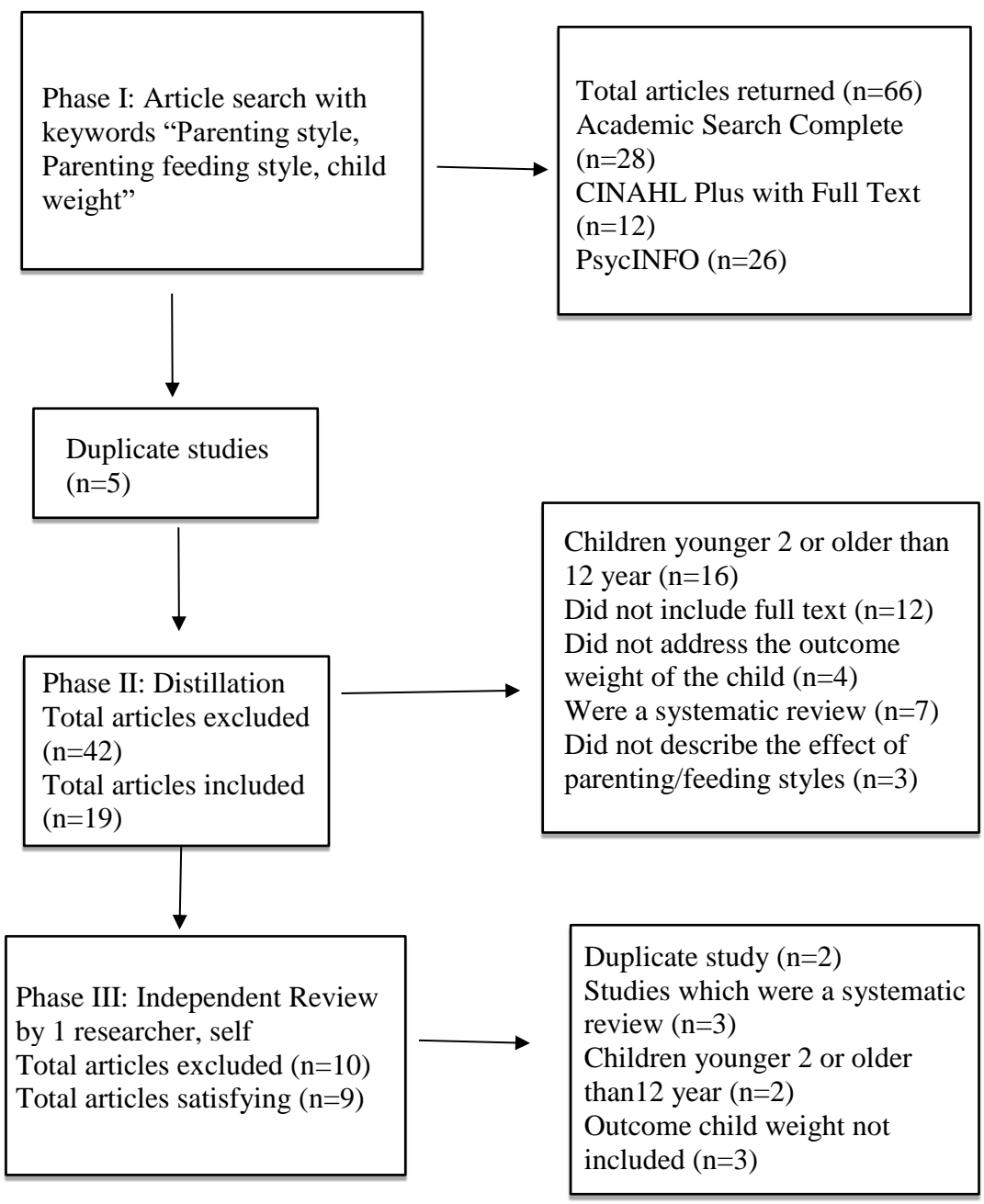


Figure 1: Article Extraction

Table 1

A Summary of Results of Systematic Analysis (n=9)

Author (Year)	Study Characteristics	Participant Characteristics	BMI	Parenting Style	Evaluation Measures ¹	Outcomes
Boutelle, Cafri & Crow (2012)	5 months Obese/overweight children given questionnaires with parents Correlational Study USA	Children ages 8-11 years old (N=80)	Average BMI = 29.37	Authoritative	Parenting Styles and Dimensions Questionnaire (PSDQ) responses BMI Data	Most effective style was authoritative as decreased BMI.
Cachelin, Thompson, & Phimphasone (2014)	1 week Randomized Control Trial Los Angeles, California	Children aged 2-11 years old (n=425) 15% AsA 51% HA 6% AA 27% EA	HA: 27.7±5.8 AsA: 22.7±3.3 AA 26.8±8.0 EA: 24.8±5.4	Authoritarian	CFQ Responses BMI	Reduced BMI in Asian (P=0.04) Higher BMI in other ethnicities (p=0.03)

Cardel, et al., (2012)	Measurements from 2005-2008 Cross-Sectional study Birmingham, Alabama	Children ages 7-12 years old (n=267)	BMI for age percentile AA: 63.0% EA: 59.7% HA: 77.2%	Restriction/ Pressure to Eat	Caregiver's Feeding Styles Questionnaire (CFQ) Responses BMI	Higher BMI linked to Restriction and Pressure to eat (p=0.0001)
Hennessy, et al., (2012)	2 weeks Child Feeding questionnaires, BMI and dietary habits were recorded Correlational Study USA	Children aged (9-12) dyads (N=99) Rural families (22% Hispanic, 29% White, 49% Black)	60% of children classified as overweight or obese	Permissive	Caregiver's Feeding Styles Questionnaire Responses Dietary information BMI	Permissive parenting style linked to increased BMI (p=0.05) Emotional feeding style led to higher BMIs compared to other styles(p<0.05) Permissive parenting style linked to increased intake of unhealthy food (p=0.05)

Johnson, et al., (2012)	<p>1 year Questionnaire and BMI screenings for students</p> <p>Diverse sample of students and families</p> <p>Observational Study</p> <p>USA</p>	<p>Children aged 7-10 years old (N=182)</p> <p>School 1: 58.8% EA 16.2% HA 8.8% AA 8.8% AsA</p> <p>School 2: 89.3% Caucasian 1.9% HA 3.9% AA 1% AsA</p>	<p>Average BMI percentile of students: 68.3% ± 28.3</p>	<p>Permissive Authoritarian Neglectful Authoritative</p>	<p>PSDQ and FNPA responses BMI</p>	<p>Authoritative environment less obesogenic. Showed lower levels of BMI compared to other parenting styles</p> <p>Authoritarian/ permissive environment led to higher BMI compared to other styles (p=0.05)</p> <p>Permissive parenting linked to higher emotional feeding and higher BMI development in children</p> <p>Neglectful parenting also linked with obesogenic environment (p=0.05)</p>
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Momin, Chung, & Olson (2013)	<p>10 months</p> <p>Sample of Asian Indian American Mothers</p> <p>Used interviews and coding of responses</p> <p>USA</p>	Children aged 5-10 (N=27)	<p>44.4% overweight BMI</p> <p>18.5% Obese BMI</p>	<p>Authoritarian Style</p> <p>Pressure to Eat</p>	Interview Responses	<p>Authoritarian styles linked to Indian culture.</p> <p>Pressure to eat was practiced preserving Indian culture.</p> <p>The population of the study exhibited higher BMI levels for parents who used the authoritarian parenting style and pressure to eat feeding style.</p>
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Parks, et al., (2016)	3 months Semi-structured interviews for parents/ grandparents in an Urban Black church USA	Children aged 3-7 years old (N=33)	36% obese 6% overweight	Permissive	Interview Responses	Permissive Parenting led to less nutritious food in times of stress. Permissive parenting linked to lower SES, leading to higher BMI's. Permissive parenting leads to negative influence on children's food choices.
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Rhee, et al., (2015)	<p>16-week Subject interactions videotaped during mealtime and coded</p> <p>General Parenting Observational Scale (GPOS) responses also used</p> <p>Conducted in Rhode Island and San Diego, California, USA</p>	Children aged 8-12 years (N=44)	Mean child BMI percentile = 98.2	Authoritarian Authoritative Neglectful	<p>Coded videotape interactions</p> <p>General Parenting Observational Scale (GPOS) Responses</p>	<p>More Authoritarian styles linked to low weight control and task accomplishment</p> <p>Authoritative style linked to higher weight control and task accomplishment</p> <p>Neglectful style with low warmth and responsiveness also linked low control and accomplishment</p> <p>Parents with lower BMI and higher education linked to a more authoritative style (p=0.05).</p>
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Tung & Yeh, (2013)	1 year Questionnaires given to student- parent pairs Observational Study Taiwan	Children aged 2-10 years old 231 boys, 234 girls (N=465)	Boys: 16.5% Obese, 18.6% overweight Girls: 12.4% obese, 11.1% overweight	Authoritarian Authoritative	(PSDQ) and (CBQ) BMI	Effectiveness of feeding control was higher in authoritative mothers compared to Authoritarian mothers, BMI decreased in families with authoritative style.
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CFQ = Child Feeding Questionnaire, (PSDQ) = Parenting Styles and Dimension Questionnaire, FNPA = Family Nutrition and Physical Activity, and GPOS = The General Parenting Observational Scale.

Relevancy and validity of studies reviewed.

The quality assessment of the studies used in this review was based on the Academy of Nutrition and Dietetics *Evidence Analysis Library Manual* (Academy of Nutrition and Dietetics, Chicago, 2012) and the results are presented in Table 2. All nine studies reviewed were deemed relevant based on the scoring in the Relevancy category of the *EAL Manual*. In terms of their overall validity, the studies were of high quality as depicted by the median score of 9 on a 10-point Validity scale. All studies scored positively for the required questions in the criteria, which rendered the final selection to be a reliable sample for the purpose of the study.

Table 2 Quality Validation

Quality Validation Rating of the Studies included within the Systematic Review

Author	Research Question Stated	Clear of selection bias	Comparable study groups	Withdrawal Protocol discussed	Blinding used	Intervention described	Outcomes defined	Appropriate statistical analysis	Results conclusions supported	Unlikely bias	Ave. Score
Boutelle, Cafri, & Crow (2012)	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes	Yes	8
Cachelin, Tomphson, & Phimphasone (2014)	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	9
Cardel, et al. (2012)	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	9
Hennessy, et al., (2012)	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	9
Johnson, et al. (2012)	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	9
Momin, Chung, & Olson (2013)	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes	Yes	8
Parks, et al. (2016)	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes	Yes	8
Rhee, et al. (2015)	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	9
Tung & Yeh (2013)	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	9

Data collection methodology variances.

Data methodology varied across different studies in terms of how each study examined the relationship between parental feeding style and the child's weight outcome. The reviewed studies included qualitative, quantitative, or a mixed methodology. Qualitative studies (Momin, et al., 2013; Parks, et al., 2016) included interviews and focus groups. The study by Rhee et. al. (2015) incorporated a mixed methodology. The majority of the studies utilized quantitative methods, including questionnaires and/or health data to determine if there was an observable link between parenting/feeding styles and the development of childhood obesity.)

Four questionnaires were utilized in the reviewed studies. A self-reporting instrument in the form of the Child Feeding Questionnaire (CFQ) contains thirty-one questions that aim to evaluate the attitudes, beliefs, and practices of parents concerning child feeding, with emphasis on the propensity towards obesity in children. There are seven factors considered in this questionnaire: (1) perceived feeding responsibility; (2) perceived child overweight; (3) perceived parent overweight; (4) child overweight concerns; (5) pressure to eat; (6) restriction; and (7) monitoring. Among these seven factors, four are associated with the propensity towards child obesity, and these are: perceived feeding responsibility, perceived parent overweight, and perceived child overweight. The remaining three factors, which are pressure to eat, restriction, and monitoring are associated with parents' attitudes and control practices in child feeding. Each of the seven factors is considered a subscale, and a mean score is calculated for

each one from the items loading on the factor. The CFQ is an empirical tool, and the most frequently employed participant self-reporting instrument in this area of research. There is high (above 0.70) internal consistencies for all the factors, as well as validity evaluated observing the relationships between the child weight status independent measures and the CFQ factors (Cachelin et. al., 2014; Cardel et. al., 2012; Tung & Yeh, 2013).

The second data collection instrument utilized was the Parenting Styles and Dimensions Questionnaire (PSDQ) which evaluates the parenting styles of preschoolers and school-age children. Adapted from the original Parenting Practices Questionnaire which contains fifty-eight items evaluated on a 1-5 Likert scale, the PSDQ assesses the three main parenting typologies – authoritative, authoritarian, and permissive – which were identified by Baumrind. First, the items are clustered based on stylistic dimensions, then are aggregated with a score for each aggregate according to the three typologies. The individual PSDQ scale has high reliability, from 0.75-0.91. Different questions gauge different dimensions, for example, parents' permissiveness is gauged by responses to the question "I ignore our child's misbehaviors", or parents' authoritarianism is gauged by responses to the question "I demand for our child to do things". The authoritative typology is characterized by the four dimensions of democratic participation, good natured/easy going, reasoning/ induction, and warmth and involvement. The authoritarian typology is characterized by the dimensions of non-reasoning/punitive strategies directiveness and verbal hostility, while the permissive typology is characterized by the three dimensions of lack of follow through, ignoring misbehavior, and self-confidence. Since the stylistic dimensions varied in the number of items, each dimension's mean score was first calculated and then the average of each of the related stylistic dimension

was computed to derive the total composite score for each parenting typology. In this way, every stylistic dimension is weighted equally as opposed to using the mean of all related items to describe the overall typology (Boutelle et. al., 2012; Johnson et al., 2012; Tung & Yeh, 2013).

A third instrument, the Family Nutrition and Physical Activity (FNPA) questionnaire which was developed by Johnson et.al. (2012) collected data about environments at homes and behaviors that promote overweight or obesity in youth. The data was subjected to comprehensive analyses to determine ten risk factors that predispose children towards becoming overweight or obesity. The ten risk factors or constructs are : (1) family eating; (2) breakfast patterns; (3) food choices; (4) beverage choices; (5) parental reward and restriction; (6) family activity; (7) child physical activity; (8) TV/video game/computer screen time; (9) TV usage; and (10) family bedtime routine. The FNPA items possess good internal reliability ($\alpha = 0.71$), and have good predictive validity based on a longitudinal studies which provided evidence that this instrument has been able to predict a child's likelihood of becoming overweight.

The final instrument utilized by the reviewed studies, the General Parenting Observational Scale, was based on a five-point global rating scale known as the Home Observation Coding System and was used to determine whether the general parenting dimensions were prevalent during meal time. Coding occurred during a family's meal time with the coder scoring the interaction between the index parent (the parent involved in the intervention) and the child based on each of the ten parenting dimensions: demands for maturity, detachment, firm discipline/ structure, negative affect, neglect,

permissiveness, physical control, psychological control, support/sensitivity, and warmth/affection (Rhee et.al., 2015).

Results and Discussion

Two research questions guided this systematic review. The results and the discussion of those results will be presented by research question after a brief overview of the different parenting styles.

Overview of parenting styles.

The first dimension in parenting styles is *authoritarian*, which consists of parental interactions that are high in involvement and low in responsiveness (Cachelin et. al., 2014; Johnson et. al., 2012; Momin et. al., 2013; Rhee et. al., 2015; Tung & Yeh, 2013). In authoritarian parenting, a parent takes steps to fully control the habits of a child by using forceful tactics, such as negative reinforcement, restrictive feeding, and pressure to eat, to ensure their child will eat a certain food at a certain time, regardless of what the child may need or want. This parenting style can be exhibited with demands such as “finish your plate” or “finish your dinner”. These types of behaviors are mainly centered upon the wants of the parent and can result in children ignoring their personal responses to hunger or fullness (Boots, et. al., 2015; Momin, Chung, & Olson, 2013; Rhee, et. al., 2015).

The *authoritative* parenting style, which is high in both involvement and responsiveness, involves the parent taking steps to control certain aspects of the child’s eating habits while also being responsive to a child’s needs and wants, such as feelings of hunger and satiety (Boutelle et. al., 2012; Johnson et. al., 2012; Rhee et. al., 2015; Tung & Yeh, 2013). In this case, a parent may still want to ensure that the child is also able to

identify expected foods and eat accordingly (Boutelle, Cafri, & Crow, 2012; Rhee, et al., 2015; Rodgers, et al., 2013). Additionally, this approach focuses on modeling healthy behaviors, rather than simply pressuring children into eating certain items. This approach has been argued to be more effective than authoritarian, permissive, or neglectful in most situations regarding parental influence on eating habits as it encourages improvements in eating behavior while still ensuring that a child's hunger and fullness responses are taken into account. It is also a much better approach as it reduces the risk of building ignorance to satiety cues from the child's body (Arlinghaus, et al., 2017; Rhee, et al., 2015; Tung & Yeh, 2013).

Contrary to the authoritative feeding style, the *permissive* parenting style is defined by high responsiveness and low involvement (Hennessy et. al., 2012; Johnson et. al., 2012; Parks et. al., 2016). This is manifested mainly with the parent listening to the needs and wants of a child, rather than exerting control over their choices. This approach often has negative consequences as it incorporates more calorically-dense foods that are poorer in nutritional value, ultimately leading to a higher weight status in children. Parents who employ permissive style are known to negatively affect perceptions of healthy food, which may reinforce poor eating choices for their children (Hennessy, et. al., 2012; Parks, et. al., 2016).

The last type of parental style is *neglectful*, which is characterized by low involvement and low responsiveness (Johnson, et al., 2012; Rhee, et al., 2015). A neglectful parent displays little to no desire to care for a child's needs or wants and does not make any effort to have any control over a child's choices. This is a highly disadvantageous approach as it does not provide any restrictions or encourage a learning

process with respect to children making their own healthy choices. This type of parenting can lead to poor diet quality and frequent snacking which can, in turn, lead to an increased risk of obesity in childhood (Johnson, et. al., 2012; Sleddens, et. al., 2011). Given the negative effects of this parental feeding style, intervention needs to be initiated swiftly to reduce the increased potential for obesity in the children.

How does parental style affect their children's feeding behaviors, food choices and weight status?

The results of these studies found that where parents had an authoritarian parenting style, their children had a higher BMI (kg/m^2). In addition, "pressure to eat" and restrictive feeding styles were also related to higher BMIs among children (Cardel et al., 2012; Momin, Chung, & Olson, 2013). The data here suggests that there is a link between childhood development of BMI and parenting style, since these studies showed how authoritarian styles are positively related to increased BMI levels in children.

According to the results, parenting styles such as authoritarian, neglectful, and permissive were shown to be linked to higher weight status in children. Parents who used these types of parenting styles were found to have children with increasing levels of BMI and weight status in much of the research that was reviewed. For example, the authoritarian style often utilizes approaches that do not take into account a child's needs and wants during the course of feeding. This tends to result in feeding strategies which are pressured or restrictive. In the studies reviewed, parents who employed the authoritarian parenting style tended to raise children with an increased BMI (Stang & Loth, 2011). Studies that examined mothers and children in the United States found that

BMI tended to increase when the authoritarian parenting style was used compared to others (Cachelin, et al., 2014).

In addition to the authoritarian parenting style, permissive parenting was also analyzed within the studies in this review. Four of the studies addressed the effect of the permissive parenting style on child weight status. Parks and colleagues (2016) used interviews to obtain parenting style information, which was then analyzed in relation to BMI information about the children. Researchers such as Tung & Yeh, Hennessy, and Johnson used questionnaires such as the PSDQ to identify the parenting styles of the subjects and then compared them with the BMI of their children. Studies that addressed the permissive parenting style showed that this style was also linked to higher BMI development in children during the duration of the studies (Hennessy, et al., 2012; Johnson, et al., 2012; Martinez, et al., 2012; Parks, et al., 2016). This also illustrates a relationship between childhood BMI and parenting style, as the permissive style was also linked with higher BMI's in the tested children.

Indulgent or permissive parenting is also linked to the development of higher BMI in children. These styles consist of greater listening to children's choices and demands for food. Since children may not have a true understanding of nutritional needs, parents utilizing this style can lead to children developing high BMIs with increased exposure to negative food choices that have been reinforced throughout their lifetime. This parenting style often uses emotional feeding, which consists of parents feeding their children as a symbol of care and love which often reinforces food as a primary stress reliever and increases unhealthy snacking in children. The permissive style also consists of low

monitoring of the eating habits of the child, leading to the development of unhealthy eating habits (Collins, Ducanson, & Burrows, 2014; Johnson, et al., 2012).

Moreover, permissive parenting styles are known to be linked to higher BMI in times of stress, since easy to prepare, unhealthy foods are preferred by children raised this way to ease their stress (Parks, et al., 2016). This often leads to unhealthy eating during the time of feeding, as well as the development of unhealthy eating habits in the future, as children may subsequently prefer food lower in nutrition during times of stress similar to the actions of their parents (Parks, et al., 2016). Further evidence shows that permissive parenting styles play a role in the development of childhood obesity, as rural populations with high levels of obesity also contained a majority of permissive parenting styles in studied families (Hennessy, et al., 2012; Lim, Govey, & Janicke, 2014).

Another parenting style addressed by the studies was the neglectful parenting style. There were two studies that investigated the neglectful parenting style and its effects on child weight status. In the research done by Johnson and colleagues (2012), questionnaires such as the PSDQ were used to gain information about parental style and compared with the BMI information of the children in the study. The second study was conducted by Rhee and colleagues (2015), which used a videotaping method alongside a General Parenting Observational Scale (GPOS) questionnaire. Interactions between family members were videotaped and coded to classify the parenting style. Both studies showed that neglectful parenting style led to the development of a lower quality diet, and subsequently to higher BMI levels in the children studied. This method of data collection also shows another example of how BMI can be associated parenting style, since the neglectful style was also positively associated with higher BMI levels.

In addition, neglectful parenting style may also lead to a decreased level of accomplishment. This can become a problem if parents or health professionals want to create goal interventions to decrease BMI and institute healthier eating habits. Families with neglectful parenting styles were seen to have children with a low level of goal accomplishment in weight management intervention and low level of control in eating habits (Johnson, et al., 2012; Rhee, et al., 2015).

The final type of parenting style was the authoritative style. This style was studied in six studies. The primary approach was through questionnaires and comparison with child BMI information through the duration of the study. This approach was used in the studies conducted by Tung & Yeh (2013), Johnson et al. (2012), and Boutelle et al. (2012). In addition to the questionnaire approach, more qualitative approaches were used by Rhee (2015) and colleagues. Rhee used a combination of the GPOS questionnaire and the coding of videotape interactions to extract parenting style information alongside BMI data. In the questionnaire-based studies, it was found that the authoritative parenting style was associated with lower child-weight status and overall healthy behavior in terms of food consumption. The study conducted by Rhee showed lower BMI levels and better self-regulation in food consumption in families that used an authoritative approach, which consisted of more warmth and responsiveness when suggesting healthier options for mealtimes (Boutelle, et al., 2012; Johnson, et al., 2012; Rhee, et al., 2015; Tung & Yeh, 2013). These studies also suggest a relationship between childhood BMI and parenting style. In this case, this is an example of a theoretically beneficial parenting style that were found to help in reducing BMI's in children.

The primary result was the high BMI in response to authoritarian, permissive, and neglectful parenting styles. The secondary result was the lower weight status in response to the authoritative response, which has a lower rate compared to the primary result. The main source of heterogeneity in this review stemmed from cultural differences that have been shown to influence BMI responses to parental styles. In addition, some heterogeneity may also arise from the different metrics used to measure parental styles, since some studies used a combination of PSDQ and CFQ results, while others used an interview, focus group, or FNPA survey to assess parental styles.

How does the parenting of feeding behavior affect their children's feeding behaviors and weight status?

Parenting styles are often characterized by feeding styles, such as emotional feeding in the case of permissive, or pressure to eat and restriction in the case of authoritarian styles (Cardel et. al., 2012; Hennessy et. al., 2012; Johnson et. al., 2012; Momin et. al., 2013; Rhee et. al., 2015; Tung & Yeh, 2013). These feeding practices have been shown to increase the risk of obesity in children, as it reinforces unhealthy eating habits and decreases children's attention to hunger and satiety cues (Momin et. al., 2013; Rhee et. al., 2015). For example, pressure to eat is one specific feeding style that is utilized in authoritarian parenting styles, which tends to force children to eat even when cues of hunger or satiety are present.

Restricting access to highly desirable food leads children to eat more restricted food when not supervised by their parents (Hennessy, et al., 2012; Sleddens, et al., 2011). This type of feeding reinforces unhealthy behaviors and decreases children's attention to cues of hunger or satiety, which leads to more unhealthy eating practices. This was seen

to be evident with studies showing pressure to eat practices linked with higher BMIs in children (Cardel, et al., 2012; Momin, et al., 2013; Tung & Yeh, 2013).

On the other end of the spectrum, emotional feeding is often found within familial dyads utilizing the permissive parenting style (Hennessy et. al., 2012). In the emotional feeding style, a parent may provide food as a symbol of care or love, and often leads to more usage of food as a stress reliever (Cachelin et. al., 2014). This type of feeding style has shown to also significantly increase food intake, and in turn higher levels of BMI in children who take part in this feeding style (Hennessy et. al., 2012; Johnson et. al., 2012).

A balance between permissive, neglectful, and authoritarian has been shown to be effective in controlling children's BMI and reinforcing positive eating habits (Johnson, et al., 2012). This is known as the authoritative strategy, which gives parents the chance to control feeding, but also creates opportunities to communicate and teach about healthy habits. Authoritative parenting also allows children to focus more on hunger and satiety cues, which promotes increased self-control of eating (Rhee et. al., 2015). Also, they encourage a child to eat an appropriate portion size, model healthy behaviors to their child, which further decreases BMI (Boutelle, et al., 2012; Rhee, et al., 2015; Shloim, et al., 2015). Overall, the authoritative style has been demonstrated to be an effective approach as studies have shown that caregivers who practiced authoritative styles had children with lower BMIs because they reinforced healthy eating habits (Tung & Yeh, 2013).

Chapter 4

Conclusions and Implications

In conclusion, this systematic review highlighted the effects of different parenting styles on the development of childhood obesity. Research examined in the review showed a link between authoritarian or permissive parenting styles and heightened risk for childhood obesity (Cachelin et. al., 2014; Johnson et. al., 2012; Momin et. al., 2013; Parks et. al., 2016; Rhee et. al., 2015; Tung & Yeh, 2013). The authoritative parenting style was demonstrated to be an effective approach as results of the highlighted studies showed that children of caregivers who practiced the authoritative style were linked with lower BMIs perhaps due to reinforced healthy eating habits for them (Boutelle et. al., 2012; Johnson et. al., 2012; Rhee et. al., 2015; Tung & Yeh, 2013).

The role of feeding style in influencing child weight status was also covered in this review. The data collected shows that feeding styles, such as pressure to eat and emotional feeding, are often associated with authoritarian and permissive parenting (Cardel et. al., 2012; Hennessy et. al., 2012; Johnson et. al., 2012; Momin et. al, 2013; Rhee et. al., 2015; Tung & Yeh, 2013). These feeding styles are found to have a significant effect on child weight status, as seen with the increase of BMI in children who took part in such feeding styles (Cachelin et. al., 2014; Johnson et. al., 2012; Momin et. al., 2013; Parks et. al., 2016; Rhee et. al., 2015; Tung & Yeh, 2013).

Limitations and Strengths

Three limitations of the results were noted. The main limitation of the studies that have been reviewed is that the parent has been the sole indicator of childhood eating habits. As with any human relationship, actions and reactions are two-sided; therefore, a

better understanding of childhood obesity and parenting styles can be reached if communication between parent and child is also from the child's point of view (Hennessy et. al., 2012). Therefore, studies need to be conducted from the child's perspective as well.

A secondary limitation is that this study did not include any research that might have examined variations in parenting style between mother and father. An important path for future research will be to examine the relationship between different parenting styles of mother and father and how this can affect the child's weight and behavior.

A final limitation of the review is that the socioeconomic status and the parent's education level were not addressed which could have enhanced our understanding of any influence these two factors might have on different parenting styles and feeding styles in addition to culture. Thus, future research needs to examine the effect of socioeconomic status on parenting style.

The strength of the studies that have been done is the quality of their data. The overall quality of the studies as determined by the AND chosen for the review is high. Biases in the design of the studies were addressed and therefore the results are unlikely to be skewed. These studies have also reported similar results to support the links between authoritarian, neglectful, and permissive parenting styles and child weight outcomes. Still, more studies can continue to be done to generate more supporting evidence to further strengthen the evidence of association between parenting feeding styles and childhood BMI.

Implications

Health professionals can use the results of this studies to formulate more concrete plans for interventions and educating clients. They should also focus on developing more authoritative interactions between parents and children, so that the risk of high BMI development can be lowered. Usage of the authoritative style can be reinforced in during family mealtimes where there can be a shared space for eating. This can enable parents and children to have more open dialogues about food. Health professionals are encouraged to work with families to create more opportunities to develop healthful eating habits and allow parents to model healthy behaviors for their children.

As the researcher was evaluating the studies, an emergent theme of “culture” appeared. These cultural aspects included ethnicity, beliefs about food, attitudes and practices, and body images. In many studies, culture was shown to play a role in how parenting styles might affect weight outcomes for children. For example, parents in the Latino culture equate eating with being “big and strong”, causing them to focus more on feeding their children and sometimes using pressure to make them eat, which may lead to children losing their sense for hunger and satiety cues (Braden, et al., 2014). This is seen in the permissive parenting style, which exhibits a correlation with the emotional feeding style. In these feeding styles, parents might equate feeding as a symbol of love or care, leading to higher rates of feeding (Hennessy, et al., 2012; Johnson, et al., 2012).

Similar phenomena have also been seen in Asian Indian cultures where eating is seen as a way to honor religion and culture. Parents have also used pressure to eat in most scenarios, leading to higher BMI’s in their children (Momin, et al., 2013). Additionally, Asian parents may also view controlled feeding as a gesture of love and care, leading to a

higher incidence of authoritarian practices which are, in turn, linked with the development of higher BMI's in children (Cachelin, et al., 2014).

This element of culture may affect the outcomes on child weight status in response to parenting styles. Overall, parents and children can benefit by focusing on modeling healthy behaviors and allowing for attention to hunger and satiety cues which may decrease the risk of overeating and the resultant higher BMIs in children. While there is some research evidence that cultural values may have an influence on how parenting affects child weight status, there is insufficient data to support the influence of the cultural factor. Thus, further research on a global scale with different cultures should be carried out to help paint a more inclusive and nuanced picture of parenting and its effect on the development of childhood obesity.

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