Understanding the connection between parental self-efficacy and child nutrition, activity, and weight

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Abstract

**Objective:** Concern over childhood obesity has driven research to focus on prevention and intervention strategies to curb the epidemic. Parental factors like efficacy have gained attention as this concept is grounded in behavioral change research. Studies have linked self-efficacy to improved child health behaviors like eating a more nutritious diet and engaging increased physical activity. This leads to a need to examine parental efficacy literature to examine its relationship to childhood obesity.

**Methods:** Six databases including the Psychology and Behavioral Sciences Collection, CINAHL, PubMed, Psychinfo, EBSCOhost, and Onesearch were searched for original research studies examining parental self-efficacy and child health measures like diet, activity, or weight.

**Results:** Only 16 articles were found that met criteria. This limited research did showcase that higher parental self-efficacy levels are linked to positive effects, especially regarding improved child diet. There is also evidence of an inverse relationship between higher self-efficacy and lower child weights and higher self-efficacy and improved child activity levels, though this was not uniformly found. This review also showcased significant variance in how self-efficacy is measured and how it is used within studies.

**Conclusion:** Connections between parental self-efficacy and child healthy behaviors has been established in multiple studies. However, this remains an under-examined area that needs further study to understand how it can be used to improve interventions.

**Keywords:** childhood obesity, overweight, parenting, self-efficacy, prevention, child health, BMI, preschool
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Introduction

Childhood obesity can have lasting, widespread and unnecessary health and social consequences that require focus on prevention and intervention during preschool ages (1). However, for this young population, initiating healthy lifestyles, regulating diet, and promoting physical activity relies on parental influence (2, 3, 4, 5, 6, 7). Because of the parental role in regulating and modeling healthy behaviors that influence child weight, parents must feel capable to effect change and influence the child (8).

This idea of being capable of effecting change has been linked to the concept of self-efficacy, which developed from Albert Bandura’s social cognitive theory in the 1970s (9, 8). Successful intervention strategies for obesity treatment have relied on the social cognitive theory, which has self-efficacy as a central tenet (10).

The efficacy concept has evolved through social science and health research, though its examination has been limited and confused with other concepts like parental competence, parental self-esteem, and self-confidence (8). Both literature reviews examining self-efficacy research through 2008 identified a general lack of research relating parental efficacy to obesity and a need to further examine this topic, especially as understanding it fully could allow healthcare professionals like nurses to focus attention on resolving identified issues that lower parental efficacy (4, 8).

Limited analysis of the concept was highlighted as a gap in both studies, especially as what research has been done has hinted to a positive (though limited) link between self-efficacy and well-being for individuals and families (4,8). While the 2014 review found six articles specifically discussing self-efficacy (4), the 2004 review identified 30 articles each in nursing and psychology that examined parental self-efficacy from 1980 onward (8). However, only 27 of the 60 were noted to have measured efficacy as outlined by Bandura, and those articles mainly focused on mediators of efficacy and not on how efficacy affects health issues like obesity (8).

Successful strategies may depend on how much efficacy the parent has in their abilities to influence and help their children. Efficacy has been described as an influential motivator that enhances or impedes motivation for behavior change, and that is related to one’s confidence to successfully perform required tasks (9). It also relates to an ability to transfer knowledge successfully into action (11). Using Bandura’s model, perceived parental efficacy is the “beliefs or judgments a parent holds of their capabilities to organize and execute a set of tasks related to parenting a child” (8, pg. 394).

This review sought to understand how parental self-efficacy has been described in the literature, what scales have been used to measure it, and if it is linked to improvements in child weight or health outcomes.

Methods
Original research articles examining parental self-efficacy and comparing it to either weight or improvement in lifestyle factors were included in this review. Six databases including Psychology and Behavioral Sciences Collection, CINAHL, PubMed, Psychinfo, EBSCOhost, and Onesearch were examined. Onesearch is a database that allows comprehensive searching of the entire library catalog and provides results ranked in terms of relevance. As an earlier review was found on this topic, this search focused only on articles published after 2008 (4).

Search strategy

The search was conducted between March 2018 and May 2018. Search terms included variations of these word combinations: “parent” and “self-efficacy” versus “parental self-efficacy” and “parental efficacy” or “efficacy,” “child weight” versus “child BMI” and “child health.” Another search string included “self-efficacy,” “parenting,” and “childhood obesity.” Titles and abstracts were searched to first assess if the study met inclusion and exclusion criteria. The study selection process is detailed in Figure 1.

Inclusion criteria

For inclusion, parental self-efficacy had to be an outcome measure linked to either healthy lifestyles, such as activity or nutrition improvement, or to weight in children. Only studies completed from 2008 to 2018 were included to focus on new research. This criterion was established partly due a previous literature review that found self-efficacy had been addressed in six studies, though they had all been done prior to 2008 (4).

Exclusion criteria

Exclusion criteria included: any study not available in English or full text, studies not published in peer-reviewed journals, review articles or studies validating scales (unless this included comparison to weight or health parameters), and duplicate articles were excluded. During the full-text analysis, the majority of studies were excluded because they involved scale development, were not original research, or did not provide enough information on self-efficacy results.

Results

This current analysis encompasses 16 new studies conducted from 2008 onward, which is when the last review was written. Of the studies in this current review, the majority were conducted in the United States and Australia with four each. Other studies were conducted in Sweden, the Netherlands, Turkey, Iran, and England. Most studies (n=12) used a cross-sectional design while only 1 did a longitudinal study and three did randomized control trials.

In all but one study (22), there was an official measurement of self-efficacy that was scored and used for comparison. The study with no official scale incorporated self-efficacy in the intervention and compared that group to a control, which is why it was still included in the review.
Table 1 shows how self-efficacy has been measured in a chronological timeline since 2008. The 16 articles that ultimately met inclusion criteria are listed and the concepts included in evaluating self-efficacy are described.

**How is self-efficacy conceptualized?**

While many examinations of self-efficacy are linked to the social cognitive theories of Bandura and describe parental capability to be confident in acting successfully, the tool used to measure efficacy varied considerably in this review. In fact, no scale has been used consistently to evaluate parental self-efficacy and its effect on child health behaviors or weight.

Prior to 2008, the Parenting Sense of Competence Scale (PSOC) that focuses on evaluating satisfaction, efficacy, and parental competence on a Likert-scale was used (4). However, only one of the 16 studies in this review used that scale. Instead, four studies used a general parenting tool, one used both a general and a focused self-efficacy measure, and 11 used various focused measures dealing with a range of items including self-worth, diet and physical activity, and even limit-setting ability. How each study evaluated self-efficacy is shown in Figure 2 using a chronological ordering.

Of note is the evolution of self-efficacy measurement. Campbell et al. (2010) was one of the first to work on how parental self-efficacy can specifically affect dietary and sedentary behaviors, which has been deemed important to the obesity challenge (11). As earlier work had involved a more general focused tool, Campbell et al. (2010) utilized a self-created and focused measure that evaluated maternal confidence to influence and control their child’s eating and sedentary behaviors on a five-point Likert scale. The scale specifically rated promoting healthy eating, limiting non-core foods, and promoting physical activity.

Starting in 2013, other researchers began work developing specific self-efficacy scales that were designed to target efficacy for behaviors that can help or hinder obesity in children. These scales include the Parental Self-Efficacy Questionnaire (12) and Parental Self-Efficacy for Healthy Dietary and Physical Activity Behavior in Preschoolers Scale (10, 12). While the former has two subscales gauging confidence of parents to have children ages 6 to 12 do specific items like eat vegetables, choose healthy foods at school, and play outdoors the latter examines parent’s self-efficacy to promote healthy dietary behaviors, perform limit setting of unhealthy diet and activity, and encourage healthy physical activity. Each of these scales were used in at least one of the 16 studies.

Other studies did not include multi-item scales to evaluate efficacy. One study (14) asked a single question about parental confidence to support activity while another (15) asked a single question about global parenting and four questions relating to infant parental self-efficacy. One study also took an efficacy scale meant to measure something else and substituted specific obesity items relating to nutrition and activity into the scale (16).

The specific scales used in each of the 16 studies are shown in Table 3. This review highlights that parental self-efficacy has been measured using both general and focused scales and even by just a single or a small number of questions.
How is self-efficacy linked to diet and exercise?

The link between healthful behaviors, such as adequate fruit and vegetable intake and physical activity in children, and parental self-efficacy has been established by multiple studies (11, 16, 14, 17, 18, 19, 15). For example, Ice at al. (2014) found that parental self-efficacy was significantly correlated to child fruit and vegetable intake and physical activity (16). That study also identified that both self-efficacy and parental role were significant predictors of a child’s physical activity.

These results were most recently confirmed by Parekh et al. (2018) that used baseline data from the MINISTOP trial in healthy Swedish children (17). The results showed higher efficacy scores had a significant, positive correlation to increased fruit intake and a significant negative correlation to unhealthy snack consumption. Similarly, Campbell et al. (2010) linked maternal self-efficacy to the ability to promote healthy eating (11). Their population found higher self-efficacy was linked to 1-year-old children’s vegetable consumption and to 5-year-old children’s water, fruit, and vegetable consumption.

While the above results showcase a link between parental self-efficacy and improved child diet, the effect on physical activity is not as clear. Three studies (14, 19, 22) found significant connection between some component of activity and parental efficacy while one (17) did not.

The motivational intervention relating to efficacy found no significant effects for physical activity between the control and intervention groups (22). However, there was an effect on the time spent being sedentary in the intervention versus the control group with 9.2 minute less and 11.3 minute less respectively (22). Another study found a significant relationship between children playing outdoors more than two hours a day and increased parental efficacy (15). In fact, this study showed children of parents with higher efficacy were 1.54 times more likely play outdoors for more than two hours a day.

Loprinzi et al. (2013) examined self-efficacy in a slightly different context and found significant results (14). This study wanted to understand how parents influenced activity behaviors in preschool children. Their results showed parents who found activity to be important were more confident in supporting physical activity, had good activity experiences as a child, and perceived child’s ability for activity more highly. They also showed this linked to employing more activity-facilitating parenting practices and behaviors.

However, not all studies found a connection between parental efficacy and activity (17).

How is self-efficacy linked to weight?

There is a lack of studies that address child body composition or BMI and its relationship to parental self-efficacy. The results of these few studies have mixed results. While two studies identified that lower self-efficacy scores were negatively correlated to higher body mass index in children (16, 20), another found no association between weight measures and parental efficacy (17).
Both Ekim (2016) and Ice et al. (2014) used researcher-assessed weights and heights while Parekh et al. (2018) measured body composition by an air-displacement plethysmography. Using a different means to evaluate weight and body composition is a potential reason for the variance of results. Further, the effect sizes observed were small in Parekh et al. (2018) and may not be large enough to capture differences between parental self-efficacy and child BMI. These studies all also used different measures to evaluate self-efficacy, which is another factor that can contribute to varied results.

Other studies evaluating self-efficacy used generic scales and/or had a broader focus for the study that did not involve direct comparison of efficacy and child measures.

For example, Gibson et al. (2016) used the Rosenberg Self-Esteem Scale that has parents rate their agreement with 10 statements regarding self-worth and acceptance (21). The results did not predict child BMI, and the Rosenberg scores were very close between the three evaluated weight groups. Parents of children in the community healthy weight group scored 17.91 while the parents of the community overweight/obese group scored 18.04 and the clinical overweight/obese group scored 18.82. The only significant predictors found for child BMI were maternal BMI and single-parent status, which were both significant findings.

Differences between Gibson et al. (2016) and previous three studies discussed related to weight involves the scale used, which follows general self-efficacy measures and is not specific to parenting or promoting healthy lifestyles. Their primary purpose was also to compare longitudinal data involving 286 participants over a 2-year period to determine what family factors affect development of weight issues in children aged 6 to 13 with a mean age of 9.43. This age is older than the other studies, and Ice et al. (2014) previously noted that parental efficacy decreases as children age. Gibson et al. (2016) also only compared efficacy to child weight (by BMI) and no other measures.

The last study that examined weight incorporated self-efficacy into an intervention, but did not have a standardized measure to evaluate levels (22). Using an efficacy-oriented intervention, they found positive changes to eating, activity, and weight. Specifically, they found children categorized as obese in the intervention group had significantly lower BMI than obese children in the control group after intervention.

In all, only 6 of the 16 studies measured parental efficacy and weight/BMI in some way as shown in Table II. Demographic information, including weight, and associations to efficacy are outlines in this table.

**Parental efficacy’s connection to other findings**

Six studies examined the effect of self-efficacy in other ways, including one that was previously discussed (19). Two of these studies (15,11) found a relationship between efficacy and television viewing in children. Increased global parental efficacy was related to children watching less than 1 hour of television daily in children (15) while higher parental efficacy for promoting physical activity was found to lower television viewing time in 1- and 5-year-old children (11).
Other uses of parental efficacy were to examine how it mediated participation in a health program (26), though no relationship was found, and to determine a relationship with food security issues (25). Salarkia et al. (2016) showed that household food insecurity is associated with reduced mother’s self-efficacy, reduced control of home and food access, an increase of the use of the pressure style for child feeding (25).

Two other studies tracked changes in efficacy within a health-related intervention. While one focused on how parent and child changes in efficacy changed throughout a study period and found no significant changes (25), another tracked how parents of children 2 to 12 evolved over the intervention period (23). The latter found the eight measured components of efficacy all had small to moderate effect size changes and connected this to significant improvements in child emotional health and well-being that maintained to the four-month follow up.

Discussion

Critical analysis and synthesis of these individual studies updates the literature and identifies associations of parental efficacy on children’s diet, physical activity, screen time habits, and weight. This review confirms that parental self-efficacy has been linked to the ability to limit television viewing and limit non-core foods/unhealthy foods/snacks (11, 17), and fruit and vegetable intake (11, 16, 17). This indicates there is a well-established connection between higher levels of parental self-efficacy and healthier diets in children. However, other areas such as parental efficacy and its relationship to child weight and physical activity has varied and limited results. This limitation is also observed with how research has related to specific age groups.

A significant finding of this review is the strength of associations in preschool-age children specifically. One study examining children in four different grades from kindergarten to eighth grade confirmed that as children aged, parental efficacy decreased significantly (16). This result was illustrated again in a study looking at 1-year-old children versus 5-year-old children with the finding that all parental efficacy levels dropped between these two ages and the ability to limit non-core foods and limit television viewing had significant changes (11). Of the studies looking at children under six, the three that used a 5-point Likert scale had parental efficacy scores hovering around 4.3 to 4.6 mostly (11, 16, 14) while the only one using a 5-point scale examining children around age 9 had scores of 3 and 3.5 (26).

The idea that intervention may be best focused in preschoolers is discussed in other literature as well. This time-period has been associated with establishment of basic habits that establish patterns for physical activity and nutrition that continue into adulthood (1, 27, 33). In the preschool age, children also are more reliant on parents (33, 34).

Despite this confirmation of the importance of young children, the difficulty of this review is also highlighted by these findings as well. As so many different scales are used with varying focus and measurements, it is difficult to compare findings among studies. The variation in results could be due to the instrument used and not actual difference in efficacy. This problem is exacerbated by the limited research on this topic.
Further, the way parental-efficacy is used within studies is also highly variant. Efficacy has been used as an independent measure and its change tracked (23, 31), to determine associations between efficacy and a child measurement (11, 15, 16, 17, 20, 21, 25, 29, 30, 32), as part of an intervention (22, 31), and in analysis as a mediating factor (24, 26). The child measurement features have been vast including television, diet, exercise, weight, and emotional well-being. Within those uses, there is difference in what self-efficacy has been compared to.

The topic of how parental efficacy can influence child behaviors, diet, and weight appears to be underexplored and inconsistently explored. This lack of findings related to parental self-efficacy and its impact on eating and activity in children has been noted in the articles reviewed. Ekim (2016) noted the need for further theoretical and systematic knowledge that could be used to guide practices (20). This is especially important considering that what research is available describes the positive effects of high parental self-efficacy on child nutrition, activity, and weight.

If self-efficacy is a measure that can affect child weight and habit formation, results from this review indicate it is important to focus on the preschool age and use a tool that targets efficacy to effect obesity-related behaviors like diet and exercise. Among these studies, key findings confirm interventions were best suited to early life as higher maternal self-efficacy is associated with increased obesity protective eating and sedentary behaviors at both 1 and 5 years old (11).

To affect childhood obesity, the child cannot be considered in isolation. A child’s ability to eat healthfully, engage in physical activity, develop positive habits, and engage in interventions is tied to their parents and guardians (20, 27, 28). While the measurement tools have differed, parental self-efficacy has been described as a measure of how well parents feel they can influence healthy behaviors in their children. This concept of how self-efficacy can affect current child health and success of intervention and prevention studies needs further exploration.

However, with the results of these most current studies, there appears to be a connection between parental self-efficacy and promoting healthy behaviors and decreasing weight. With this in mind, nursing and other health disciplines need to use targeted strategies that increase parental efficacy in effecting change in their children.

Limitations

The low number of articles addressing self-efficacy is a limitation, though the number reflects the state of the science. Work exploring parental efficacy and its relation to promoting healthy child behaviors, including appropriate nutrition and physical activity, is limited. The science looking at how self-efficacy and child weight are related has even fewer studies that examine it. So while the low number limits generalizability, they provide insight into this issue.

Conclusions
Parental self-efficacy and its relationship to the ability to promote healthy behaviors has been confirmed by most of the reviewed studies. The relationship of self-efficacy to child present weight or weight changes has not been explored enough to make any meaningful connections.

**Conflict of Interest Statement**

The authors have no conflicts of interest to report.
References


