Childhood Overweight: Parental Perceptions and Readiness for Change

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ABSTRACT: Although the national health crisis of childhood obesity is a well-documented problem, few if any clinical interventions have had success in curbing its growth. In fact, childhood obesity, along with its associated morbidities, continues to climb even in the face of increased awareness. Research shows that factors contributing to obesity are almost entirely modifiable on some level. Furthermore, specific behavior changes have been shown to result in positive outcomes, yet these changes have not been widely implemented by practitioners, families, or individuals. The transtheoretical model of health behavior change offers insight into assessing individuals and targeting interventions for behavior change. This article focuses on guiding school nurses to assess parents of school-age children at risk for obesity for readiness for health behavior change, then choosing parent-focused interventions based on their stage of readiness for change.

KEY WORDS: behavioral change, childhood overweight, health behavior, obesity, parental perceptions, transtheoretical model

INTRODUCTION

The epidemic of obesity is of such concern that *Healthy People 2010* (U.S. Department of Health and Human Services [USDHHS], 2000) has deemed obesity and overweight collectively as one of the 10 leading health indicators that measure the success of the United States in "increasing quality years of life and eliminating health disparities" among Americans. Adult overweight and obesity has long been known to result in a myriad of health problems such as coronary artery disease, type 2 diabetes, and sleep apnea, but these conditions are no longer exclusive to adults. In addition, childhood overweight is predictive of a lifetime of overweight and obesity, with the aforementioned health problems often being the result, possibly even during childhood. These conditions are, however, largely responsive to lifestyle modifications. It is clear that interventions must begin early and must focus on prevention to achieve the goal of increasing quality years of life.

The literature points toward parents as key in addressing the problem of childhood overweight. Research also indicates that many parents of overweight children are either unaware that their children are overweight or do not consider it a threat to their children's health. As an early and frequent point of contact between the child and the health care system, school nurses are in a unique position to work with parents to improve children's health in this area. The transtheoretical model (TTM) of health behavior change is a framework that school nurses can use to assess parental readiness for change. The purpose of this article is to increase school nurses' awareness of the critical role of parents in conquering the epidemic of obesity and to give school nurses a workable framework with which to assist parents in implementing interventions to help them move through the stages of change.

BACKGROUND

The concepts of obesity and overweight can be confusing, especially as they relate to children. According to the National Center for Health Statistics (NCHS), overweight in childhood is defined as having a body

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This article is based on a project required for the family nurse practitioner program at Pacific Lutheran University, Tacoma, WA.

mass index (BMI) at or above the 95th percentile, based on the current growth chart designated for each gender. Likewise, the definition of risk for overweight has been set at the 85th percentile (NCHS, 2005). It is important to note that this definition uses the official NCHS BMI updated in 2000, because it is more representative of the current population than are the weight-for-height charts created in 1977 (Roberts & Dallal, 2001). *Obesity* is a term commonly cited in the literature, and although it is defined for adults based on BMI, obesity in children is not defined by the NCHS. Some have attempted to create a standard for obesity in children using a proposed cutoff at the 85th percentile on the BMI charts for overweight and the 95th percentile for obesity. However, neither method has established predictability of morbidity among children based on a percentile ranking alone (Cole, Bellizzi, Flegal, & Deitz, 2000). Instead, *Healthy People 2010* (USDHHS, 2000) recommends the use of BMI, sexual maturity, body fat, and body weight to be included for a full determination of obesity. The NCHS's use of BMI does not attempt to *define* obesity, but seeks to screen for obesity so more specific measures to predict morbidity can be used.

Ogden, Flegal, Carroll, and Johnson (2002) present statistics that indicate the increasing magnitude of the problem of childhood overweight in the United States. In 1963–1965, the percentage of children considered overweight was 4% and remained rather steady until 1980, when a jump to *7%* occurred. Statistics from the 1999–2002 report show that 16% of school-age children (ages 6–11) in the United States are overweight, a fourfold increase since 1963. Similar statistics exist for ages 12–19, suggesting that overweight is not a problem that school-age children outgrow by adolescence.

Health Consequences

Dietz (1998) summarizes some of the adverse health outcomes associated with overweight. Early maturation is a well-documented consequence, as well as a predictor of overweight. According to Dietz, this can lead to a higher expectation of a child's intellectual and social maturity, potentially leading to the child's sense of failure, unwillingness to try, and social isolation. Negative physiologic outcomes of overweight include glucose intolerance, hepatic steatosis, and cholelithiasis. Less common, but more serious, health outcomes include hypertension, sleep apnea, orthopedic complications, and polycystic ovary syndrome. Although the latter consequences are more common among adults, they all have been identified in children and at an increasing rate. Additionally, Dietz points out that childhood overweight is associated with adult overweight and obesity, making these complications both short- and long-term possibilities for overweight children now and in the future as adults.

Contributing Factors

Hardy, Harrell, and Bell (2004) identified a number of factors that contribute to the problem of overweight in childhood. These include a low level of physical activity, excessive hours watching television and using computers recreationally, frequent consumption of fast foods, inadequate consumption of fruits and vegetables, a preference for fatty foods, environmental factors such as types of foods available and eating patterns of the family, and socioeconomic status. Golan and Crow (2004) consolidate these factors into two categories of sociologic "obesogenic factors" (p. 39). The first set of factors are those that *encourage* the consumption of excess energy with the second set being those that *discourage* energy expenditure. Not mentioned in either list of contributing factors is the role that genetics may play in childhood overweight. With the exception of genetics, all of the contributing factors reviewed in this article are modifiable.

Prior to 1999, there was evidence of a weak association between television viewing and childhood adiposity (Anderson, Crespo, Bartlett, Cheskin, & Pratt, 1998). Then in a randomized controlled trial conducted by Robinson (1999), strong evidence for a relationship between these two variables was shown in children in grades 3 and 4. Researchers determined BMI, triceps skin fold, waist circumference, hip circumference, and waist-to-hip ratios before and after a "turn off the television" curriculum was administered to children in one school. The same measures were determined at the same time among school children at a second school with matched demographics not participating in the curriculum. Significantly lower adiposity in the experimental group versus the control group was demonstrated among these children in southern California.

Diets high in total fats and saturated fats have long been considered unhealthy, but the role of dietary fructose on weight gain and morbidity has more recently come under scrutiny. Research indicates that children who regularly consume soft drinks had a higher level of total energy consumption compared with children who do not. Further, the same children who regularly drink soda have an increased likelihood of overweight and obesity. The liver metabolizes fructose differently than other sugars, such as sucrose. Consumption of fructose can result in higher postprandial blood sugar and triglycerides. Excess consumption of fructose also favors insulin resistance (Havel, 2005).

REVIEW OF LITERATURE

Parental Influence

The literature points to parents as both the "gatekeeper of the family food supply" and the child's first role model of a healthy lifestyle. Parents typically maintain these roles in their children's lives well into

adolescence (O'Dea, 2003). There is ample research to support the practice of a family mealtime. A study of school children in rural West Virginia found that the frequency of meals prepared away from home, particularly breakfast and late-night snacks, were predictive of high intake of total energy and saturated fats. This factor was more significant than who the child lived with, the child's gender, the number or people in the home, or the child's nutrition knowledge score (Gonzales, Marshall, Heimendinger, Crane, & Neal, 2002). Stender, Burghen, and Mallare (2005) characterized the family meal as important from both a nutritional and an emotional standpoint. This institution has been shown to prevent disordered eating at both the underconsumption and overconsumption ends of the spectrum. The family meal also offers time structure, allowing children to anticipate mealtime and therefore make better intake choices. Creating a routine for other health behaviors, such as sleep and exercise, is also key. Children who do not sleep well are at risk for low serotonin levels and insulin resistance, which can result in depression and weight gain. Planning physical activity together is important for families to prevent excessive television viewing and other sedentary activities.

Hardy, Harrell, and Bell (2004) and Golan and Crow (2004) agreed that parents set the stage for either healthy or unhealthy factors contributing to the child's weight. Interventions directed exclusively toward parents, rather than children, meet with the greatest success. They proposed that interventions should be based on positive actions and role modeling by parents. Because the use of food controlling behaviors has been shown to increase eating disorders, parents should be encouraged to provide a wide variety of healthy choices for their children and to allow considerable latitude in making decisions about food choices and quantity (Golan & Crow). Giskes, Patterson, Turrell, and Newman (2005) supported the idea of initiating a more positive attitude about a healthful lifestyle, including good nutrition and activity. This study revealed that adolescents in Brisbane, Australia, equated negative concepts with a healthful lifestyle. These adolescents often were able to identify what food to avoid, but rarely phrased nutrition in terms of what behaviors could promote health, energy, and vitality. The American Academy of Pediatrics (2003) supports the use of a positive concept of health and recommends interventions for parents, health care providers, and public entities. Among these interventions are promoting physical activity, including unstructured play, limiting television and video time to 2 hours a day, and discussing healthy habits rather than body build in order to control overweight and obesity.

Parental Perception

Although parental beliefs and attitudes are key aspects in addressing the problem of childhood overweight, the literature suggests that many parents are unaware of overweight or its potential consequences in their children. Baughcum, Chamberlain, Deeks, Powers, and Whitaker (2000) examined maternal perceptions of overweight children. This study sample included 662 pairs of children and their mothers of varying socioeconomic status, education levels, race, and geographic locations in the United States. Children were included in the study regardless of BMI. In addition to analyzing the mother's perceptions of their children's weight status, the mothers were asked to identify their own weight status as normal, overweight, or obese. Ninety-five percent of the mothers who were obese correctly identified themselves as such, but only 21% of mothers of overweight children correctly identified their children as overweight. Mothers with a low education (high school or less) were three times as likely as those with some college education to misidentify their child's overweight status. Few of the mothers who failed to describe their child as overweight believed that their child's health may be affected in the future by his or her weight. Even so, only two thirds of the mothers who correctly identified their children as overweight considered it to be a health concern. Although the researchers found a correlation between the mother's level of education and her ability to identify correctly her child's overweight status, they found no correlation among other factors, including the child's sex, mother's race, maternal age, maternal obesity, maternal smoking, household income level, and the mother's ability to identify overweight in her child.

In a qualitative study of 18 mothers of overweight preschool children participating in the Women, Infants, and Children (WIC) program, only 11% of the mothers correctly identified their overweight children as such (Jain, Sherman, Chamberlain, Carter, Powers, & Whitaker, 2001). Additionally, parents had a different set of criteria for determining overweight. The mothers in this study demonstrated a distrust of growth charts as an accurate way of defining overweight. Furthermore, they identified three ways of demonstrating whether their child had a weight problem: (a) when the child grew out of his or her clothing too quickly, (b) the child was teased at school, or (c) the child was experiencing physical limitations to his or her activity. These mothers believed their child's weight to be a function of heredity and tended to describe their children as "thick, solid, strong or big-boned" (p. 1140). This study gives some insight as to issues surrounding childhood overweight that may be meaningful to mothers. With its small sample size, this study is clearly not generalizable to all overweight preschool children and their parents, but it aids health professionals in understanding parental perceptions of overweight preschool children.

THEORETICAL FRAMEWORK

It has been established that parental influences are key to childhood health behaviors; therefore, interventions should focus on parents rather than children. With nearly all of the factors associated with childhood overweight being modifiable, it makes sense to look at this problem in terms of parental health behavior change. The TTM of health behavior change identifies six stages to health behavior change: (a) precontemplation, (b) contemplation, (c) preparation, (d) action, (e) maintenance, and (f) termination (Table 1) (Prochaska & Velicer, 1997). The authors also identify specific processes involved at stages 1–4. Table 2 describes the major processes at work during these stages and the goals of interventions for each corresponding stage. Armed with the knowledge of parental readiness for health behavior change, interventions can be tailored to reflect the stage of the parent. The TTM has established the 40/40/20 rule, which has been validated across 12 health behaviors. This rule states that of individuals at risk (defined as those in stages 1–3), 40% will be in the precontemplation stage, 40% will be in the contemplation stage, and 20% will be in the preparation stage. With this guideline in mind, the school nurse can focus on selecting interventions appropriate to the first three stages of change.

Table 1. Description of the Stages in the Transtheoretical Model

Stage of Change	Description of Stage
Precontemplation	Not intending to change health behavior in the next 6 months
Contemplation	Not prepared to take action, but intends to change health behavior in the next 6 months
Preparation	Actively considering changing health behavior in the next month
Action	Has actually made overt behavior change consistent with improved health
Maintenance	Has changed health behavior and is working to sustain changes
Termination	100% "self-efficacy" in health behavior

Source: Prochaska and Velicer, 1997.

Two studies have applied the TTM to the problem of obesity. In the first study, Peterson and Aldana (1999) compared three groups (784 participants) within a large telecommunications company. The employees were assessed to determine their stages of exercise behavior change and were randomly assigned to one of the three groups. One group was given a stage-based message regarding exercise behavior, the second group was given a generic message, and the third group was given no message. The results of this short-term study showed a significant increase in the movement toward the maintenance stage in the group given the stage-appropriate message compared with both of the other groups. Limitations of this study include its short duration and the possibility of contamination because all the subjects worked in the same building.

In the second study, Vallis and colleagues (2003) use the TTM to address readiness for change among adults with diabetes. Although this population is different in many ways from the population addressed in this article, two conclusions have particular bearing on overweight and readiness for change. First, individuals identified to be in the precontemplation stage often were not able to identify themselves correctly as overweight. A frequently cited objection to interventions was "Low-fat diets are for overweight people" (p. 1472). Second, action-oriented interventions were most successful when directed toward individuals in action stages of behavior change and least successful when directed toward individuals in the precontemplation or contemplation stage. Although these findings may seem intuitive, they point to the importance of choosing stage-appropriate interventions.

IMPLICATIONS FOR SCHOOL NURSING PRACTICE

Although school nurses are busy with students with asthma, diabetes, and other special needs, they cannot afford to overlook the overweight child. Early intervention can prevent complications such as diabetes, hypertension, polycystic ovary syndrome, and ortho-

Table 2. Description of Processes Emphasized at the Various Stages of the Transtheoretical Model

Stage of Change	Major Processes	Description of Interventions
Precontemplation	Consciousness raising	Increase awareness
	Dramatic relief	Elicit emotion
	Environmental reevaluation	Increase emotion and stimulate thought about the effect of the individual's health behavior on social sphere
Contemplation	Self reevaluation	Guide the individual cognitively and emotionally toward comparing current self-image to that without the unhealthy behavior
Preparation	Self-liberation	Increase social opportunities that support positive health behaviors
Action	Contingency management	Reinforce positive or discourage negative health behavior change
	Helping relationships	Provide or encourage supportive relationships
	Counterconditioning	Provide new healthy behaviors to replace old unhealthy ones
	Stimulus control	Remove cues that prompt unhealthy behaviors

Source: Prochaska and Velicer, 1997.

pedic problems. As Vallis and colleagues (2003) have shown in their study, an approach with parents that does not first address the reality of a child's overweight status will meet with failure. The health care provider's assessment of the parent's readiness for lifestyle change at home to influence his or her child's weight is key. The school nurse must not make the assumption that the parent knows that his or her child is overweight. It has been shown that BMI charts are not often convincing to parents. Although use of the BMI charts is necessary, the use of questions about physical limitations, frequent need to buy new clothing, and the child being teased at school may elicit more meaningful information from parents and may be more helpful in raising awareness of their child's weight status (Jain, Sherman, Chamberlain, Carter, Powers, & Whitaker, 2001).

The school nurse also must keep cultural considerations in mind. Overweight may not have social stigma in all ethnic and cultural groups and may not be equally important to all groups (Davis, Northington, & Kolar, 2000). The researchers suggested that a slim "European figure" is not the standard of beauty adhered to by all parents. In addition, assessment of the parent's perceived ability to affect change in their child's weight is a critical step in determining readiness for change. A parent who sees his or her child's overweight solely as a function of genetics is a common finding consistent with the precontemplation stage. Research suggests that many mothers do not recognize overweight in their children nor are aware of the health consequences that their overweight children may face. In terms of the TTM, it can be said that many mothers are in the precontemplation stage of change.

Assessment of parental perception of the problem, current health behaviors, and readiness for change is key in determining stage-appropriate interventions. Using this information, as well as the findings of Robinson's (1999) study of childhood overweight and television viewing and the guidelines offered by the American Academy of Pediatrics (2003), a sample of proposed interventions at each at-risk stage are given in Table 3.

A parent in the precontemplation stage benefits from interventions that increase awareness, elicit emotion, and help the parent realize the impact of his or her health choices on others. In this stage, parents may not be aware that their child is overweight. The first step is to review the growth chart with the parents and to explain the meaning and significance of BMI in terms of the child's health. Inquiring about physical limitations, rapidly outgrowing clothing, and being teased by other children can elicit an emotional connection to data provided by the growth chart that can assist parents contemplating making changes. Additionally, at the precontemplation stage, parents may not be aware that their behaviors influence their child's health. Sharing information, such as the con-

Table 3. Parental Characteristics and Proposed Interventions for At-Risk Stages

At-Risk Stage	Parental Characteristics	Proposed Interventions for School Nurses
Precontemplation	Unaware that their child is overweight	Review growth chart with parents; provide local or school-wide overweight statistics to groups of parents
	Unaware of the health risks associated with overweight	Point out the child's body mass index (BMI) on a chart; explain risks for child based on the child's BMI
	Unaware of their contribution to their child's health behaviors	Inquire about lifestyle issues at home that may influence the child's health: How many meals a week are eaten out of the home? Is soda readily available? Does child play video games?
	Aware of one or more of the above, but do not plan to change their health behavior in the next 6 months	Ask meaningful questions about outgrowing clothing, activity limitations, fatigue, inattention, teasing, depression
Contemplation	Aware that their child is overweight and one or more health risks of overweight	Periodically review child's growth chart and BMI with parents
	Can identify one or more health behavior that is associated with overweight	Encourage parents to keep a log of a behavior that parent is considering changing, such as the number of hours viewing TV, number of meals eaten away from home, or amount of soda consumed at home
	Is not ready yet, but intends to change one or more health behavior in the next 6 months	Guide the parents in identifying the benefits of the behavior change (i.e., health, well-being, more free time when not watching TV, more energy)
Preparation	Awareness is consistent with the contemplation stage	Periodically review growth chart and BMI with parents
	Intends to make one or more health behavior change in the next 30 days	Make parents aware of community resources, particularly those that are no or low cost
		Teach parents to plan to avoid negative health behaviors and to engage in positive ones; schedule time for family meals, game nights, activities, homework, and sleep

Source: American Academy of Pediatrics, 2003; Prochaska and Velicer, 1997; Vallis et al., 2003.

nection to more than 2 hours of screen time each day or the role of structured mealtimes at home with the child's weight, is important at this stage.

At the contemplation stage, the parent realizes that his or her child is overweight and that there are health risks related to being overweight. Furthermore, the parent knows that there are behaviors he or she can change to improve his or her child's health status. The parent is not yet ready to make a change, but can identify one behavior that he or she plans to change in the next 6 months. At this point, the school nurse should focus on helping the parent compare his or her self-image with a healthier image when a behavior has changed. Although the school nurse will continue to keep the parent updated on the child's growth, the nurse should now encourage the parent to consider the enhanced quality of life that can be enjoyed by the family resulting from improved health behavior. At this stage, it is also helpful to encourage the parent to keep a diary of a health behavior that he or she is considering changing. Be aware that it is still too soon to develop an action plan.

At the preparation stage, the parent is aware of the health problem and some of its consequences. The parent can see the benefits of behavior change and plans to make that change within the next 30 days. The school nurse should continue to review the child's growth charts with the parent. With the nurse's guidance, these data should be more meaningful to the parent. At this stage, the parent and the school nurse should develop an action plan for behavior change. The nurse also should focus on directing the parent toward social support of his or her goals. This may be in the form of support groups, classes, or alternate healthy activities.

During the action stage, the nurse begins to assume a more supporting role and encourages the parent to build other helping relationships. The nurse and other support partners should focus on reinforcing positive health behaviors. The nurse also can guide the parent in identifying cues that trigger unhealthy habits and can help the parent develop positive habits to replace unhealthy ones. Gradually, supportive relationships will be developed that replace the nurse's role as the parent moves on to the maintenance stage and then the termination stage, in which the parent assumes "100% self-efficacy" in the new health behavior (Prochaska & Velicer, 1997).

These stage-based strategies can be applied to a number of health behaviors relating to overweight, as well as other health problem. Excessive television viewing is a common health behavior problem among parents, children, and families, and reduction of television viewing time has been shown to result in decreased adiposity in children (Robinson, 1999). Some schools have begun to institute "turn off the TV" programs that are directed toward children. The school nurse can use the TTM to reduce hours spent watching time in the home with interventions directed toward parents.

Case Example

Because the school nurse knows that a knowledge deficit regarding overweight is common among many parents, the school nurse plans a health fair with the theme "Media and Your Child's Health." The nurse enlists a team of volunteers, including parents and members of the health care community, to provide health-focused information covering explanations of BMI, growth charts, factors associated with overweight, health consequences, and the role of parents, the school, other health care providers, and the community. Because this intervention is directed to parents in the precontemplation stage, "dramatic relief" is incorporated (Prochaska & Velicer, 1997). This is what will bring dramatic attention to the problem, with the intent of making an emotional connection between the parents and the problem of childhood overweight. Information should be simple and direct. Local and national statistics on childhood overweight can be illustrated using a graph, and television and screen time and its relationship to adiposity can be presented in poster form.

The health fair can be used to move parents into the contemplation stage as they become more informed about overweight, its consequences, television's influence, and parental role in change. Parents who enter this stage can meet with the nurse as a group or as individuals, or they can communicate through online discussion boards or newsletters. During the contemplation stage (the first 6 months), parents are encouraged to keep a record of the family's television viewing and to identify the benefits of spending less time watching television. Example of benefits include more time to pursue other interests; improved sleep quality and duration, because the family is not watching television late at night; and the children do not see as many commercials or ask for sugary cereals. The nurse can send postcards, e-mails, or newsletters that remind parents of these benefits.

As the parents prepare to make behavior changes, the nurse's direct involvement decreases, because the parents begin to develop social support for the new behavior they plan to implement. The school nurse is key in helping parents identify support systems, as well as other low-cost community resources. Parents can plan alternative activities, such as setting aside nights for board games, sports, trips to the park, crafts, and other activities that children can do alone or with a parent or other caregiver. The preparation stage is short, lasting 1 month or less, and leads directly to the action stage.

During the action stage, the school nurse should help parents identify "triggers" that lead to television viewing (Prochaska & Velicer, 1997). Examples of trig-

gers might include boredom, completion of the evening meal, or weather that keeps the family indoors. The nurse can assist parents in recognizing these stimuli so alternate activities can be implemented when they arise. For example, during winter the school nurse can send e-mails or postcards reminding parents to visit the library so the family can read together in front of the fireplace on snowy days, rather than returning to the habit of watching television.

Once parents have decreased the family's television viewing time to 2 hours or less each day, they are in the maintenance stage (American Academy of Pediatrics, 2003). At this time, the nurse may enlist these parents as mentors for others in earlier stages. This also can be helpful in preventing relapse to earlier stages. If relapse does occur, the nurse may need to intervene from time to time or simply reinforce desired behavior with encouraging e-mails, notes, or newsletters. When success occurs, parents move to the termination stage, in which they see themselves as able to sustain the desired behavior without outside influence. The school nurse should be aware that achieving the final stage is not the norm (Prochaska & Velicer, 1997). Most parents will require continued outside support from friends, family, community resources, or the school nurse.

CONCLUSION

Current statistics regarding the growth of childhood overweight are alarming, especially in light of the potential short- and long-term health consequences. Although many parents are unaware of this problem and the health consequences affecting their children, school nurses have a responsibility to intervene. The TTM is a useful tool to assist school nurses in directing their limited time more effectively in addressing health-related problems. All too often, action-oriented interventions fail because parents are not yet in the action stage. Using the TTM to affect television viewing is one example of intervening with parents to address the problem of childhood overweight. This model also can target other behaviors that parents influence, such as family mealtime, healthy food selection, sleep habits, fructose consumption, and tobacco use. School nurses are in a unique position to influence the health of children and, in doing so, will assist in meeting the *Healthy People 2010* goal of adding to the number of quality years of life for today's children and families.

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