10-2011

What Can Parents Do to Reduce Youth Obesity? An Initial Study With a Diverse Sample

Marilyn Frenn
Marquette University College of Nursing, marilyn.frenn@marquette.edu

Amy Heinrich
Marquette University

Claire Schmidt Dohmen
Marquette University

Jessica E. Pruszynski
Medical College of Wisconsin

Journal of Pediatric Nursing, Vol. 26, No. 5 (October 2011): 428-434. DOI.

What Can Parents Do to Reduce Youth Obesity? An Initial Study with a Diverse Sample

Marilyn Frenn
Marquette University College of Nursing, Milwaukee, WI
Amy Heinrich
Graduate Students Marquette University College of Nursing, Milwaukee, WI
Claire Schmidt Dohmen
Graduate Students Marquette University College of Nursing, Milwaukee, WI
Jessica E. Pruszynski
Medical College of Wisconsin Division of Biostatistics, Milwaukee, WI

The body mass index (BMI) of diverse, low-income fifth grade students (n = 36) was regressed on physical activity (Child Adolescent Activity Log), percentage dietary fat (Food Habits Questionnaire), and the Food/Activity Parenting Practices Questionnaire. The model explained 50% of the variance in student BMI, adjusted R^2 = .50, F (4, 19) = 6.84, p = .001. Students accurately perceived their weight status. Students' perception of parenting strategies, along with dietary fat, was significantly associated

with their BMI. Parent's (*n* = 14) BMI, not the child's, was associated with the strategies they used. Three parents tested an online authoritative parenting program. Further research is needed.

Key words

Obesity, Authoritative parenting, Dietary fat, BMI

ALMOST 32% OF youth are at or above the 85th body mass percentile (BMP), presenting long-term risks to their health and acceleration of health care costs (Gaziano, 2010). Fortunately, the rate of increase in obesity prevalence appears to be leveling for most groups. But boys between 6 and 19 years old are the one group in which an increase is still seen among those with a BMP >97 (Ogden, Carroll, Curtin, Lamb, & Flegal, 2010). A massive public health campaign is recommended (Gaziano, 2010), but components of such a campaign that really will prevent excess body mass index (BMI) are needed. The U.S. Preventive Services Taskforce (2010) concluded that overweight youth are at increased risk of obesity in adulthood, but the evidence for prevention was uncertain.

Conceptual Framework and Related Literature

BMI is used as a marker of obesity in adults, but age and gender differentiations among children are necessary, that is, the BMP. Youth with BMP <5 are underweight, 5–85 are normal weight, ≥85 are overweight, and ≥95 are obese (Centers for Disease Control and Prevention [CDC], a). The BMI *z* score is a standardized version of the BMP that provides a normal distribution that may be useful in research (Himes, 2009).

A meta-analysis of interventions for childhood overweight indicated that parent involvement increased effectiveness when content included parenting strategies (Kitzmann et al., 2010). Although various theories might guide consideration of parent involvement, authoritative approaches have been recommended (Davis et al., 2007). Authoritative parenting differs from authoritarian, permissive, and neglectful parenting in that authoritative parenting was associated with significant maintained weight loss among Israeli children followed for 7 years (Golan, 2006). Authoritative parenting consists of parental acceptance and a firm parenting style. In contrast, high demands from parents without attention to the child's satiety cues lead to overeating and obesity (Jansen et al., 2007, van Strien and Bazelier, 2007).

Authoritarian, permissive, and neglectful parenting has been associated with a higher child BMI (Bessinger and Heaberlin, 2007, Birch et al., 2003, Birch et al., 2001) when compared with authoritative parenting (Golan et al., 2006, Rhee and Lumeng, 2006). In Caucasian samples, mothers' (Kim, McIntosh, Kubena, Anding, & Reed, 2006) or fathers' authoritative parenting has been associated with lower BMI (Stein, Epstein, Raynor, Kilanowski, & Paluch, 2005). But authoritative parenting relationships with child BMI have not been well examined in low-income, culturally diverse youth, who are at the highest risk of obesity (Kumanyika, 2008).

Purpose

The purpose of this study was to explore parenting style, dietary fat, and exercise contributions for youth BMI and BMI percentile. The relationships between youth and parent perceptions about parenting style, BMI, dietary fat, and exercise were also examined, as was parent participation in an online authoritative parenting intervention.

Methods

Design

A cross-sectional descriptive correlational design was used. The study was approved by the institutional review boards of Marquette University and the school district. Parents provided written consent and students provided written assent.

Sample

The sample was taken from an urban Midwestern school where 77% of students were eligible for reduced or free lunch and included 19 male and 17 female fifth grade students (15% Asian, 35% African American, 18% Caucasian, and 32% other or mixed race). Parents of 11 boys and 3 girls completed the questionnaires. They included 2 fathers and 12 mothers ranging in age from 29 to 53 years (14% Asian, 43% African American, 36% Caucasian, 7% other race). Educational preparation listed by parents ranged from 2 with a high school diploma, 2 with some college, 6 with an associate degree, to 2 with a bachelor's degree.

Measures

Body Mass Index

BMI was calculated as weight in kilograms divided by height in meters squared. Weight was measured without shoes or over clothes. Height was measured to the nearest 0.1 cm. The CDC algorithm was used to calculate BMI percentiles reflective of age and gender.

The Food Habits Questionnaire

The Food Habits Questionnaire (FHQ) is a 21-item measure with a five-option response used with algorithms to calculate percentage dietary fat, as in prior research (Frenn et al., 2003, Frenn et al., 2005a, Frenn et al., 2005b). The FHQ classified 93% of adult participants in one sample and 87% of participants in a second sample as consuming >30% of calories from fat and was thus was determined a satisfactorily specific measure (Greene, Rossi, Reed, Willey, & Prochaska, 1994). Low–middle-income urban teenagers were able to provide valid estimates of their food intake (Finckenor & Byrd-Bredbenner, 2000). The FHQ has a correlation of .85 with the Harvard diet instrument, and structural equation modeling has provided further construct validity. The FHQ was used to measure both student and parent dietary fat. Parent and youth diets may be correlated (Campbell et al., 2007).

Child and Adolescent Activity Log

The Child Adolescent Activity Log (CAAL) is a 22-item daily log of activities engaged in by youth. Participants circled the number of minutes they spent the previous day in each activity for Sunday, Monday, and Tuesday. Test–retest during a 50-minute period was $r = .94$ (Garcia et al., 1995). The 3-day CAAL logs correlated with fitness as measured by a 3-minute step test ($r = .65$, $p = .017$ at 15 seconds; $r = .74$, $p = .004$ at 1 minute; Frenn, Malin, Brown, et al., 2005).

Food/Activity Parenting Practices Questionnaire–Parent and Student Versions

The Food/Activity Parenting Practices Questionnaire (FAPPQ) is a 45-item instrument that assesses authoritative parenting feeding practices, exercise, and sedentary activity, with a total scale alpha coefficient of .82. The student version similarly had acceptable internal consistency (α = .78). Student and parent perspectives were found to be correlated (r = .41, p < .01) in a culturally diverse sample (80.4% Caucasian, 10.9% African American, 4.3% Hispanic, and 4.3% other) of adolescent–parent dyads: 26 males, 20 females, and a parent (97.2% mothers; Steadman, 2006). Confirmatory factor analysis was shown with 260 parent/guardians (92% female; 55% African American, 35% Caucasian, 10% other; Kaur et al., 2006). Adapted versions with parents of younger African American and Hispanic children revealed no significant ethnic differences. The factors have correlated as hypothesized with child and adolescent BMI (Steadman, 2006). In this study, values were as follows: parent feeding practices (20 items), α = .76; practices regarding child's exercise and sedentary activity (8 items), α = .78; and total scale, α = .84. Student version alphas were acceptable: parents' feeding practices (30 items), α = .83; exercise parenting practices (9 items), α = .83; and total scale α = .88.

Subscales in the FAPPQ for students included perception of (a) concern about own weight, (b) responsibility for own weight, (c) parental concern about child over weight, (d) parental restriction, responsibility, and control of foods, (e) parental monitoring of foods, (f) parental help with food, (g) parental pressure to eat, (h) parental support for exercise, and (i) parental control of exercise. Cronbach's alphas for subscales in this study ranged from .71 to .81.

International Physical Activity Questionnaire

Parent activity was measured using the International Physical Activity Questionnaire (IPAQ; seven items). The IPAQ test–retest Spearman's rho was .96. Criterion validity (with Computer Science Application accelerometer), a median rho of .30, was comparable with that of other self-report validation studies (Craig et al., 2003, Sallis and Saelens, 2000).

Parent Report of Child Activity

One item assessed parents' perception of their child's exercise as sedentary, slightly active, or active. This was found to be associated with physical fitness as measured by maximal oxygen consumption in 213 children (Murphy, Alpert, Christman, & Willey, 1988).

Procedure

Parents were contacted as they waited prior to parent–teacher conferences. Six parents completed the surveys and were measured, 3 declined, and 15 took stamped envelopes with surveys home. Twenty-six students whose parents did not attend were sent home the next day with stamped envelopes with consents and surveys. In addition to the 14 parent–student dyads completing the surveys, 22 parents consented for their child to participate but did not participate themselves.

Assents and survey data were collected from students in the classroom. BMI data were measured for both students and parents in a private area near the classroom. Students received a $5 skate rink coupon if both they and their parent completed the study.

Data were analyzed using SPSS Version 17 for descriptive statistics, simple correlations, and multiple regression. Generalized extreme studentized deviate test for outliers was conducted using SAS 9.2.

Results

Descriptive data for student and parent weight, dietary fat, and physical activity are shown in Table 1. Student BMI classifications included 49% of the participants in the normal weight designation; 17%, overweight; and 34%, obese. The BMI, dietary fat, total exercise, and FAPPQ of students whose parents participated were not different from those of students whose parents did not participate. Higher amounts of exercise and dietary fat were reported by obese students, but differences were not statistically significant. Data were examined for outliers, and one case would have met the criteria for having a greater impact than expected on results, but given the BMI was measured and other participants also submitted high reports of physical activity and dietary fat, the decision was made not to remove the case.

Table 1. Means, Standard Deviations, and Range for Weight, Dietary Fat, and Physical Activity

Variable	***M***	***SD***	**Range**
Student			
BMI, kg/m^2	21.90	5.63	15.80 to 36.00
BMI *z* score	1.07	0.91	−0.78 to 2.60
BMI percentile	78.22	20.84	22 to 100
Percentage fat in food	29.16	2.31	24.59 to 34.84
Duration of physical activity, min/day	139	144.26	0 to 653.57
Parent			
BMI, kg/m^2	28	5.76	19.20 to 39.60
Percentage fat in food	31	3.12	24.66 to 36.03
Duration of physical activity, min/day	63.81	37.38	22.86 to 120

Parent-reported BMI classifications included three normal-weight, four overweight, and three obese participants using CDC guidelines. Only half the parents attended parent–teacher conferences, thereby being present for measurement of BMI. Classifications for the five parents who were measured included one normal weight, one overweight, and three obese parents.

As shown in Table 2, the model explained 50% of the variance in student BMI, adjusted $R^2 = .50$, $F(4, 19) = 6.84$, $p = .001$. Findings were similar with BMI percentile, adjusted $R^2 = .33$, $F(4, 19) = 3.84$, $p = .02$, and BMI *z* score, adjusted $R^2 = .43$, $F(4, 19) = 5.26$, $p = .005$. However, using BMI percentile and BMI *z* scores as the dependent variables resulted in child perceptions of parental approaches to guide their eating no longer being a significant predictor. Adding gender or whether the parent participated did not change the findings, although parents of boys ($n = 11$) were more likely to participate than parents of girls ($n = 3$).

Table 2. Regression of Antecedents Predicting Students' BMI

Model	**Unstandardized Coefficients**		**Standardized Coefficient**	***t***	**Significance**	**Collinearity Statistics**	
	B	***SE***	***β***			**Tolerance**	**Variance Inflation Factor**
1 Constant	26.088	12.230		−2.133	.05		
Percentage fat in food*	.914	.361	.378	2.532	.02	.965	1.036
Daily exercise duration†	.004	.006	.105	0.672	.51	.888	1.126
FAPPQ food‡	.136	.058	.396	2.348	.03	.757	1.321
FAPPQ exercise§	.272	.122	.391	2.225	.04	.700	1.429

Note: Adjusted R^2 = .50; $F(4, 19) = 6.84$; p = .001.

∗ FHQ.

† CAAL.

‡ FAPPQ food questions.

§ FAPPQ exercise questions.

Few students were able to report their height and weight: Four completed height and nine completed weight. But child perception of their weight as under, normal, over, or markedly over correlated highly with their BMI *z* score ($r = .76$, $p < .001$), whereas there was no significant correlation of parents' perception of their child's weight status with the child's BMI *z* score.

To better understand specific relationships of students' perceptions of parenting on their BMI, subscales of the FAPPQ were examined as shown in Table 3. Student percentage dietary fat was negatively related to their perceptions that their parent helped them decide how much and what to eat ($r = -.41$, $p = .03$), monitored sweets and high-fat foods ($r = -.43$, $p = .03$), and decided portion sizes and told them if they had eaten the right kind of foods ($r = -.54$, $p = .003$). Student duration of physical activity was significantly related to individual items on the FAPPQ: their perception that their parent encourages them to exercise ($r = .46$, $p = .006$), that their parent keeps track of the amount of physical activity they get ($r = .37$, $p = .03$), and of how much their parent tries to control their physical activity ($r = .45$, $p = .007$).

Table 3. Correlation of Child BMI With Child Perceptions of Parenting for Diet and Exercise

	Concern About Own Weight (3 Items)	**Child-Perceived Responsibility (6 Items)**	**Perception of Parent Concern (3 Items)**	**Perception of Parent Restricting, Responsibility, and Control of Foods (10 Items)**	**Perception of Parent Monitoring Foods (2 Items)**	**Perception of Parent Help With Food (2 Items)**	**Perception of Parent Pressure to Eat (4 Items)**	**Perception of Parent Support for Exercise (3 Items)**	**Perception of Parent Control of Exercise (5 Items)**
Pearson's *r*	.17	−.17	.0*	.46†	.07	.19	−.14	.32	.45*
Significance	.37	.38	.02	.01	.73	.29	.46	.07	.01
Cronbach's alpha	.78	.74	80	.77	.73	.73	.80	.81	.79

* Correlation is significant at the .05 level (two tailed).

† Correlation is significant at the .01 level (two tailed).

Parents' report of their parenting behaviors had no correlation to student BMI, student perception of their weight status, student perceptions of the parenting behaviors, student dietary fat, or duration of physical activity. Parents' report of parenting behavior related to their child's eating was significantly related to their own BMI (r = .78, p = .02). Like their child, parents had an accurate understanding of their own weight status as underweight, normal weight, overweight, or markedly overweight in comparison with their BMI (r = .82, p = .006). Their own dietary fat intake correlated with their own BMI (r = −.71, p = .05) and their concern about their own weight (r = .87, p = .01). Parents' perceived exercise parenting strategies were negatively correlated with the number of days they walked for at least 10 minutes (r = −.71, p = .02), but no other student or parent activity scores were correlated. There was no significant relationship between parents' estimate of their child's activity and the student's self-report (r = .09, p = .77). In this sample, there were no significant correlations between parent BMI and student BMI, BMI z score, or BMI percentile, nor was the parents' report of their weight status as a child correlated with their child's measured or perceived weight status.

To address the second purpose of the study, parents were invited to review eight authoritative parenting modules in an online program. E-mailed invitations were issued with instructions on accessing the ID and password-protected online program. Three parents participated in the online program, spending a range of 11 minutes to 4 hours and 4 minutes. They made from one to four visits to the program completing portions of the first four modules.

Discussion

Mean percentage dietary fat for students was less than 35, within recommended levels of 25% to 35% (CDC, b). Reported physical activity was high, which may reflect the mean age of the students, because physical activity tends to decline as youth grow older, or it may reflect that data were collected in early Fall, so cold weather had not yet dampened outdoor activity in this Midwestern state. Physical activity among the students was twice as high as the recommended 60 minutes per day. The amount of vigorous activity was congruent with recommendations for vigorous activity on at least 3 days per week (CDC3).

The predominance of boys' parents in the sample is important given that boys 6 to 19 years old with high BMI (>97th percentile) were the only group where obesity is increasing in the most recent NHANES study (Ogden et al., 2010). Although the rate of obesity in other subgroups has not declined, it is especially important to understand what parents can do to prevent more boys from reaching the 97th percentile or even higher levels.

Students not being able to report their height or weight is age related and congruent with other studies in that older children are able to report their height and weight but children in fifth grade often do not know their measurements (Himes, 2009, Himes and Faricy, 2001, Jansen et al., 2006, Shannon et al., 1991). It is important that children in this study had a more accurate sense than their parent did of whether their BMI was normal, overweight, or obese.

The parent distribution of overweight (40%) and obese (30%) was similar to NHANES population data (Flegal, Carroll, Ogden, & Curtin, 2010). Their percentage dietary fat was within recommended levels (.gov/dietaryguidelines/dga2005/recommendations.htm). Parents' reported vigorous and moderate

activities also were within recommended levels (http://www.cdc.gov/physicalactivity/everyone/guidelines/adults.html#Musclestrengthening).

The model explained 50% of the variance in student BMI, which is large compared with that of analyses in which norms, role models, benefits, barriers, and access were examined as antecedents for dietary fat or physical activity (Frenn et al., 2003, Frenn et al., 2005a, Frenn et al., 2005b, Garcia et al., 1995). The variables had acceptable tolerances and variance inflation factors.

Limitations and Recommendations for Future Research

This was a comparatively small sample with regard to large-population studies in which BMI is examined. However, those studies do not include examination of children's perceived parental influences, which are modifiable and could help to reduce the obesity epidemic. Although this was a small sample in which it was not possible to examine covariates of parental income, education, or BMI, other research examining parenting effects on girls' obesity did not find that these variables changed results (Anzman, & Birch, 2009). A larger sample is warranted, including a higher incentive to increase the number of parents participating. The contribution of student perceptions of parental efforts to improve the child's nutrition and exercise made to their BMI may help parents decide to spend the time participating in an authoritative parenting intervention, because these initial results could be shared as potential benefits of participating in such an intervention.

Implications for Clinical Practice

Until a larger funded study can be conducted, the findings of this study can be used to inform clinical practice. Student perceptions of parenting style for both food and exercise, along with percentage dietary fat, were most predictive of their BMI. Students have an accurate estimate as to whether they are underweight or overweight, but parents do not have an accurate estimate of their child's weight status or activity level.

Parents not having an accurate perception of their child's weight status corroborates other findings (Fitzgibbon, & Beech, 2009). Parents should be informed of their child's BMI percentile and ways they can be helpful in their child's sustaining a healthy weight. However, a comprehensive program to prepare the parents and those measuring BMI needs to be in place before BMI measurements are taken (Nihiser et al., 2009).

Child perceptions of parent concern about their eating, food restriction, and parent exercise control all were associated with higher BMI *z* scores and should thus be avoided. In a larger longitudinal study, food restriction also exacerbated BMI increases for Caucasian girls aged between 7 and 15 years (Anzman, & Birch, 2009). Parenting strategies that helped keep dietary fat within recommended limits included helping the child decide how much and what to eat, monitoring sweets and high-fat foods, deciding portion sizes, and telling the child if they had eaten the right kind of foods.

Although parents did not have an accurate idea of their child's weight status, they were accurate in the category for their own BMI. Based on these results, it would be wise to work with students on their BMI and eating and exercise behaviors. Students' perceptions about their parents' efforts are highly correlated to their BMI and diet and exercise behaviors, so student programs should include information to help them interpret parenting strategies, as well as information for them to share with

their parents. For example, students who perceive their parents as restricting certain foods could be encouraged to show their parent what they have learned about healthier foods and portion sizes, bring a recipe home, and ask for the parent's help in preparing it, so parents could observe their child's ability to self-regulate food intake. Programs for parents need to include accurate information about their child's weight status and eating and exercise behaviors, as well as information about strategies that will help children achieve and sustain a normal weight BMI percentile.

An important gap in the research concerns education of providers after the BMI is measured (Dietz, Story, & Leviton, 2009). These initial results provide some evidence on which to base such education so that providers can best counsel youth and parents. With obesity continuing and the associated health problems very likely to increase, further research and intervention are needed.

Acknowledgments

This study was funded in part by Delta Gamma Chapter Sigma Theta Tau International Nursing Honor Society.

References

Anzman and Birch, 2009.

Anzman S.L., Birch L.L. **Low inhibitory control and restrictive feeding practices predict weight outcomes.** Journal of Pediatrics, 155 (2009), pp. 651-656

Bessinger and Heaberlin, 2007. Bessinger R.C., Heaberlin E. **Relationship between parents' child feeding practices and overweight in children.** Journal of the American Dietetic Association, 114 (2007), p. A59

Birch et al., 2003. Birch L.L., Fisher J.O., Davison K.K. **Learning to overeat: Maternal use of restrictive feeding practices promotes girls' eating in the absence of hunger.** American Journal of Clinical Nutrition, 78 (2003), pp. 215-220

Birch et al., 2001. Birch L.L., Fisher J.O., Grimm-Thomas K., Markey C.N., Sawyer R., Johnson S.L. **Confirmatory factor analysis of the Child Feeding Questionnaire: A measure of parental attitudes, beliefs and practices about child feeding and obesity proneness.** Appetite, 36 (2001), pp. 201-210

Campbell et al., 2007. Campbell K.J., Crawford D.A., Salmon J., Carver A., Garnett S.P., Baur L.A. **Associations between the home food environment and obesity-promotion eating behaviors in adolescence.** Obesity, 15 (2007), pp. 719-730

Centers for Disease Control and Prevention (2008). Centers for Disease Control and Prevention. **What is dietary fat?** Retrieved from http://www.cdc.gov/nutrition/everyone/basics/fat/

Centers for Disease Control and Prevention (2009). Centers for Disease Control and Prevention. **What is BMI percentile?** Retrieved from http://www.cdc.gov/healthyweight/assessing/bmi/childrens_bmi/about_childrens_bmi.html# What is BMI percentile

Centers for Disease Control and Prevention (2010). Centers for Disease Control and Prevention. **Be physically active in the New Year .**Retrieved from http://www.cdc.gov/Features/HealthyHolidays/

Craig et al., 2003. Craig C.L., Marshall A.L., Sjöström M., Bauman A.E., Booth M.L., Ainsworth B.E., *et al.* **International Physical Activity Questionnaire: 12-Country reliability and validity.** Medicine and Science in Sports and Exercise, 35 (2003), pp. 1381-1395

Davis et al., 2007. Davis M.M., Gance-Cleveland B., Hassink S., Johnson R., Paradis G., Resnicow K. **Recommendations for prevention of childhood obesity.** Pediatrics, 120 (2007), pp. S229-S253

Dietz et al., 2009. Dietz W.H., Story M.T., Leviton L.C. **Issues and implications of screening, surveillance, and reporting of children's BMI.** Pediatrics, 124 (2009), pp. S98-S101

Finckenor and Byrd-Bredbenner, 2000. Finckenor M., Byrd-Bredbenner C. **Nutrition intervention group program based on preaction—State-oriented change processes of the Transtheoretical Model promotes long-term reduction in dietary fat intake.** Journal of the American Dietetic Association, 100 (2000), pp. 335-342

Fitzgibbon and Beech, 2009. M.L. Fitzgibbon, B.M. Beech. **The role of culture in the context of school-based BMI screening.** Pediatrics, 124 (Suppl 1) (2009), pp. S50-S62

Flegal et al., 2010. Flegal K.M., Carroll M.D., Ogden C.L., Curtin L.R. **Prevalence and trends in obesity among U.S. adults, 1999–2008.** JAMA, 303 (2010), pp. 235-241

Frenn et al., 2003. Frenn M., Malin S., Bansal N.K. **Stage-based interventions for low-fat diet with middle school students.** Journal of Pediatric Nursing, 18 (2003), pp. 36-45

Frenn et al., 2005a. Frenn M., Malin S., Brown R.L., Greer Y., Fox J., Greer J., *et al.* **Changing the tide: An Internet/video exercise and low fat diet intervention with middle school students.** Applied Nursing Research, 18 (2005), pp. 13-21

Frenn et al., 2005b. Frenn M., Malin S., Villarruel A.M., Pearson K., McCarthy S., Freeman J., *et al.* **Determinants of physical activity and low-fat diet among low income African American and Hispanic middle school students.** Public Health Nursing, 22 (2005), pp. 89-97

Garcia et al., 1995. Garcia A., Broda M.A., Frenn M., Coviak C., Pender N.J., Ronas D.L. **Gender and developmental differences in exercise beliefs among youth and prediction of their exercise behavior.** Journal of School Health, 65 (1995), pp. 213-219

Gaziano, 2010. Gaziano J.M. **Fifth phase of the epidemiology of transition: The age of obesity of inactivity.** JAMA, 303 (2010), pp. 275-276

Golan, 2006. Golan M. **Parents as agents of change in childhood obesity—From research to practice.** International Journal of Pediatric Obesity, 1 (2006), pp. 66-76

Golan et al., 2006. Golan M., Kaufman V., Shahar D.R. **Childhood obesity treatment: Targeting parents exclusively v. parents and children.** British Journal of Nutrition, 95 (2006), pp. 1008-1015

Greene et al., 1994. Greene G.W., Rossi S.R., Reed G.R., Willey C., Prochaska J.O. **Stages of change for reducing dietary fat to 30% of energy or less.** Journal of the American Dietetic Association, 94 (1994), pp. 1105-1110

Himes, 2009. Himes J.H. **Challenges of accurately measuring and using BMI and other indicators of obesity in children.** Pediatrics, 124 (2009), pp. S3-S22

Himes and Faricy, 2001. Himes J.H., Faricy A. **Validity and reliability of self-reported stature and weight of US adolescents.** American Journal of Human Biology, 13 (2001), pp. 255-260

Jansen et al., 2007. Jansen E., Mulkens S., Jansen A. **Do not eat the red food! Prohibition of snacks leads to their relatively higher consumption in children.** Appetite, 49 (2007), pp. 572-577

Jansen et al., 2006. Jansen W., van de Looij-Jansen P.M., Ferreira I., de Wilde E.J., Brug J. **Differences in measured and self-reported height and weight in Dutch adolescents.** Annals of Nutrition & Metabolism, 50 (2006), pp. 339-346

Kaur et al., 2006. Kaur H., Li C., Nazir N., Choi W.S., Resnicow K., Birch L.L., *et al.* **Confirmatory factor analysis of the child-feeding questionnaire among parents of adolescents.** Appetite, 47 (2006), pp. 36-45

Kim et al., 2006. Kim M.J., McIntosh A., Kubena K.S., Anding J., Reed D. **Perceived parenting behaviors may predict young adolescents' body fatness.** Appetite, 47 (2006), p. 392

Kitzmann et al., 2010. Kitzmann K.M., Dalton W.T. III, Stanley C.M., Beech B.M., Reeves T.P., Buscemi J., *et al.* **Lifestyle interventions for youth who are overweight: A meta-analytic review.** Health Psychology, 29 (2010), pp. 91-101

Kumanyika, 2008. Kumanyika S.K. **Environmental influences on childhood obesity: Ethnic and cultural influences in context.** Physiology & Behavior, 94 (2008), pp. 61-70

Murphy et al., 1988. Murphy J.K., Alpert B.S., Christman J.V., Willey E.S. **Physical fitness in children: A survey method based on parental report.** American Journal of Public Health, 78 (1988), pp. 708-710

Nihiser et al., 2009. Nihiser A.J., Lee S.M., Wechsler H., McKenna M., Odom E., Reinold C., *et al.* **BMI measurement in schools.** Pediatrics, 124 (2009), pp. S89-S97

Ogden et al., 2010. Ogden C.L., Carroll M.D., Curtin L.R., Lamb M.M., Flegal K.M. **Prevalence of high body mass index in U.S. children and adolescents, 2007–2008.** JAMA, 303 (2010), pp. 242-249

Rhee and Lumeng, 2006. Rhee K.E., Lumeng K.E. **Parenting styles and overweight status in first grade.** Pediatrics, 117 (2006), pp. 2047-2054

Sallis and Saelens, 2000. Sallis J.F., Saelens B.F. **Assessment of physical activity by self-report: Status, limitations, and future directions.** Research Quarterly for Exercise and Sport, 71 (2000), pp. 1-14

Shannon et al., 1991. Shannon B., Smiciklas-Wright H., Wang M.Q. **Inaccuracies in self-reported weights and heights of a sample of sixth-grade children.** Journal of the American Dietetic Association, 91 (1991), pp. 675-678

Steadman, 2006. Steadman, P. L. (2006). An examination of the relationship between perceived parental involvement and adolescent eating and exercise habits (doctoral dissertation). Available from Proquest Dissertations and Theses database. (UMI No. 3225331).

Stein et al., 2005. Stein R.I., Epstein L.H., Raynor H.A., Kilanowski C.K., Paluch R.A. **The influence of parenting change on pediatric weight control.** Obesity Research, 13 (2005), pp. 1749-1755

U.S. Preventive Services Taskforce, 2010. U.S. Preventive Services Taskforce. **Screening for obesity in children and adolescents.** Pediatrics, 125 (2010), pp. 361-367

van Strien and Bazelier, 2007. van Strien T., Bazelier F.G. **Perceived parental control of food intake is related to external, restrained and emotional eating in 7–12-year-old boys and girls.** Appetite, 36 (2007), pp. 618-625