Pediatric Weight Management

PWM: Major Recommendations (2015)

Major Recommendations

Below you will find a list of recommendations in the Pediatric Weight Management (PWM) Evidence-Based Nutrition Practice Guideline 2015. The project started with a review of the 2007 recommendations. The **Summary of Changes** provides an overview of the recommendation revisions.

To see the Recommendation Summary, **click** on the Recommendation title.

Nutrition Assessment

PWM: Assessment of Fast-Food Meal Frequency in Children and Teens

Nutrition Diagnosis

None.

Nutrition Intervention

PWM: Multicomponent Pediatric Weight Management

PWM: RDN in Multicomponent Pediatric Weight Management Interventions

PWM: Multicomponent Pediatric Weight Management Interventions

PWM: Family Participation in Multicomponent Pediatric Weight Management Interventions

PWM: Length of Treatment in Multicomponent Pediatric Weight Management Interventions

PWM: Treatment Setting in Multicomponent Pediatric Weight Management Interventions

PWM: Sessions in Multicomponent Pediatric Weight Management Interventions

PWM: Group Sessions in Multicomponent Pediatric Weight Management Interventions

PWM: Individual Sessions in Multicomponent Pediatric Weight Management Interventions

PWM: Fast-Food Meal Frequency in Children and Teens

Nutrition Monitoring and Evaluation

None.

- Pediatric Weight Management
- Pediatric Weight Management (PWM) Guideline (2015)

Recommendations Summary

PWM: Assessment of Fast Food Meal Frequency in Children and Teens 2015

Click here to see the explanation of recommendation ratings (Strong, Fair, Weak, Consensus, Insufficient Evidence) and labels (Imperative or Conditional). To see more detail on the evidence from which the following recommendations were drawn, use the

hyperlinks in the Supporting Evidence Section below.

- Recommendation(s)

PWM: Assessment of Fast Food Meal Frequency in Children and Teens

The registered dietitian nutritionist (RDN) should assess the frequency of fast-food intake of overweight or obese children and teens. Limited evidence in populations eight years to 16 years of age at baseline suggests that higher frequency of fast-food consumption, particularly more than twice a week is associated with increased adiposity; BMI Z-score; or risk of obesity during childhood, adolescence and during the transition from adolescence into adulthood.

Rating: Weak
Imperative

- Risks/Harms of Implementing This Recommendation

  There are no potential risks or harms associated with the application of the recommendations.

- Conditions of Application

  - Evidence for this recommendation is based on children eight years to 16 years of age and may not apply to children in other age groups
  - While the recommendation is based on evidence analysis of a specific meal consumption (fast food), the practitioner should not limit his or her assessment to the frequency of fast-food meals.

- Potential Costs Associated with Application

  There are no obvious costs associated with the application of the recommendations.

- Recommendation Narrative

  The following evidence to support the recommendations are excerpted from the Nutrition Evidence Library (Dietary Guidelines Advisory Committee 2015):

  What Is the Relationship Between Eating Out and Take-away Meals and Body Weight in Children and Adults? (DGAC 2015)

  Conclusion: Among children, limited evidence from prospective cohort studies in populations eight years to 16 years of age at baseline suggests that higher frequency of fast-food consumption is associated with increased adiposity; BMI Z-score; or risk of obesity during childhood, adolescence and during the transition from adolescence into adulthood.**Grade:** Limited

  Key Findings

  A total of seven prospective cohort studies (Bisset et al, 2007; Fraser et al, 2012; Haines et al, 2007; Laska et al, 2012; MacFarlane et al, 2009; Taveras et al, 2005; Thompson et al, 2004) examined the relationship between frequency of fast-food meals, or consumption of other types of meals and anthropometric outcomes:

  - *Six studies examined fast-food meals:* Three studies indicated increased fast-food intake, particularly more than twice per week, was associated with increased risk of obesity, BMI/BMI Z-score or body fat (Bisset et al, 2007; Fraser et al, 2012; Thompson et al, 2004); two found no association (Laska et al, 2012; MacFarlane et al, 2009); and one found no association in boys and a negative association in girls (Haines et al, 2007)
  - Two studies looked at a variety of non-fast-food meals away from home, using varying definitions of food establishments and meal types and reported mixed findings for a relationship with weight-related outcomes (Taveras et al, 2005; Thompson et al, 2004)
  - In adolescents transitioning to adulthood, one study found high baseline frequency of fast-food intake was associated with increased BMI Z-scores at five-year follow-up
  - Risk of bias ratings ranged from four of 24 to seven of 24, consistent with low to moderate risk of bias
  - This body of evidence is small and results are inconsistent; however, a majority of studies found an association between increased fast-food intake and weight outcomes.

- Recommendation Strength Rationale

  - The Academy of Nutrition and Dietetics (AND) and the Pediatric Weight Management Expert Work Group concurs with the Nutrition Evidence Library Dietary Guidelines Advisory Committee conclusion statement and grade (2015 DGAC Grade for Children and fast-food consumption: **Limited**).
  - Methodological limitations include:
    - Generalizability is relatively good for this body of evidence, although Hispanic/Latino participants are not well-represented and only one relatively small study included children under the age of nine years
    - Three studies used self-reported and parent-reported height and weight to assess outcomes and only three reported BMI Z-scores.
    - Studies used different means of defining food locations; standardization is needed
    - There were no data on the composition of meals consumed and studies did not control for overall energy intake.

- Minority Opinions

  None.

- Supporting Evidence

The recommendations were created from the evidence analysis on the following questions. To see detail of the evidence analysis, click the blue hyperlinks below (recommendations rated consensus will not have supporting evidence linked).

- References
- References not graded in Academy of Nutrition and Dietetics Evidence Analysis Process

United States Department of Agriculture. Nutrition Evidence Library. Dietary Guidelines Advisory Committee. *What Is the Relationship Between Eating Out and Take-away Meals and Body Weight in Children and Adults? (DGAC 2015)* Accessed online June 1, 2015: http://www.nel.gov/conclusion.cfm?conclusion_statement_id=250450.

- Pediatric Weight Management
- Pediatric Weight Management (PWM) Guideline (2015)

Quick Links

Recommendations Summary

PWM: Multi-component Pediatric Weight Management Interventions 2015

Click here to see the explanation of recommendation ratings (Strong, Fair, Weak, Consensus, Insufficient Evidence) and labels (Imperative or Conditional). To see more detail on the evidence from which the following recommendations were drawn, use the hyperlinks in the Supporting Evidence Section below.

- Recommendation(s)

PWM: RDN in Multi-component Pediatric Weight Management Interventions

The registered dietitian nutritionist (RDN) should be an integral part of multi-component pediatric weight management interventions. A strong body of research indicates that short-term (six-month) and long-term (two-year) decreases in body mass index (BMI) and BMI Z-scores for all age categories were more likely to be achieved when an RDN or psychologist/mental health provider were involved in multi-component weight management interventions that included diet and nutrition [including medical nutrition therapy (MNT)], physical activity and behavioral components.

Rating: Strong
Imperative

PWM: Multicomponent Pediatric Weight Management Interventions

When providing pediatric weight management, the registered dietitian nutritionist (RDN) should ensure the multi-component interventions include diet/nutrition [medical nutrition therapy (MNT)], physical activity and behavioral components. A strong body of research indicates that short-term (six-month) and long-term (two-year) decreases in body mass index (BMI) and BMI Z-scores for all age categories were more likely to be achieved when an RDN or mental health professional were involved in the multi-component pediatric weight management interventions that included the above three major components.

Rating: Strong
Imperative

- Risks/Harms of Implementing This Recommendation

  The harm of delivering multi-component pediatric weight management interventions is small. Pediatric weight management interventions for overweight and obese youths may mildly increase injury risk with exercise. However, no evidence of other adverse effects resulting from pediatric weight management programs on growth, eating disorder pathology or mental health was found. Caution is suggested because these findings were tentative due to incomplete reporting. More robust harms assessment and reporting was recommended to confirm this (USPSTF, Barton 2010; Whitlock et al, 2010). An update of the USPSTF 2010 is underway at the time of this publication.

- Conditions of Application

  - Adequate staffing with expertise in pediatric weight management and the major component areas is required
  - Intervention format and training and educational materials should be developmentally appropriate and health literate, as well as culturally relevant for both the child and parent or care giver
  - Age, socioeconomic status, cultural issues and disease conditions should be taken into consideration
  - Organizational barriers include lack of space for groups, space for physical activity (indoor and outdoor) and trained staff to conduct components of the intervention program
  - Absenteeism and attrition may affect success rate
  - The RDN should be aware of and refer to community resources and programs to support pediatric weight management.

- Potential Costs Associated with Application

  Costs to Organization or Program

  - Substantial infrastructure is required to implement a multi-component pediatric weight management program
  - The costs and resources required depend upon the level of professional and support staffing, the setting (clinical and non-clinical space), individual or group sessions, size of groups, frequency of visits and duration of intervention
  - Participant absenteeism and attrition may affect reimbursement and program sustainability.

  Costs to Patient and Family

  - Costs of nutrition, physical activity and behavioral components and reimbursement for these may vary
  - The absence of health insurance coverage for pediatric weight management could limit program access and participation.

- Recommendation Narrative

A total of 72 articles (73 studies) provide support for the recommendations

Positive Quality Studies (36)

- *A total of 34 randomized controlled trials (RCTs):* Budd et al, 2007; Chanoine and Richard, 2011; Collins et al, 2011; Demol et al, 2009; Díaz et al, 2010; Epstein et al, 2008; Epstein et al, 2005; Ford et al, 2010; Jelalian et al, 2010; Jiang et al, 2005; Jones et al, 2008; Kalavainen et al, 2007; Kalavainen et al, 2011; Klesges et al, 2010; Krebs et al, 2010; Munsch et al, 2008; Naar-King et al, 2009; Nemet et al, 2005; O'Brien et al, 2010; Okely et al, 2010; Rezvanian et al, 2010; Robinson et al, 2010; Rooney et al, 2005; Rosado et al, 2008; Sacher et al, 2010; Saelens et al, 2011; Sato et al, 2010; Savoye et al, 2011; Shalitin et al, 2009; Simon et al, 2008; Stice et al, 2008; Wafa et al, 2011; Wilfley et al 2007; Yu et al, 2005
- *Two randomized crossover trials:* Coppins et al, 2011; Doyle-Baker et al, 2011.

Neutral Quality Studies (37)

- *A total of 31 RCTs:* Atabek and Pirgon, 2008; Berkowitz et al, 2006; Berkowitz et al, 2011; Bravender et al, 2010; Burgert et al, 2008; Clarson et al, 2009; Croker et al, 2012; Doyle et al, 2008; Garipagaoglu et al, 2009; Godoy-Matos et al, 2005; Golan et al, 2006; Goldschmidt et al, 2011; Hart et al, 2010; Hughes et al, 2008; Jelalian et al, 2008; Jelalian et al, 2006; Johnston et al, 2011; Kalarchian et al, 2009; Magarey et al, 2011; Nemet et al, 2008; Pedrosa et al, 2011; Ribeiro et al, 2005; Tjønna et al, 2009; Van Mil et al, 2007; Wake et al, 2009; Weigel et al, 2008; Williams et al, 2007; Williamson et al, 2005; Williamson et al, 2006; Wilson et al, 2010; Yackobovitch-Gavan et al, 2008
- *Four non-randomized controlled trials:* Adam et al, 2009; Nowicka et al, 2009; Reinehr et al, 2006; Reinehr et al, 2009
- *One cluster randomized trial:* Eliakim et al, 2007
- *One before-after study:* Epstein et al, 2005 (Study 2).

Multi-component Weight Management Interventions

- Multi-component weight management interventions that include diet and nutrition, physical activity and behavioral components and involve an RDN or psychologist or mental health provider are more likely to be effective in treating overweight in children and teens compared to interventions missing at least one of these major components
- Multi-component interventions were associated with shorter-term (six-month) and longer-term (two-year) decreases in BMI Z-scores and BMI for all age categories. Conversely, the absence of one or more of these components was associated with in an increase in BMI measures in the longer term. Shorter-term and longer-term BMI-Z scores were reduced with both types of interventions. However, significantly greater reduction was reported in the multi-component interventions. BMI percentile reductions at six months were also observed in the multi-component interventions, but were reported in fewer studies.
- A huge number of possible combinations of intervention components existed across studies. Multiple correspondence analysis and hierarchical cluster analysis was used and two very clear clusters (types of intervention mixes) were identified:
  - *Multi-component intensive type (MCI):* Study arms characterized by interventions that tend to include all of the following major components:
    - Diet and nutrition
    - Physical activity
    - Behavior
    - Involvement of an RDN or psychologist or mental health provider.
  - *Minimal intervention type (MI):* Study arms characterized by interventions that are likely to be missing at least one of the above major intervention components.
- We then examined the associations between these intervention mix types (MCI vs. MI) and the presence or absence of a range of diet, exercise and behavior intervention components.

BMI Z-Score Outcomes

Fifty arms reported BMI Z-score changes from baseline in at least one of the five time periods. Data analysis of arm-level BMI Z-score means indicated that both intervention mix types had a net reduction in BMI Z-score across periods (mean BMI Z-score below zero). However, BMI Z-score increased from the initial decrease at less than six months and stabilized at -0.1 BMI-Z compared to baseline for MI. The pattern was different with MCI; where BMI Z-score increased from the initial time point, but then decreased from six months to one year. Both types maintained a decrease in BMI Z-scores below baseline at two years. At the one-year time point, the difference in BMI-Z for MCI was significantly lower ($P<0.05$) than for MI.

BMI Outcomes

Forty-five arms reported BMI changes from baseline in at least one of the time periods. Data analysis indicated that the two intervention types showed similar patterns with respect to BMI change from baseline. In both MCI and MI, there were greater BMI declines in the first period (less than six months) with a BMI regain at the second year. The initial decreases in baseline BMI were offset by increases in BMI in later time periods, with both groups demonstrating a net BMI increase over baseline at two years. MCI remained very close to baseline BMI measure, even at the two-year time period. The BMI decrease in MCI was significantly higher at less than six months, six months and one year ($P<0.05$) compared to MI.

BMI Change Sub-analysis by Age Group

- Because child growth affects BMI values, data were also analyzed to see whether there were differences in BMI changes at each time point by age categories. The sample was divided into three categories:
  - Child: Six to 11 years
  - Middle school: Twelve years to 14 years
  - Teen: Thirteen to 18 years.
- For all three age categories, the BMI change from baseline showed significant short-term reductions for MCI compared to MI and remained very close to baseline BMI measures even at the two-year time period.

BMI Percentile Outcomes

Fewer studies reported changes in BMI percentile (N=10). At less than six months, mean BMI percentile changes were significantly ($P=0.005$) different between the two intervention types, with MCI reporting the greatest decrease. The small number of arms reporting this outcome decreases our confidence in the effect of the two intervention types on BMI percentiles.

- Recommendation Strength Rationale
  - Conclusion statement is **Grade I.**
  - Study arms (groups in the study, for example, intervention group or control) varied widely in terms of the mix of intervention components used
  - Because of the extreme heterogeneity, differences between type were interpreted at the treatment arm, not at the individual child level. No attempt was made to estimate individual level effects of intervention.
- Minority Opinions

  None.

- Supporting Evidence

The recommendations were created from the evidence analysis on the following questions. To see detail of the evidence analysis, click the blue hyperlinks below (recommendations rated consensus will not have supporting evidence linked).

What is the effectiveness of multi-component pediatric weight management interventions to treat overweight in children and teens?

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- Pediatric Weight Management
- Pediatric Weight Management (PWM) Guideline (2015)

Quick Links

Recommendations Summary

PWM: Family Participation in Multicomponent Pediatric Weight Management Interventions 2015

Click here to see the explanation of recommendation ratings (Strong, Fair, Weak, Consensus, Insufficient Evidence) and labels (Imperative or Conditional). To see more detail on the evidence from which the following recommendations were drawn, use the hyperlinks in the Supporting Evidence Section below.

- Recommendation(s)

  PWM: Family Participation in Multicomponent Pediatric Weight Management Interventions

  The registered dietitian nutritionist (RDN) should encourage family participation as an integral part of a multi-component pediatric weight management intervention for children of all ages, including teens. A strong body of research indicates that family involvement as part of a m ulti-component pediatric weight management intervention is highly consistent with positive weight status outcomes at both six months and 12 months.

  Rating: Strong
  Imperative

  - Risks/Harms of Implementing This Recommendation

    There are no potential risks or harms associated with the application of this recommendation.

  - Conditions of Application

    - The following may impact success of counseling:
      - Awareness and sensitivity to parental style in limit setting and creating healthy boundaries and ability to support child's weight loss efforts
      - Family dynamics (e.g., parent-child relationship, parenting techniques, parental attitude towards food and weight, etc.)
      - Family unit differences and circumstances at home (i.e., single parent, lives part of the time with other parent)
      - Parent or family commitment to program participation (during sessions and at home)
      - Parent or family unable or unwilling to actively participate (i.e., no child care for younger children at home, disinterest).
    - To maximize participation, scheduling counseling during parents' off-work hours should be considered
    - The location of counseling (distance from home or workplace), the duration and the length of sessions may affect family participation

- The RDN should be aware of and refer to community resources and programs to support pediatric weight management.

- Potential Costs Associated with Application

  The duration, frequency and length of sessions may require additional costs to parents such as costs related to child care for other family members or lost wages if a parent or parents must take time off from work to attend sessions.

- Recommendation Narrative

  Family Participation in Multi-component Pediatric Weight Management and Weight Status Outcomes

  A total of 32 studies were included in the treatment context multivariate analysis and provide support for this recommendation.

  Positive Quality Studies (17)

  - *A total of 16 randomized controlled trials (RCTs):* Budd et al, 2007; Chanoine and Richard, 2011; Díaz et al, 2010; Ford et al, 2010; Jelalian et al, 2010; Jiang et al, 2005; Klesges et al, 2010; Nemet et al, 2005; O'Brien et al, 2010; Okely et al, 2010; Robinson et al, 2010; Sacher et al, 2010; Savoye et al, 2011; Shalitin et al, 2009; Stice et al, 2008; Wilfley et al 2007
  - *One randomized crossover trial:* Coppins et al, 2011.

  Neutral Quality Studies (15)

  - *A total of 13 RCTs:* Berkowitz et al, 2006; Berkowitz et al, 2011; Garipagaoglu et al, 2009; Hughes et al, 2008; Johnston et al, 2011; Kalarchian et al, 2009; Magarey et al, 2011; Pedrosa et al, 2011; Reinehr et al, 2009; Tjønna et al, 2009; Wake et al, 2009; Weigel et al, 2008; Wilson et al, 2010
  - *Two non-randomized controlled trials:* Nowicka et al, 2009; Reinehr et al, 2006.

  These studies were included in the analysis because they included weight status outcomes at six months and 12 months and all six treatment characteristics below:

  - Family involvement vs. no family involvement
  - Whether Group pediatric weight management sessions were included vs. exclusively individual pediatric weight management sessions
  - Whether the intervention was on teens only vs. children or mixed children and teens
  - Whether the intervention took place in a clinic vs. any other setting
  - The intervention lasted six or more months vs. less than six months
  - Whether the intervention was Intensive multi-component in contrast to minimal or no intervention.

  Because the effect of one component (e.g., including family involvement or treatment outside a clinic setting) may depend on the presence of other components, the analysis focused on configurations of components. In addition, consistency and coverage patterns were reviewed to determine whether, and under what conditions (including the above components in the treatment mix) was consistently associated with positive outcomes.

  Family Participation in Multi-component Pediatric Weight Management

  - *Consistency:* Including family involvement as part of a multi-component pediatric weight management intervention is highly consistent with positive weight status outcomes. Multi-component pediatric weight management interventions that include family involvement were consistent with positive weight status outcomes at both six months and 12 months. Not including family involvement was consistent with negative weight status outcomes in one of three configurations at 12 months. There were no configurations that included family involvement consistent with negative outcomes and no configurations that did not include family involvement consistent with positive outcomes. Thus, including family involvement as part of a multi-component pediatric weight management intervention is highly consistent with positive weight status outcomes.
  - Coverage: At 12 months, family involvement was included in 83% of arms (N=15) in configurations with consistent positive weight status outcomes, and 90% (N=26) of all arms with positive weight status outcomes. Thus, family involvement was included in the large majority of both arms and configurations with positive outcomes. Coverage was high.

- Recommendation Strength Rationale

  Conclusion statement is Grade I.

- Minority Opinions

  None.

- Supporting Evidence

  The recommendations were created from the evidence analysis on the following questions. To see detail of the evidence analysis, click the blue hyperlinks below (recommendations rated consensus will not have supporting evidence linked).

  What is the association between family participation and weight status outcomes in multi-component pediatric weight management interventions?

  - References

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- References not graded in Academy of Nutrition and Dietetics Evidence Analysis Process

  None.

- Pediatric Weight Management
- Pediatric Weight Management (PWM) Guideline (2015)

Quick Links

Recommendations Summary

PWM: Length of Treatment in Multi-component Pediatric Weight Management Interventions 2015

Click here to see the explanation of recommendation ratings (Strong, Fair, Weak, Consensus, Insufficient Evidence) and labels (Imperative or Conditional). To see more detail on the evidence from which the following recommendations were drawn, use the hyperlinks in the Supporting Evidence Section below.

- Recommendation(s)

  PWM: Length of Treatment in Multi-component Pediatric Weight Management Interventions

  The registered dietitian nutritionist (RDN) should ensure the multi-component pediatric weight management intervention is at least six months in duration. Research indicates that shorter term (less than six months) interventions were not consistently associated with positive weight status at 12 months. At least six months of treatment was associated with longer-term positive weight status outcomes, especially when group pediatric weight management sessions were included and it occurred in a clinic.

  Rating: Fair
  Imperative

  - Risks/Harms of Implementing This Recommendation

    There are no risks or harms associated with the application of this recommendation.

  - Conditions of Application

    - The number of treatment sessions and duration of each session within a given time period may vary. The optimal model for frequency and duration of a single session could not be determined, as interventions varied widely.
    - The length of treatment sessions and the frequency and duration of each session may impact regular participation
    - The RDN should be aware of and refer to community resources and programs to support pediatric weight management.

  - Potential Costs Associated with Application

    - The costs and resources required are dependent upon the duration of intervention
    - The duration, frequency or length of sessions may require addition costs to parents, such as costs related

to child care for other family members or lost wages if a parent must take time off from work to attend sessions.

- Recommendation Narrative

Length of Treatment in Multi-component Pediatric Weight Management and Weight Status Outcomes

A total of 32 studies were included in the treatment context multivariate analysis and provide support for the recommendation.

Positive Quality Studies (17)

- *A total of 16 randomized controlled trials (RCTs):* Budd et al, 2007; Chanoine and Richard, 2011; Díaz et al, 2010; Ford et al, 2010; Jelalian et al, 2010; Jiang et al, 2005; Klesges et al, 2010; Nemet et al, 2005; O'Brien et al, 2010; Okely et al, 2010; Robinson et al, 2010; Sacher et al, 2010; Savoye et al, 2011; Shalitin et al, 2009; Stice et al, 2008; Wilfley et al 2007
- *One randomized crossover trial:* Coppins et al, 2011.

Neutral Quality Studies (15)

- *A total of 13 neutral quality RCTs:* Berkowitz et al, 2006; Berkowitz et al, 2011; Garipagaoglu et al, 2009; Hughes et al, 2008; Johnston et al, 2011; Kalarchian et al, 2009; Magarey et al, 2011; Pedrosa et al, 2011; Reinehr et al, 2009; Tjønna et al, 2009; Wake et al, 2009; Weigel et al, 2008; Wilson et al, 2010
- *Two nonrandomized controlled trials:* Nowicka et al, 2009; Reinehr et al, 2006.

These studies were included in the analysis because they included weight status outcomes at 6 and 12 months and all six treatment characteristics below:

- Family involvement vs. no family involvement
- Whether group pediatric weight management sessions were included vs. exclusively individual pediatric weight management sessions
- Whether the intervention was on teens only vs. children or mixed children and teens
- Whether the intervention took place in a clinic vs. any other setting
- The intervention lasted six or months months vs. less than months
- Whether the intervention was intensive multi-component in contrast to minimal or no intervention.

Because the effect of one component (e.g., including family involvement, or treatment outside a clinic setting) may depend on the presence of other components, the analysis focused on configurations of components. In addition, consistency patterns were reviewed to determine whether, and under what conditions, including the above;components in the treatment mix was consistently associated with positive outcomes.

Length of Treatment in Pediatric Weight Management

- *Consistency:* Length of treatment of at least 6 months (≥6 months) was consistently associated with positive weight status outcomes—though this consistency was weak. The majority of configurations consistent with positive weight status outcomes at both 6 and 12 months did not include treatment ≥6 months as a component. Treatment <6 months was present in one configuration consistently associated with positive outcomes at 6 months, but, in contrast, was also consistently associated with negative weight status outcomes in two configurations at 12 months. Treatment lasting at least 6 months is consistent with positive weight status outcomes under limited conditions, but does not appear to be consistently associated with negative weight status outcomes under any conditions. In contrast, treatment lasting <6 months is consistently associated with shorter term positive weight status outcomes under limited conditions, and more consistently associated with negative weight status outcomes in longer time periods.
- *Coverage:* At 12 months, length of treatment of at least 6 months was included in 61% of arms (n=11) in configurations with consistent positive weight status outcomes, and in 62% (n=18) of all arms with positive weight status outcomes. Thus, length of treatment ≥6 months was in slightly over half arms and configurations with positive outcomes: coverage was moderate.

- Recommendation Strength Rationale

  Conclusion statement is **Grade II.**
- Minority Opinions

  None.

- Supporting Evidence

The recommendations were created from the evidence analysis on the following questions. To see detail of the evidence analysis, click the blue hyperlinks below (recommendations rated consensus will not have supporting evidence linked).

What is the association between length of treatment and weight status outcomes in multi-component pediatric weight management interventions?

- References

Berkowitz R, Fujioka K, Daniels S, Hoppin A, Owen S, Perry A, Sothern M, Renz C, Pirner M, Walch J, Jasinsky O, Hewkin A, Blakesley V.. Effects of sibutramine treatment in obese adolescents: A randomized trial. *Annals of Internal Medicine.* 2006; 145:81-90.

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- References not graded in Academy of Nutrition and Dietetics Evidence Analysis Process

  None.

- Pediatric Weight Management
- Pediatric Weight Management (PWM) Guideline (2015)

Quick Links

Recommendations Summary

PWM: Treatment Setting in Multi-component Pediatric Weight Management Interventions 2015

Click here to see the explanation of recommendation ratings (Strong, Fair, Weak, Consensus, Insufficient Evidence) and labels (Imperative or Conditional). To see more detail on the evidence from which the following recommendations were drawn, use the hyperlinks in the Supporting Evidence Section below.

- Recommendation(s)

  PWM: Treatment Setting in Multi-component Pediatric Weight Management Interventions

  The registered dietitian nutritionist (RDN) can provide multi-component pediatric weight management interventions either within the clinic or outside the clinic setting. Research indicates that positive weight status outcomes occur in either setting, especially when the interventions are multi-component, include group pediatric weight management sessions and have family involvement.

  Rating: Fair
  Imperative

  - Risks/Harms of Implementing This Recommendation

    Group pediatric weight management sessions conducted in school settings may lead to stigmatization of some children and teens (Barlow, 2007).

  - Conditions of Application

    - Organizational barriers may include lack of space to conduct counseling and for physical activity (indoor/outdoor)
    - The RDN should be aware of and refer to community resources and programs to support pediatric weight

management.

- Potential Costs Associated with Application

  Both within clinic and outside the clinic settings have different costs and resources associated with them, including clinical and non-clinical space.

- Recommendation Narrative

  Treatment Settings in Multi-component Pediatric Weight Management and Weight Status Outcomes

  A total of 32 studies were included in the treatment context multivariate analysis and provide support for the recommendation.

  Positive Quality Studies (17)

  - *A total of 16 randomized controlled trials (RCTs):* Budd et al, 2007; Chanoine and Richard, 2011; Díaz et al, 2010; Ford et al, 2010; Jelalian et al, 2010; Jiang et al, 2005; Klesges et al, 2010; Nemet et al, 2005; O'Brien et al, 2010; Okely et al, 2010; Robinson et al, 2010; Sacher et al, 2010; Savoye et al, 2011; Shalitin et al, 2009; Stice et al, 2008; Wilfley et al 2007
  - *One randomized crossover trial:* Coppins et al, 2011.

  Neutral Quality Studies (15)

  - *A total of 13 neutral quality RCTs:* Berkowitz et al, 2006; Berkowitz et al, 2011; Garipagaoglu et al, 2009; Hughes et al, 2008; Johnston et al, 2011; Kalarchian et al, 2009; Magarey et al, 2011; Pedrosa et al, 2011; Reinehr et al, 2009; Tjønna et al, 2009; Wake et al, 2009; Weigel et al, 2008; Wilson et al, 2010
  - *Two non-randomized controlled trials:* Nowicka et al, 2009; Reinehr et al, 2006.

  These studies were included in the analysis because they included weight status outcomes at six months and 12 months and all six treatment characteristics below:

  - Family involvement vs. no family involvement
  - Whether group pediatric weight management sessions were included vs. exclusively individual pediatric weight management sessions
  - Whether the intervention was on teens only vs. children or mixed children and teens
  - Whether the intervention took place in a clinic vs. any other setting
  - The intervention lasted six or more months vs. less than six months
  - Whether the intervention was intensive multi-component (in contrast to minimal or no intervention).

  Because the effect of one component (e.g., including family involvement, or treatment outside a clinic setting) may depend on the presence of other components, the analysis focused on configurations of components. In addition, consistency and coverage patterns were reviewed to determine whether, and under what conditions (including the above components in the treatment mix) was consistently associated with positive outcomes.

  Treatment Settings in Multi-component Pediatric Weight Management

  - *Consistency:* Delivering treatment within a clinic setting was not consistently associated with positive weight status outcomes, especially at 12 months. That is, whether clinic-only treatment was associated with positive or negative weight status outcomes depended on its combination with other components. Treatment outside a clinic was consistent with positive weight status outcomes in one configuration at six months. There were no configurations that occurred outside a clinic consistent with negative outcomes. Treatment in a clinic-only setting is not consistently associated with positive weight status outcomes. Thus, the association between clinic-only treatment and weight status outcomes is complex, depending on the presence of other treatment components. In contrast, treatment outside a clinic is not consistent with negative outcomes in the configuration and is consistent with positive weight status outcomes at 12 months in one configuration of treatment components.
  - *Coverage:* At 12 months, treatment in a clinic-only setting was included in 83% of arms (N=15) in configurations with consistent positive weight status outcomes, and 13% of arms consistent with negative weight status outcomes. Clinic-only treatment was present in 79% (N=23) of all arms with positive weight status outcomes. Thus, clinic-only treatment was present in the majority of both arms and configurations with positive outcomes. Coverage was high.

- Recommendation Strength Rationale

  Conclusion statement is **Grade II.**

- Minority Opinions

  None.

- Supporting Evidence

The recommendations were created from the evidence analysis on the following questions. To see detail of the evidence analysis, click the blue hyperlinks below (recommendations rated consensus will not have supporting evidence linked).

What is the association between treatment setting (clinic vs. outside the clinic) and weight status outcomes in multi-component pediatric weight management interventions?

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- Pediatric Weight Management
- Pediatric Weight Management (PWM) Guideline (2015)

Quick Links

Recommendations Summary

PWM: Sessions in Multicomponent Pediatric Weight Management Interventions 2015

Click here to see the explanation of recommendation ratings (Strong, Fair, Weak, Consensus, Insufficient Evidence) and labels (Imperative or Conditional). To see more detail on the evidence from which the following recommendations were drawn, use the hyperlinks in the Supporting Evidence Section below.

- Recommendation(s)

PWM: Group Sessions in Multicomponent Pediatric Weight Management Interventions

The registered dietitian nutritionist (RDN) can include group sessions and family participation as part of the multi-component pediatric weight management interventions. Multi-component intensive interventions that included group pediatric weight management sessions and included family participation were consistently associated with shorter-term (six-month) and longer-term (12-month) positive weight status outcomes.

Rating: Fair
Imperative

PWM: Individual Sessions in Multicomponent Pediatric Weight Management Interventions

The registered dietitian nutritionist (RDN) can include individual sessions as part of the multi-component pediatric weight management intervention. Treatment that relied exclusively on individual pediatric weight management sessions with or without family participation was associated with shorter-term positive weight status outcomes. Information about the

longer-term impact on weight status are mixed.

Rating: Fair
Imperative

- Risks/Harms of Implementing This Recommendation

  Group pediatric weight management sessions conducted in school settings may lead to stigmatization of some children and teens (Barlow, 2007).

- Conditions of Application

  - Organizational barriers may include lack of space to conduct counseling and for physical activity (indoor and outdoor)
  - Group options will vary by program and participant needs
  - For additional conditions of application regarding family involvement, see the following recommendation:

    PWM: Family Participation in Multi-component Pediatric Weight Management
  - The RDN should be aware of and refer to community resources and programs to support pediatric weight management.

- Potential Costs Associated with Application

  Both individual and group interventions have different costs and resources associated with them.

- Recommendation Narrative

  Sessions in Multi-component Pediatric Weight Management and Weight Status Outcomes

  A total of 32 studies were included in the treatment context multivariate analysis and provide support for the recommendation.

  Positive Quality Studies (17)

  - *A total of 16 randomized controlled trials (RCTs):* Budd et al, 2007; Chanoine and Richard, 2011; Díaz et al, 2010; Ford et al, 2010; Jelalian et al, 2010; Jiang et al, 2005; Klesges et al, 2010; Nemet et al, 2005; O'Brien et al, 2010; Okely et al, 2010; Robinson et al, 2010; Sacher et al, 2010; Savoye et al, 2011; Shalitin et al, 2009; Stice et al, 2008; Wilfley et al 2007
  - *One randomized crossover trial:* Coppins et al, 2011.

  Neutral Quality Studies (15)

  - *A total of 13 RCTs:* Berkowitz et al, 2006; Berkowitz et al, 2011; Garipagaoglu et al, 2009; Hughes et al, 2008; Johnston et al, 2011; Kalarchian et al, 2009; Magarey et al, 2011; Pedrosa et al, 2011; Reinehr et al, 2009; Tjønna et al, 2009; Wake et al, 2009; Weigel et al, 2008; Wilson et al, 2010
  - *Two non-randomized controlled trials:* Nowicka et al, 2009; Reinehr et al, 2006.

  These studies were included in the analysis because they included weight status outcomes at six months and 12 months and all six treatment characteristics below:

  - Family involvement vs. no family involvement
  - Whether group pediatric weight management sessions were included (vs. exclusively individual pediatric weight management sessions)
  - Whether the intervention was on teens only vs. children or mixed children and teens
  - Whether the intervention took place in a clinic vs. any other setting
  - The intervention lasted six or more months vs. less than six months
  - Whether the intervention was intensive multi-component in contrast to minimal or no intervention.

  Because the effect of one component (e.g., including family involvement or treatment outside a clinic setting) may depend on the presence of other components, the analysis focused on configurations of components. In addition, consistency and coverage patterns were reviewed to determine whether, and under what conditions (including the above components in the treatment mix), was consistently associated with positive outcomes.

  Sessions in Multi-component Pediatric Weight Management

  - *Consistency:* Including group pediatric weight management sessions in the configuration of treatment components was consistent with positive weight status outcomes at both six months and 12 months. Including only individual pediatric weight management sessions was consistent with positive weight status outcomes in one configuration at six months and consistent with one with negative weight status outcomes in one of three configurations at 12 months. There were no configurations that included group sessions consistent with negative outcomes. Thus, including group sessions as part of a multi-component pediatric weight management intervention is consistent with positive weight status outcomes. In contrast,

individual only treatment may be consistent with either positive or negative weight status outcomes dependent on other components in the configuration.
- *Coverage:* At 12 months, group sessions were included in 83% of arms (N=15) in configurations with consistent positive weight status outcomes, and 79% (N=23) of all arms with positive weight status outcomes. Thus, group sessions included in the majority of both arms and configurations with positive outcomes. Coverage was high.

- Recommendation Strength Rationale

  Conclusion statement is **Grade II.**

- Minority Opinions

  None.

- Supporting Evidence

  The recommendations were created from the evidence analysis on the following questions. To see detail of the evidence analysis, click the blue hyperlinks below (recommendations rated consensus will not have supporting evidence linked).

  What is the association between including group sessions (vs. individual sessions only) and weight status outcomes in multi-component pediatric weight management interventions?

  - References

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- References not graded in Academy of Nutrition and Dietetics Evidence Analysis Process

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- Pediatric Weight Management
- Pediatric Weight Management (PWM) Guideline (2015)

Recommendations Summary

PWM: Fast Food Meal Frequency in Children and Teens 2015

Click here to see the explanation of recommendation ratings (Strong, Fair, Weak, Consensus, Insufficient Evidence) and labels (Imperative or Conditional). To see more detail on the evidence from which the following recommendations were drawn, use the hyperlinks in the Supporting Evidence Section below.

- Recommendation(s)

PWM: Fast Food Meal Frequency in Children and Teens

If the overweight or obese child or teen consumes fast-food meals, the registered dietitian nutritionist (RDN) should encourage reduction in the frequency of fast-food intake to less than twice a week. Limited evidence in populations eight to 16 years of age at baseline, suggests that higher frequency of fast-food consumption, particularly more than twice a week is associated with increased adiposity; BMI Z-score; or risk of obesity during childhood, adolescence and during the

transition from adolescence into adulthood.

Rating: Weak
Conditional

- Risks/Harms of Implementing This Recommendation

  There are no potential risks or harms associated with the application of the recommendations.

- Conditions of Application

  - Evidence for this recommendation is based on children eight to 16 years of age and may not apply to children in other age groups
  - While the recommendation is based on evidence analysis of a specific meal consumption (fast food), modification of the frequency and portion size of fast-food meals should be considered when developing the nutrition prescription.

- Potential Costs Associated with Application

  There are no obvious costs associated with the application of the recommendations.

- Recommendation Narrative

  The following evidence to support the recommendations are excerpted from the Nutrition Evidence Library (Dietary Guidelines Advisory Committee 2015):

  What Is the Relationship Between Eating Out and Take-away Meals and Body Weight in Children and Adults? (DGAC 2015)

  Conclusion: Among children, limited evidence from prospective cohort studies in populations eight years to 16 years of age at baseline suggests that higher frequency of fast-food consumption is associated with increased adiposity; BMI Z-score; or risk of obesity during childhood, adolescence and during the transition from adolescence into adulthood. **Grade:** Limited

  Key Findings

  A total of seven prospective cohort studies (Bisset et al, 2007; Fraser et al, 2012; Haines et al, 2007; Laska et al, 2012; MacFarlane et al, 2009; Taveras et al, 2005; Thompson et al, 2004) examined the relationship between frequency of fast-food meals, or consumption of other types of meals and anthropometric outcomes:

  - *Six studies examined fast-food meals:* Three studies indicated increased fast-food intake, particularly more than twice per week, was associated with increased risk of obesity, BMI/BMI Z-score or body fat (Bisset et al, 2007; Fraser et al, 2012; Thompson et al, 2004); two found no association (Laska et al, 2012; MacFarlane et al, 2009); and one found no association in boys and a negative association in girls (Haines et al, 2007)
  - Two studies looked at a variety of non-fast-food meals away from home, using varying definitions of food establishments and meal types and reported mixed findings for a relationship with weight-related outcomes (Taveras et al, 2005; Thompson et al, 2004)
  - In adolescents transitioning to adulthood, one study found high baseline frequency of fast-food intake was associated with increased BMI Z-scores at five-year follow-up
  - Risk of bias ratings ranged from four of 24 to seven of 24, consistent with low to moderate risk of bias
  - This body of evidence is small and results are inconsistent; however, a majority of studies found an association between increased fast-food intake and weight outcomes.

- Recommendation Strength Rationale
  - The Academy of Nutrition and Dietetics (AND) and the Pediatric Weight Management Expert Work Group concurs with the Nutrition Evidence Library Dietary Guidelines Advisory Committee conclusion statement and grade (**2015 DGAC Grade for Children and fast-food consumption:** Limited).
  - Methodological limitations include:
    - Generalizability is relatively good for this body of evidence, although Hispanic/Latino participants are not well-represented and only one relatively small study included children under the age of nine years
    - Three studies used self-reported and parent-reported height and weight to assess outcomes and only three reported BMI Z-scores.
    - Studies used different means of defining food locations; standardization is needed
    - There were no data on the composition of meals consumed and studies did not control for overall energy intake.
- Minority Opinions

  None.

- Supporting Evidence

The recommendations were created from the evidence analysis on the following questions. To see detail of the evidence analysis, click the blue hyperlinks below (recommendations rated consensus will not have supporting evidence linked).

- References
- References not graded in Academy of Nutrition and Dietetics Evidence Analysis Process

United States Department of Agriculture. Nutrition Evidence Library. Dietary Guidelines Advisory Committee. *What Is the Relationship Between Eating Out and Take-away Meals and Body Weight in Children and Adults?* (DGAC 2015) Accessed online June 1, 2015: http://www.nel.gov/conclusion.cfm?conclusion_statement_id=250450.