**BACKGROUND AND SIGNIFICANCE**

- The percentage of adolescents who are overweight or obese has tripled over the last 30 years (CDC, 2014).
- Overweight adolescents are likely to:
  - become obese as adults
  - exhibit poor school performance
  - have social and psychological problems
  - suffer weight related bullying
  - likely to engage in unhealthy behaviors:
    - alcohol and tobacco use
    - premature sexual behavior
    - inappropriate dieting practices (CDC, 2014).
- Significant care gaps exist in primary care; effective, evidence based treatment strategies for overweight adolescents are lacking (ACPM, 2011).
- School Based Health Centers (SBHCs) are positioned to fill this care gap as they provide access to primary care and health promotion.

**PURPOSE**

The purpose of this integrative literature review was to address the following questions:

1. What individualized interventions have been implemented by SBHCs for overweight adolescents?
2. How successful are SBHC interventions in either stabilizing weight or promoting healthy weight loss?

**TRANSTHEORETICAL MODEL**

- Biopsychosocial model, allows for motivational interviewing to facilitate process of, rather than outcome of change (Prochaska and DiClemente, 1982).
- Fits the unique needs of adolescents; focuses on the process of, rather than outcome of change; fosters health centered rather than weight centered goals.

**METHOD**

Integrative literature review with comprehensive search of electronic data bases: Ovid Medline, EBSCOHost, CINAHL

Keywords/terms: Overweight adolescent, obesity, School Based Health Center/Clinic, interventions, school health, school based intervention.

Inclusion criteria:
- Interventions by School Based Health Center staff
- Body Mass Index (BMI) as an outcome measure
- Subjects: overweight adolescents, ages 12-19
- Published after 2000, in English, peer reviewed journals

Exclusion Criteria:
- School based interventions that did not involve SBHCs
- Targeted population younger than 12 or over 19

**SYNTHESIS OF FINDINGS**

Four studies met inclusion criteria, search yielded no studies distinguishing between overweight and obese adolescents. The following themes emerged from studies:

**Access during and after school hours:**
- SBHCs located on school site with access to population
- Allows for diversity of interventions
- Participants were called to SBHC if missed sessions

**Interventions, including screening & case finding:**
- BMI assessments completed per CDC (2012) guidelines
- Adolescents at risk with BMI ≥ 85% or greater identified
- Assessment for at least one additional risk factor:
  - BP, waist circumference, HDL-C, IR, mental health
  - 1:1 assessment with review of risk factors
  - Individualized goal setting, motivational interviewing
  - Key behavioral interventions
  - Nutrition, activity, screen time & readiness to change

**Outcome Measures:**
- Two studies assessed feasibility of a SBHC intervention, all studies demonstrated feasibility
- Two studies demonstrated quality improvement with education component for staff
- One RCT demonstrated statistically significant stabilization of BMI (Kong, et al, 2013)

**Limitations:** Sample size; lack of report of within-group characteristics - overweight, obese, gender, race; lack of detail about the intervention for future replication.

**PROPOSED CHANGE/IMPLEMENTATION STRATEGY**

Current guidelines recommend a staged approach to assessment, prevention and management of child and adolescent obesity (Barlow, 2007).

- The Institute for Clinical Systems Improvement (ISCI) algorithm provides a road map for intervention implementation that promotes research at each stage of care (ISCI, 2013).
- Implementing practice changes to align with current recommendations and researching their effectiveness is crucial for identifying appropriate care for the overweight adolescent.

**isci algorithm**

- Assess behaviors, eating, physical activity, motivation
- Assess medical risks, family history, review of systems, physical exam, BMI, BP
- Healthy weight BMI 5-84%
- Overweight BMI 85-94%
- Health Risks?
  - Yes
  - No
- Ready to change?
  - Yes
  - No

**Stage 1 prevention plus in primary care**

- Maintain weight or decrease velocity of weight gain and reassess every 3-6 months
- 5 Fruits & Vegetables/day
- 4 glasses water/day
- no soda
- 3 dairy servings/day
- 2 hours of screen time max/day
- 1 hour of physical activity/day

**RECOMMENDATIONS**

**Research:**
- SBHC guidelines call for coordinating care with the medical community and documenting the effect of SBHC services on students’ health and educational outcomes (Barnett and Allison, 2012).
- SBHCs are encouraged to initiate research that is replicable and support outcomes targeted to the needs of the overweight adolescent.
- Findings may be translated to other primary care settings to address this unique population.

**Practice:**
- Primary care providers have a comprehensive role in managing an adolescent’s weight problem; significant gaps in the delivery of care are cited in the literature (ACPM 2011).
- SBHCs offer an opportunity to fill this care gap. This review highlights that SBHCs can be instrumental in developing and testing evidence based strategies.

**Education:**
- Lack of provider training and confidence are cited as frequent barriers to care of overweight and obese adolescents (Hopkins & Elliott, 2011).
- Training and education can be accomplished through quality improvement programs (Oetzel, Scott & McGrath, 2009).

**Policy:**
- SBHCs often serve uninsured, underserved and minority populations who exhibit higher rates of obesity (CDC, 2014). SBHC should advocate for, and collaborate with key stakeholders to ensure socio-environmental factors are conducive to healthy lifestyles for all children in the community they serve.
- SBHCs should continue to advocate for appropriate reimbursement and funding for prevention and health promotion as prevention and early intervention are essential to halt the progression of obesity.

**REFERENCES**