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Implementation of a School Nurse-led Intervention for Children With Severe Obesity in New York City Schools

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ABSTRACT

Purpose: The Healthy Options and Physical Activity Program (HOP) is a school nurse-led intervention for children with severe obesity. HOP was developed by experts at the New York City Department of Health and Mental Hygiene and implemented in New York City schools beginning in 2012. The purpose of this study was to evaluate HOP implementation with the goal of informing HOP refinement and potential future HOP dissemination.
Design and Methods: This study entailed a retrospective analysis of secondary data. Analytic methods included descriptive statistics, Wilcoxon rank sum and Chi square tests, and multivariate logistic regression.
Results: During the 2012–2013 school year, 20,518 children were eligible for HOP. Of these, 1054 (5.1%) were enrolled in the program. On average, enrolled children attended one HOP session during the school year. Parent participation was low (3.2% of HOP sessions). Low nurse workload, low school poverty, higher grade level, higher BMI percentile, and chronic illness diagnosis were associated with student enrollment in HOP.
Conclusions: As currently delivered, HOP is not likely to be efficacious. Lessons learned from this evaluation are applicable to future nurse-led obesity interventions.
Practice Implications: Prior to implementing a school nurse-led obesity intervention, nursing workload and available support must be carefully considered. Interventions should be designed to facilitate (and possibly require) parent involvement. Nurses who deliver obesity interventions may require additional training in obesity treatment. With attention to these lessons learned, evidence-based school nurse-led obesity interventions can be developed.

Introduction

Childhood obesity, defined as body mass index (BMI) for age and sex ≥95th percentile (Ogden, 2010), affects 16.9% of children in the United States (Ogden, Carroll, Lawman, et al., 2016). Nearly 4% of American children meet criteria for severe obesity (Skelton, Cook, Auinger, Klein, & Barlow, 2009), with a BMI for age and sex at the 99th percentile or 120% of the 95th percentile (Flegal et al., 2009; Kelly et al., 2013). In New York City (NYC) schools, 20.7% of students are obese and 5.7% of students are severely obese before the age of 14 years (Day, Konty, Leventer-Roberts, Nonas, & Harris, 2014). In both NYC and nationwide, groups that suffer from health disparities (Villarruel, 2001) such as racial/ethnic minorities (Cunningham, Kramer, & Narayan, 2014; Freedman, Khan, Serdula, Ogden, & Dietz, 2006; Ogden, Carroll, Kit, & Flegal, 2014) and children from low-income households (Boelsen-Robinson, Gearon, & Peeters, 2014; Cunningham et al., 2014; Shrewsbury & Wardle, 2008) are disproportionately affected. Causes of obesity and severe obesity are complex, including individual, family, and community level factors (Davison & Birch, 2001).

Childhood obesity is associated with many negative health consequences (Daniels, 2006); health risks are increased for children with severe obesity (Kelly et al., 2013). Children with severe obesity are more likely to be diagnosed with metabolic syndrome and have higher levels of serum inflammatory markers (Kelly et al., 2013). Severity of cardiovascular disease risk factors (e.g., hypertension, elevated serum triglycerides), non-alcoholic fatty liver disease, and musculoskeletal problems such as knee pain increase with degree of adiposity (Kelly et al., 2013; Li et al., 2016; Skinner, Perrin, Moss, & Skelton, 2015).

Childhood obesity also increases risk for poor psychosocial health. Children with obesity are more likely to have depression and anxiety (Daniels, 2006; Kalarchian & Marcus, 2012). They are also more likely to have negative self-perception and self-worth (Braet, Mervielde, & Vandereycken, 1997), be bullied (Puhl & King, 2013; Puhl & Latner, 2007), be perceived negatively by peers (Zeller, Reiter-Purtill, & Ramey, 2008), and have unhealthy peer relationships (Boneberger et al., 2009). Compared to children with obesity, children with severe obesity have greater social anxiety and depression (Phillips et al., 2012).

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The health-related quality of life for children with severe obesity is similar to that of children with cancer and is poorer than their peers across all domains (physical, psychosocial, emotional, social, and school functioning) (Schwimmer, Burwinkle, & Varni, 2003).

Nurses working in the school setting may be well suited to implement obesity interventions by assisting with health behavior improvement, weight control, and chronic illness management (Morrison-Sandberg, Kubik, & Johnson, 2011; National Association of School Nurses, 2013; Pbert et al., 2013; Tucker & Lanningham-Foster, 2015). However, school nurses have been only involved in a limited amount of school-based obesity interventions (Pbert et al., 2016; Schroeder, Travers, & Smaldone, 2016). No school nurse-led intervention for children with severe obesity has been previously implemented or evaluated (Schroeder et al., 2016). The first intervention of this type, the Health Options and Physical Activity Program (HOP), was developed by the NYC Department of Health and Mental Hygiene (DOHMH) and implemented in NYC schools beginning in the 2012–2013 school year.

The Healthy Options and Physical Activity Program

HOP is a school nurse-led intervention for children with severe obesity who attend NYC schools. HOP was created by experts at the NYC Department of Health and Mental Hygiene with a focus on the health behaviors targeted in the 5210 Let's Go program: 5 fruits and vegetables, 2 hours or less of sedentary screen time, 1 hour of physical activity, 0 sugar-sweetened beverages (Lets Go!, 2012). HOP also included a fifth behavior of interest, portion control. Let's Go is a community-wide childhood obesity prevention intervention that has demonstrated feasibility (Kessler, Vine, & Rogers, 2015; Polacsek et al., 2009; Rogers & Motyka, 2009), efficacy (Rogers et al., 2013), and sustainability (Polacsek et al., 2014).

Figure 1 illustrates the process of HOP eligibility screening, enrollment, and implementation. Children who meet criteria for severe obesity during annual fitness assessments (New York City Department of Education, 2015) are identified for potential HOP participation. Parents of identified children receive a letter from the school explaining program processes and goals. Although parents have the opportunity to opt out, this option is taken by less than 1% of parents. If parents do not opt out, the child is eligible for HOP enrollment by the school nurse. HOP entails one-on-one meetings between the child and the school nurse. HOP is a low intensity program, requiring at least one session every six months. School nurses may increase the frequency of HOP sessions at their discretion. HOP sessions include counseling with a focus on three components: BMI tracking, goal setting, and education around the 5 targeted health behaviors. There is no structured HOP session curriculum; school nurses tailor session content using a set of resources provided to them during HOP training (e.g., colorful activity sheets, tip sheets for healthy goal setting, list of websites such as ChooseMyPlate.gov (United States Department of Agricultulture, 2016) that provide additional tools for developing healthy habits). Referrals

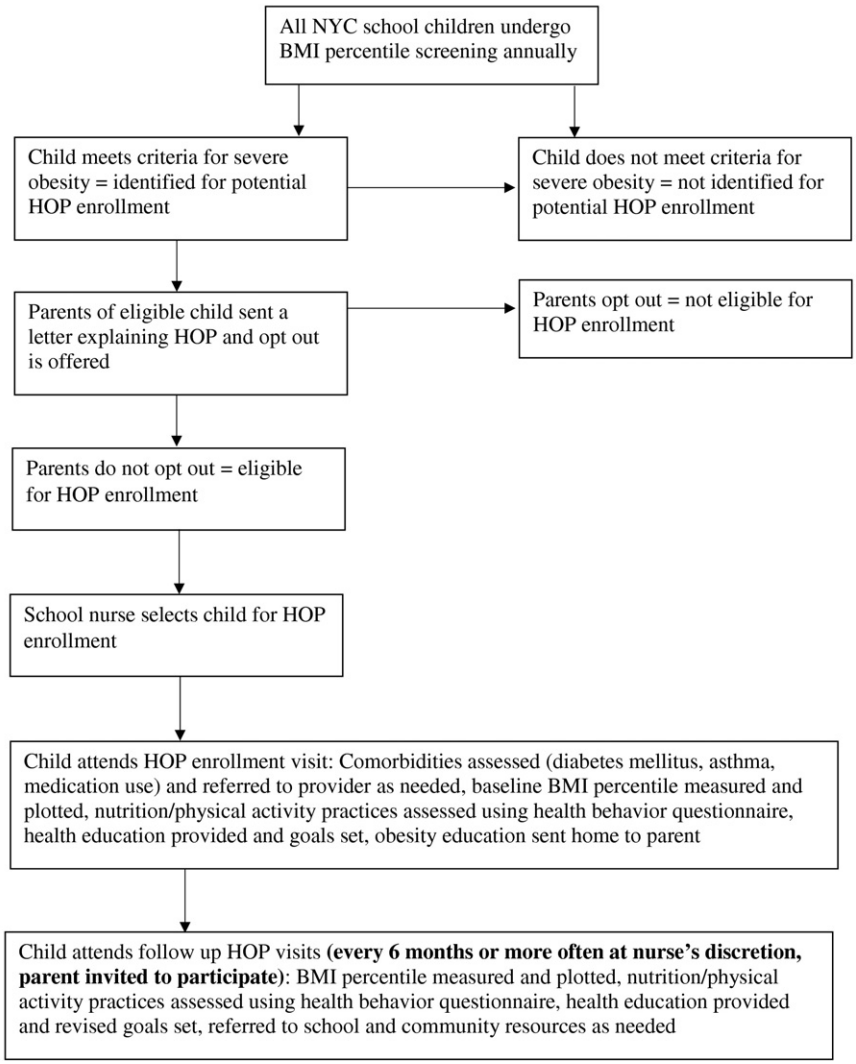

Fig. 1. Summary of HOP enrollment and implementation process.