Establishing the Limitations of Research regarding Obesity among Youth with Disabilities: a Narrative Literature Review

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Abstract

Obesity in children is increasingly prevalent in the United States, with 2x-5x higher rates observed in children with an intellectual or developmental disability. Through a narrative literature review, this study outlines the limitations of interventional studies for this group. Through examination of included articles, data exist on numerous interventions for this group; however, this data continues to be underpowered, varied by diagnosis, and a lack of practice-based guidelines endures.

Introduction

• Over 1/3 of children and adolescents in the United States have overweight or obesity.[1] Even higher rates exist among youth with intellectual and developmental disabilities (IDD), as high as 70-85% in groups with syndromic obesity.[2]
• Specific groups with increased risk include: Autism Spectrum Disorder (ASD), Down Syndrome (DS), Prader-Willi Syndrome (PWS), & Bardet-Biedl Syndrome (BBS).
• Risk factors include food selectivity, hyperphagia, psychotropic medication use, increased sedentary behavior, and genetics.
• Our aim is to examine the current literature to better outline these limitations.

Material and Methods

PubMed database was searched from 2010 to October 2020 for relevant articles. Narrative review was conducted to summarize and evaluate data.

Table 1. Select characteristics of review articles

<table>
<thead>
<tr>
<th>Clinical Diagnosis</th>
<th>Interventions</th>
<th>N Range (total)</th>
<th>Ages (years)</th>
<th>Dates reviewed</th>
<th>Quality Appraisal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abeysekara et al. 2014</td>
<td>CYSCHN</td>
<td>Family-centered care, medical home, PA</td>
<td>NP</td>
<td>NP</td>
<td>1998-2017</td>
</tr>
<tr>
<td>Robleto et al. 2018</td>
<td>IDD, ASD, DS, physical disability</td>
<td>Multidisciplinary diet/PA program, technology delivered diet program, retrospective review of BMER FIT program</td>
<td>21-453 (734)</td>
<td>2-19</td>
<td>2014-2017</td>
</tr>
<tr>
<td>Crino et al. 2018</td>
<td>PWS</td>
<td>Behavioral intervention, medications, bariatric surgery</td>
<td>NP</td>
<td>NP</td>
<td>1983-2018</td>
</tr>
<tr>
<td>Healy et al. 2019</td>
<td>ASD</td>
<td>Nutrition, PA, motivational interviewing, medications</td>
<td>1-115 (993)</td>
<td>2-20</td>
<td>2011-2017</td>
</tr>
</tbody>
</table>

Table 2. Select characteristics of individual intervention studies

<table>
<thead>
<tr>
<th>Clinical Diagnoses</th>
<th>Intervention</th>
<th>N</th>
<th>Ages (years)</th>
<th>Outcomes (primary result)</th>
<th>Notable qualities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wu et al. 2017</td>
<td>IDD, DS, ASD</td>
<td>RCT</td>
<td>12 weeks, Prescriptive cross-circuit training sessions utilizing body-weight exercises, balance boards, and treadmill</td>
<td>43</td>
<td>13-19</td>
</tr>
<tr>
<td>Rubin et al. 2019</td>
<td>PWS</td>
<td>RCT</td>
<td>24 weeks, Pre-planned, parent-led PA sessions including use of sports equipment, playgrounds, and Nintendo Wii</td>
<td>111</td>
<td>45 PWS</td>
</tr>
<tr>
<td>Wu et al. 2020</td>
<td>PWS</td>
<td>Prospective Observational</td>
<td>5</td>
<td>15-23</td>
<td>%Total weight loss (24.7% at 2 years; 11.9% at 5 years; 0% at 10 years), Comorbidity resolution</td>
</tr>
</tbody>
</table>

Results

• Of 28 intervention trials represented in the review articles, 11 (39%) had <10 individuals, 24 (86%) had <100.[3,4,5,6,7]
• Few trials (20%) compared interventions to a control group of children without IDD or syndromic obesity.
• Two of the reviews (Abeysekara et al., Crino et al.) synthesized risk factors and intervention recommendations for their specific demographic in narrative fashion.[3,4]
• Healy et al. used a peer-reviewed quality appraisal tool and found only one clinical trial to be Strong.[8]
• Consensus recommendations suggest establishing a family-centered medical home, utilizing multidisciplinary teams (dietitian, psychologist, physician), incorporating technology, and considering bariatric surgery when medical criteria are met.

Conclusion

• Multiple contemporary reviews exist on weight management in youth with IDD.
• Despite this, sample sizes are limited. The low incidence of certain IDD etiologies (i.e. genetic syndromes) directly impacts this.
• IDD is highly heterogeneous. Studies often do not differentiate by participant diagnosis, which may impair the development of tailored weight management interventions.
• A consensus among authors was that positive outcomes were consistently observed in the setting of comprehensive, multidisciplinary team interventions.
• Well-powered, controlled intervention trials are needed to inform future guidelines.

Limitations of this Project

• This literature review only spanned one database. The reviews reported on covered numerous topics within a heterogeneous group, limiting specificity and external validity of conclusions.
• No quantitative analysis was conducted of the three unique intervention trials.

Conflicts of Interest & Funding

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References