

### Adherence to Pediatric Obesity Lifestyle Intervention Programs

Much clinical research has gone into lifestyle intervention trials for the treatment of children with obesity; however, the drop-out rate of participants in such studies can be large. The purpose of this study from Israel was to determine factors associated with participant drop out in these types of pediatric interventions. This study was retrospective and included data from a multidiscipline pediatric weight loss database.

Data from pediatric patients (8 – 18 years of age) who were seen in a multidiscipline pediatric obesity clinic was obtained including patient demographics (including clinical data), socioeconomic data, laboratory data, and patient caregiver lifestyle (defined as maintaining or not maintaining a healthy lifestyle). Patient body mass index (BMI) was measured at clinic enrollment and then 3 months, 6 months, and 12 months after enrollment. Obesity was defined as a BMI > 95<sup>th</sup> percentile. Patient attrition was defined as failure for a patient to follow up in clinic while patient adherence was defined as a patient not gaining weight or losing weight during follow up.

A total of 248 patients who had completed baseline data were included in the study. The study group had a mean age of  $11.1 \pm 3.9$  years with a mean BMI of  $31.1 \pm 7.7$  kg<sup>2</sup>/m. Males comprised 48% of the study patients. Significantly fewer female patients dropped out of the interdisciplinary obesity clinic early compared to males. Additionally, significantly less early patient dropout was noted in patients whose mother or father had an advanced degree as well as in patients referred after hospitalization (versus self-referral). A multivariate analysis adjusted for factors including sex, parental education, and referral type demonstrated that early dropout was significantly lower in patients who had mothers with higher education levels or who had been referred after hospitalization. It was noted that the 156 patients kept regular follow-up clinic appointments for an average of  $8.7 \pm 7.9$  visits with their mean BMI percentile being reduced from 138% to 121% of the 95<sup>th</sup> percentile BMI. Patient adherence related to continuing follow-up clinic visits was significantly associated with older patient age ( $11.7 \pm 3.7$  vs.  $9.7 \pm 4.3$  years,  $P = 0.04$ ) and mothers who maintained a healthy

lifestyle versus those with an unhealthy lifestyle (69% vs. 29%,  $P = 0.003$ ).

This study demonstrates that there appears to be specific risk factors which predict non-adherence to a pediatric obesity lifestyle program. This data may be useful when considering advanced therapy for pediatric obesity, including bariatric surgery and GLP-1 receptor agonist therapy. More research is needed to determine if similar findings are present in other countries.

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Moran-Lev H, Vega Y, Kalamitzky N, Interator H, Cohen S, Lubetzky R. Factors Associated with Treatment Adherence to a Lifestyle Intervention Program for Children with Obesity: The Experience of a Large Tertiary Care Pediatric Hospital. *Clin Pediatr* 2023; 62: 269-275.

### Airway Impedance: A New Tool to Evaluate for Pediatric Gastroesophageal Reflux and Aspiration

A common misconception by physicians is that airway findings such as edema or erythema are associated with gastroesophageal reflux disease (GERD), although clinical research has demonstrated that this association often is not present. Esophageal mucosal impedance monitoring previously has been used to determine esophageal inflammation; thus, the authors theorized that laryngeal impedance testing may have the ability to determine if airway inflammation is associated with any type of GERD.

This prospective study included pediatric patients undergoing esophagogastroduodenoscopy (EGD) and rigid laryngoscopy with concerns of respiratory symptoms. Each enrolled patient underwent a videotaped laryngoscopic examination, and the videos were reviewed blindly by 3 otolaryngologists to quantify a reflux finding score (an 8-item clinical severity rating scale scored from 0 to 26 with higher scoring indicating more inflammation). Additionally, each enrolled patient underwent impedance testing of the posterior pharynx as well as esophageal impedance testing and associated biopsies of the lower, mid, and upper esophagus. Impedance testing occurred over 5 seconds in which the lowest

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and highest impedance values were recorded. All patients or parents filled out the Pediatric Quality of Life Questionnaire Gastrointestinal Symptom Module™ questionnaire.

A total of 88 patients were enrolled into the study with a mean age of 59 +/- 57 months although only 73 patients had impedance tracing that were usable. In these remaining patients, no correlation was seen between airway impedance measurement for mucosal inflammation and reflux finding scores. Although only 11 of these patients were on proton pump inhibitor (PPI) therapy, the researchers found that these patients had lower airway impedance values indicating more inflammation compared to patients not using PPIs although the difference between these two groups was not statistically significant. Additionally, 28 patients were using inhaled corticosteroids and had higher airway impedance values compared to patients not using this medication class although the difference between two groups again was not statistically significant. No correlation existed between the airway impedance values and symptoms of dysphagia, reflux, nausea, emesis, as well as quality of life score. In addition, patients with oropharyngeal dysphagia (aspiration and / or penetration) on video swallow study were compared to patients with a normal swallowing mechanism. The researchers found that airway impedance was significantly

lower in patients with oropharyngeal dysphagia compared to patients with a normal swallow, and patients who had aspiration of multiple textures had significantly lower median airway impedance measurements compared to patients with a normal swallow. Finally, no association was found with airway impedance values between patients with positive findings on bronchoalveolar lavage (BAL) culture versus patients with a negative BAL culture.

The authors have demonstrated that airway impedance can be obtained during an EGD, and such an impedance measurement may be an extremely useful tool to determine if GERD in a pediatric patient truly is associated with aspiration. The decreased airway impedance noted for the patients on PPI therapy is concerning and deserves more study.

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Rosen R, Rahbar R, Watters K, Hseu A, Munoz C, Ferrari L, Holzman R, Mohammad S, Cohen A, Du M, Akkara A, Catacora C, Simoneau T, Conneaney S, Mitchell P, Nurko S. Airway Impedance: A Novel Diagnostic Tool to Predict Extraesophageal Airway Inflammation. *J Pediatr* 2023; 256: 5-10.

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