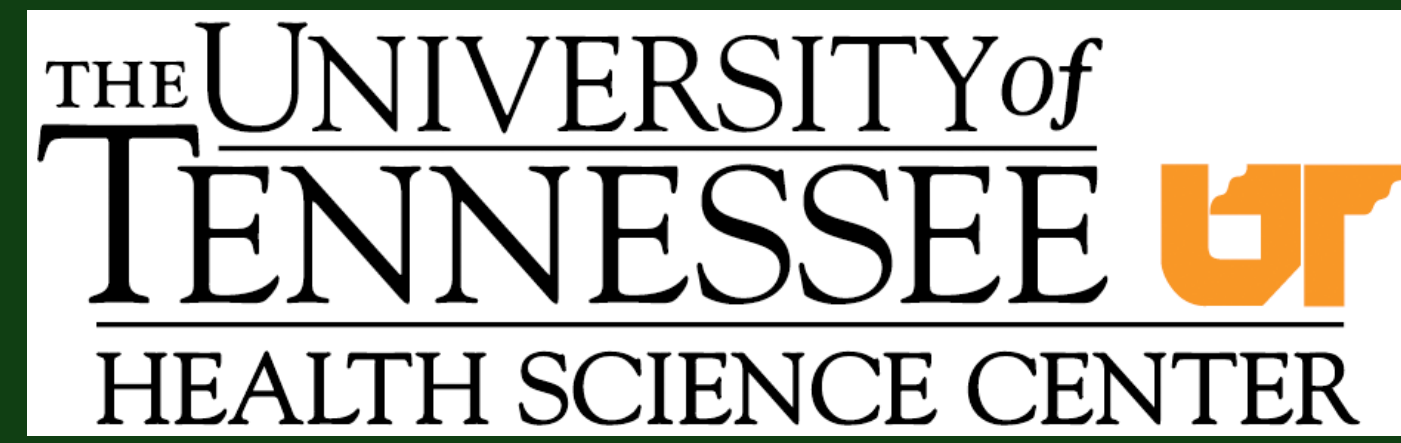


A Retrospective Study of the Prevalence of Food Allergy in Pediatric Patients with Dysphagia



Natalie Seabolt, D.N.P., R.D., P.N.P.¹, Timothy Fan, B.S.¹, Jennifer McLevy-Bazzanella, M.D.¹

University of Tennessee Health Science Center, Department of Otolaryngology, Memphis, TN
LeBonheur Children's Hospital, Department of Otolaryngology, Memphis, TN



INTRODUCTION

Dysphagia is disruption to any steps of the normal transport of ingested solids or liquids from the oral cavity to the stomach.¹ Numerous causes exist for dysphagia in pediatric patients, with gastroesophageal reflux disease (GERD) being the most prevalent.^{2,3} With food sensitivity/allergy symptoms induced by IgE and non-IgE mediated mechanisms, up to 20% of infants in the United States are affected, and 17.6% consume hypoallergenic or soy formulas.^{4,5} Among those with cow's milk allergy seen by otolaryngologists, 80% display dysphagic symptoms.⁶ There is a dearth of literature addressing the prevalence of food sensitivity/allergy in pediatric patients. The purpose of this retrospective study is to examine the prevalence of food sensitivity/allergy in pediatric patients diagnosed with dysphagia by modified barium swallow study (MBSS), and to stratify the patients by geographic and socioeconomic markers.

METHODS

- Study design: Retrospective Chart Review.
- IRB approval obtained from UTHSC.
- Patients age 0-18 who have been diagnosed with dysphagia via MBSS and have also been diagnosed with at least one of the following: eosinophilic esophagitis, gastro-esophageal reflux, allergic gastroenteritis and colitis, melena, celiac disease, atopic dermatitis, contact dermatitis, eczema, allergy, malabsorption, were included in the review.
- Data was collected from patients from 2018, allowing for 2 years of patient follow-up.
- Medical records were assessed for demographics, presenting symptoms, comorbidities, medications, formulas, and MBSS findings.
- Data on 100 patients from a Redcap registry were reported here.

RESULTS

Demographics (n = 100)	
Gender	
Male	58
Female	42
Age	
0-1 year old	51
1-2 year old	11
2-3 year old	14
3-4 year old	6
4-5 year old	8
> 5 year old	10
Race	
Black	44
White	40
Unknown	10
Hispanic	6
Insurance	
Medicaid	87
Private	13

Table 1. Patient Demographics. Seventy-six percent of patients with dysphagia and food sensitivity/allergy are under the age of 3. The gender and racial distributions are similar to the general LeBonheur Children's Hospital population. The majority of patients diagnosed with dysphagia plus food sensitivity/allergy are on Medicaid (87%).

Figure 1. Patient Formula Types. Most patients with dysphagia and food sensitivity/allergy consume Milk based foods/formulas for dietary intake (58%) vs 18% on Peptide, 9% on Amino acid, and 4% on Soy. Thirty-three percent of patients consume hypoallergenic and/or soy formulas.

- Notable additional sensitivity/allergy include shellfish, peanut, and egg.
- Forty-five patients reviewed have gastrostomy tube for primary or secondary dietary intake.

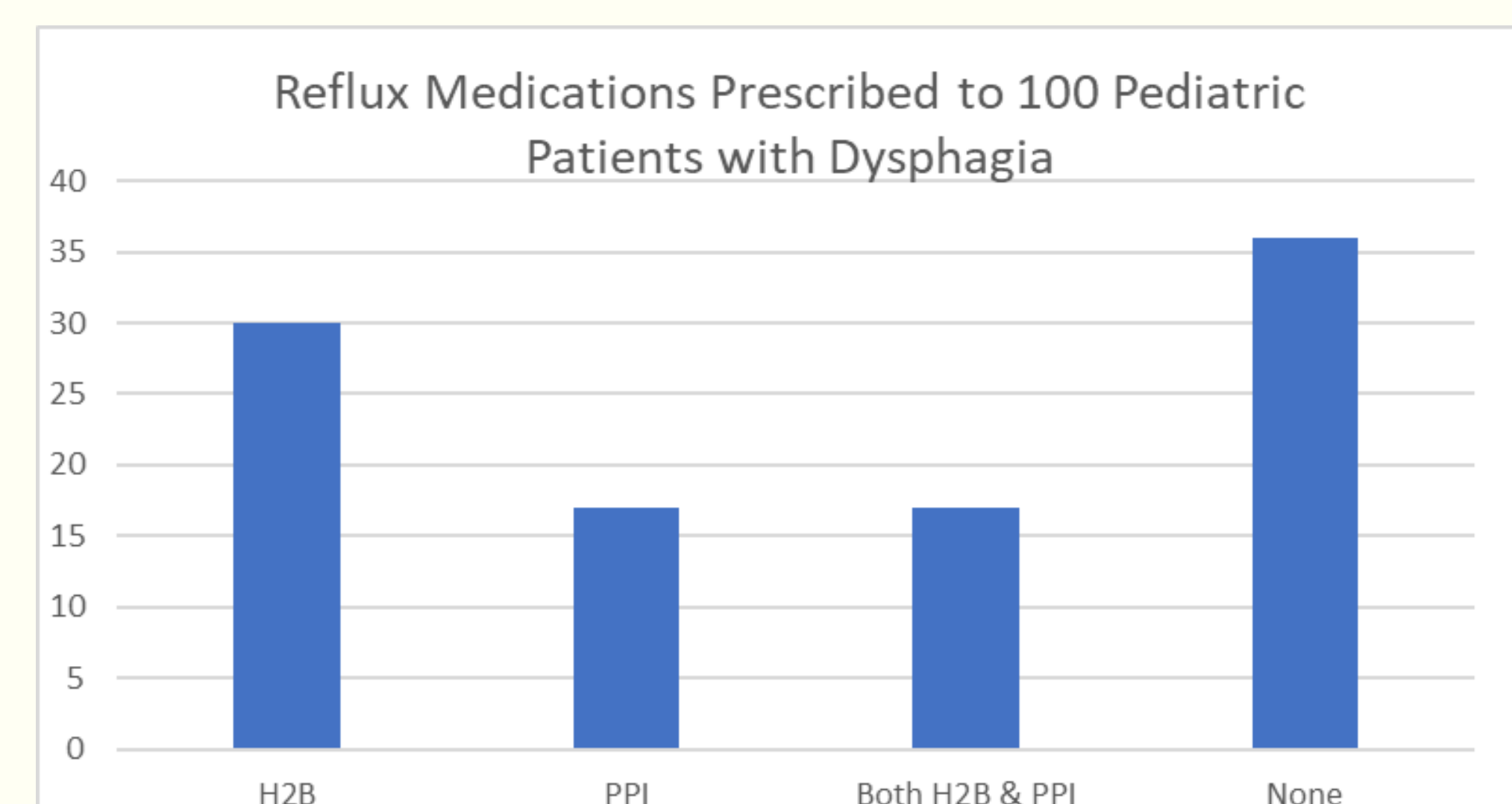
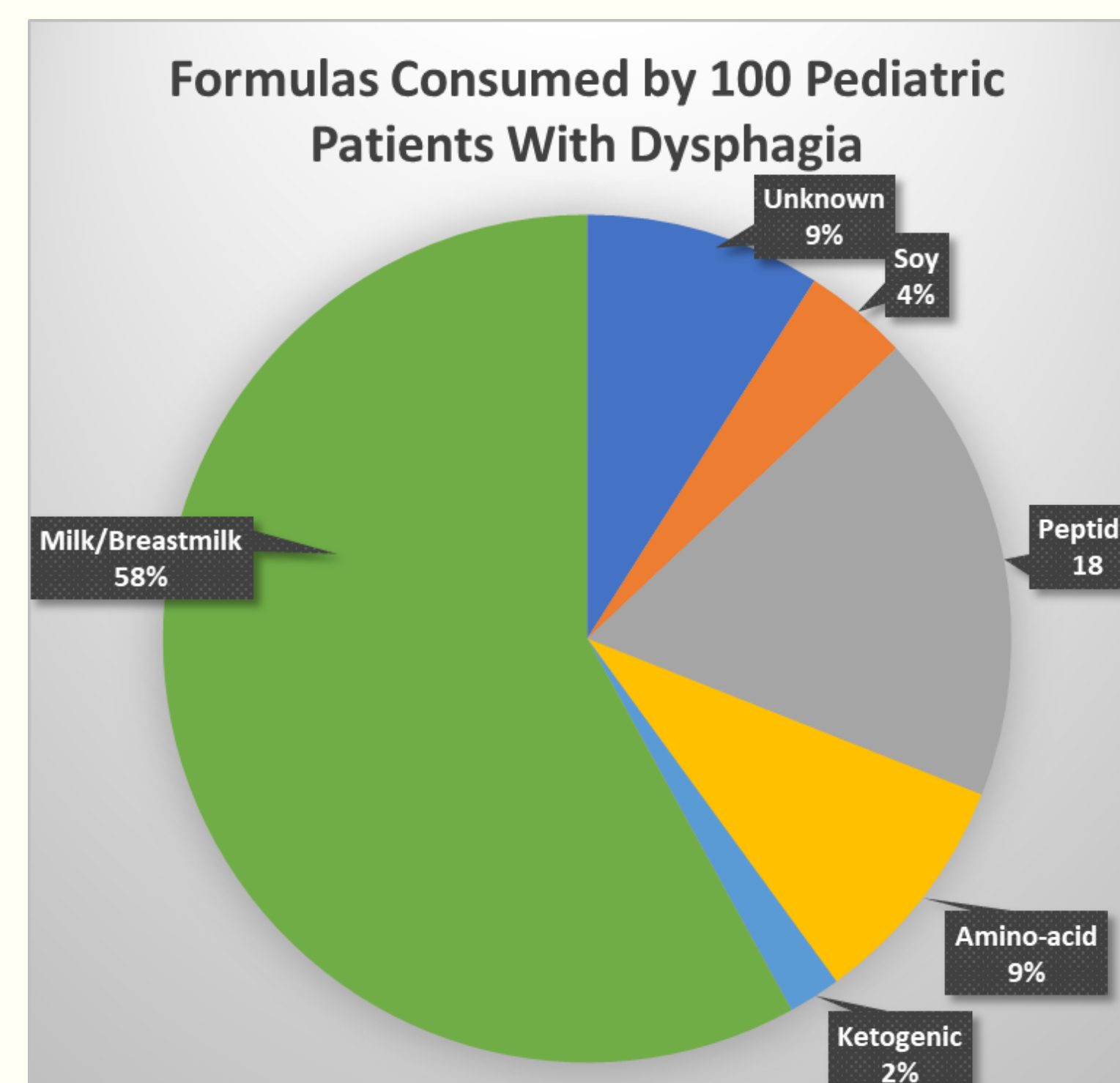


Figure 2. Patient Reflux Medications Type. Thirty-six percent of patients with dysphagia do not take any reflux medications. Thirty percent of patients on reflux medications take histamine-2 blocker (H2B), followed by equal proportions of patients on proton pump inhibitor (PPI) and combined H2B & PPI at 17%.

DISCUSSION

- Children's gastrointestinal mucosa is exposed to the most amount of foreign antigen starting immediately after birth, then gaining recognition and tolerance progressively with age.⁴ Consistent with this finding, the majority of food sensitivity/allergy was found in pediatric patients with dysphagia under the age of 3.
- The majority of pediatric patients (87%) were on Medicaid concerning that socioeconomic status may be contributing to food sensitivity/allergy in dysphagic patients.
- Thirty-three percent of patients reviewed consume hypoallergenic and/or soy formulas, in contrast to national average of 17.6%.⁵ This finding indicate that food sensitivity/allergy may be a contributing etiology and/or potentiating factor in pediatric dysphagia.
- Sixty-four percent of patients with dysphagia and food sensitivity/allergy are either taking H2B, PPI, or a combination of the two. This result reinforces the idea that food allergy, dysphagia, and reflux may intersect as comorbidities.

CONCLUSION

- In the 100 reviewed patients, there was a higher incidence of food sensitivity/allergy in comparison to general population.
- The project is ongoing and we continue to create algorithms to optimize assessment of the impact of food sensitivity/allergy on dysphagia in pediatric patients.
- Assessment for comorbid food sensitivity/allergy should be a component of comprehensive work-up for pediatric dysphagic patients, so that this important etiology may be properly diagnosed and managed.

REFERENCES

1. Dodrill P, Gosa MM. Pediatric dysphagia: Physiology, assessment, and management. *Ann Nutr Metab.* 2015;66(suppl 5):24-31. doi:10.1159/000381372
2. Philpott H, Garg M, Tomic D, Balasubramanian S, Sweis R. Dysphagia: Thinking outside the box. *World J Gastroenterol.* Published online 2017. doi:10.3748/wjg.v23.i38.6942
3. Yawn RJ, Acra S, Goudy SL, Flores R, Wootten CT. Eosinophilic laryngitis in children with aerodigestive dysfunction. *Otolaryngol - Head Neck Surg (United States).* Published online 2015. doi:10.1177/0194599815577568
4. Ho MHK, Wong WHS, Chang C. Clinical spectrum of food allergies: A comprehensive review. *Clin Rev Allergy Immunol.* Published online 2014. doi:10.1007/s12016-012-8339-6
5. Rossen LM, Simon AE, Herrick KA. Types of Infant Formulas Consumed in the United States. *Clin Pediatr (Phila).* Published online 2016. doi:10.1177/0009922815591881
6. Paddack A, Gibbons T, Smith C, Patil S, Richter GT. Food hypersensitivity and otolaryngologic conditions in young children. In: *Otolaryngology - Head and Neck Surgery (United States).* ; 2012. doi:10.1177/0194599812441573

CONTACT

1. Natalie Seabolt, D.N.P., R.D., P.N.P. nseabolt@uthsc.edu, (918) 607-3159
2. Timothy Fan, B.S. tfan3@uthsc.edu, (512) 800-5368
3. Jennifer McLevy-Bazzanella, M.D. jmclevy@uthsc.edu, (916) 508-6169

• Department of Otolaryngology
University of Tennessee Health Science Center
910 Madison Avenue Ste 430
Memphis, TN 38163
(810) 706-2307

• Department of Otolaryngology
LeBonheur Children's Hospital
848 Adams Ave
Memphis, TN 38103
(901) 287-5437