





Evaluation of Social Determinants of Health on Dysphagia Care Pathways at a Tertiary Care Facility

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Objectives: Limited research exists evaluating the impact of social determinants of health in influencing care pathways for patients with dysphagia. A better understanding of whether these determinants correlate to altered care and resource utilization is essential as it relates to patient outcomes.

Study Design: Retrospective chart review.

Methods: All adult patients seen at a tertiary midwestern hospital were screened for ICD codes of dysphagia diagnoses from 2009 to 2019. Demographic information was collected from these patients with dysphagia including sex, race, ethnicity, and insurance status. Subgroup analysis was performed to assess referral pattern rates and types of diagnostic interventions ordered (none, videofluoroscopic swallow study, esophagram, and esophagogastroduodenoscopy).

Results: A total of 31,858 patients with dysphagia were seen at our institution during the study period, with a majority being female (56.36%), Caucasian (79.83%), and publicly insured (63.16%), at a median age of 60.35 years. There were no significant care delivery pattern differences based on geography/zip code analyses. African American patients were significantly more likely to have imaging or interventions performed (odds ratio [OR] 1.463, $p = 0.005$). Patients with public insurance also had higher rates of diagnostic study utilization (OR 1.53, $p = 0.01$). Only 3% of all patients with dysphagia were seen by laryngologists.

Conclusion: No significant differences were seen in dysphagia evaluation modalities based on zip code analyses surrounding this tertiary care facility. African American patients and those with public insurance had significantly higher utilization of subsequent testing and intervention for dysphagia care. Further studies are necessary to delineate causes and outcome differences for these measurable differences in dysphagia care pathways.

Key Words: demographics, dysphagia, health care disparities, laryngology, social determinants, treatment.

Level of Evidence: IV

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INTRODUCTION

Dysphagia is defined as an inability or difficulty to swallow and is associated with increased morbidity, significant health cost burden, and a reduced quality of life.¹ A population-based survey in 2020 found dysphagia to affect 16.1% of adults at some point in their life, making

it a relatively common condition in the United States.² Patients diagnosed with dysphagia can experience complications including malnutrition, dehydration, pneumonia, increased hospital readmissions, and significant morbidity and mortality.³ Despite these outcomes, studies show that only 19%–22.7% of individuals with self-reported dysphagia seek care.^{4,5}

The World Health Organization (WHO) defines social determinants of health as non-medical factors that can influence health outcomes. This includes birth, living, and employment conditions, as well as larger systems like economic and social policies that can participate in health inequalities. Various studies have shown that social determinants play a large role in patient health, accounting for 30%–55% of health outcomes. A report of the Global Commission on Social Determinants of Health lists measuring and understanding the impact of social determinants as an area of critical action.⁶

Various studies point towards the phenomenon that a patient's health status can be better predicted by their zip code than genetic findings.⁷ Recent sociodemographic analyses have shown significant differences in rates of laryngology service utilization across areas within Southeast Wisconsin for otolaryngological pathologies, such as dysphonia and chronic rhinosinusitis.⁸

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However, research on how social determinants of health impact care patterns for management of dysphagia have been sparse. A recent Scoping review identified less than 10 total articles studying health disparities relevant to dysphagia care.^{4,9} The few studies that explore health disparities in swallowing disorders have utilized gastrostomy tube placement as the primary outcome or have concentrated on disease-specific groups instead of the general population.⁴ A better understanding of the impact of social determinants of health on dysphagia care pathways is imperative for identification of care deficits and improvement of patient outcomes.

Multiple evaluation and testing modalities exist to identify underlying pathology of patients with dysphagia. These include Videofluoroscopic Swallowing Studies (VFSS), esophagogastroduodenoscopy (EGD), and esophagram, as well as other less-commonly used modalities such as transnasal esophagoscopy (TNE) and flexible endoscopic evaluation of swallowing (FEES). Many times, these studies are ordered either alone or in combination, as the overall results from each study may complement or augment the findings from others. VFSS, or a modified barium swallow (MBS), presents a dynamic fluoroscopic examination of bolus transit from the oral cavity to the cervical esophagus. EGD utilizes a flexible endoscope under sedation to observe esophageal structural abnormalities and perform esophageal biopsies. Esophagram evaluates bolus transit with liquid barium across the entire length of the esophagus.¹⁰ Utilization rates for these varying testing modalities may vary and are relatively unknown in tertiary care protocols, and impact of social determinants of health in selection of these tests is poorly studied. The aim of this study is to evaluate social determinants of health—including sex, race, ethnicity, and insurance status—on dysphagia care pathways in the treatment of patients diagnosed with dysphagia at our tertiary otolaryngology clinic.

METHODS

This study was approved by institutional IRB at the Medical College of Wisconsin. The Froedtert and Medical College of Wisconsin health system is the only academic medical center serving Southeastern Wisconsin, with a patient catchment area of over three million patients.

The Clinical and Translational Science Institute of Southeast Wisconsin uploads electronic medical records through the Clinical Research Data Warehouse (CRDW) to JupyterHub for data analysis. Patient encounters at our institution were screened from the years 2009–2019 for inclusion in this study. Selected ICD codes relative to dysphagia were used to identify all adult patients within the study period with an initial diagnosis of dysphagia from any provider in the health system. This included patients with ICD 9 codes: 787.20, 787.21, 787.22, 787.23, 787.24, 787.29, 530.0, 530.3, 530.5, 530.6, 530.13 or ICD 10 codes: R13.10, R13.11, R13.12, R13.13, R13.14, R13.19.

Demographic data collected from this patient population included zip code, age, sex, race, ethnicity, insurance status, body mass index (BMI), and average weight. Patient data were harnessed through application of SQL queries and Python scripts. To address missing data, a systematic approach was adopted: categorical attributes with a few missing entries were

marked as “Unknown.” This decision was motivated by the observation that missing data volume was fairly insignificant. By designating missing entries as “Unknown,” potential distortion from imputation techniques such as mode or median was avoided. However, when dealing with numerical values such as age, imputation methods were employed to fill in the missing fields. This was done to retain the numerical nature of the data and provide a more robust basis for statistical analysis. In circumstances where patients had multiple encounters, the latest data available from their last visit were utilized. This ensured that the statuses of the patients were accurate and up-to-date.

ZIP code analysis involved leveraging census data to obtain relevant information associated with each patient’s ZIP code. This information was used to calculate the utilization rate, which represents the frequency of service utilization based on patients’ geographical locations.

Each patient was assigned to a specific insurance type (e.g., public, private, and self-insured) based on the following search criteria: all encounter records for each patient_hash value were identified and sorted by the most recent date. For each encounter record, the presence of attached insurance payor information was checked. If the most recent encounter did not have an attached insurance payor record, the process was repeated for the next most recent encounter until all encounters were searched. Once insurance payor information was found, the payor name was classified, and the patient was assigned the corresponding insurance type. If no encounter records had attached insurance information, the patient was classified as “Unknown.”

In our study, the quality and completeness of our dataset were notable features. Despite the complexity of the data and the potential issues with missing and inconsistent data that often arise in cases like this, no patients were excluded from our analysis due to the meticulous cleaning and imputation process. This resulted in a comprehensive and reliable dataset for analysis.

Statistical analysis was executed in Python 3.8, utilizing libraries such as Pandas and SciPy for data handling and statistical procedures. A two-stage analysis was conducted: exploratory data analysis and inferential statistical analysis. During the exploratory stage, descriptive statistics and subgroup analysis were conducted to understand the characteristics of different patient cohorts and to identify data trends and outliers. This subgroup analysis was performed to identify demographic variables between diagnostic interventions ordered for evaluation of dysphagia. Studied dysphagia evaluation groups in this research included VFSS, EGD, and esophagram/MBS. TNE and FEES were done very infrequently at our institution during the study period and were not included for analysis due to this. We also evaluated for patients who had a diagnosis of dysphagia without further diagnostic testing for comparison purposes.

Inferential statistical analysis involved the application of Chi-square tests for examining associations between categorical variables, and the computation of odds ratios [ORs] to measure the strength of the relationship between exposures (e.g., specific insurance status) and outcomes (e.g., specific health conditions).

The proportion of patients with dysphagia within each demographic group (sex, race, ethnicity, and insurance status) was compared between those having no diagnostic tests, and those having at least one diagnostic test (VFSS, EGD, or esophagram). ORs with 95% confidence intervals (CIs) and *p* values were calculated by 2-by-2 chi-square test. Independent continuous variables, such as age, weight, and BMI, were compared between the two groups using unpaired two-tailed *t*-test.



Fig. 1. Southeast Wisconsin geographic distribution of diagnosis of dysphagia and diagnostic care pathways utilization rates. Geographic heat map of Wisconsin ZIP codes showing rates of different care pathway utilization within each ZIP code. [Color figure can be viewed in the online issue, which is available at www.laryngoscope.com.]

All statistical tests were performed using R language (3.6.1) and significance was considered at $p < 0.05$.

Finally, ZIP codes were used to create a distribution map of dysphagia diagnosis prevalence in WI, primarily focusing on the eight counties within Southeastern Wisconsin surrounding our institution (Milwaukee, Waukesha, Washington, Ozaukee, Jefferson, Walworth, Racine, and Kenosha) (Fig. 1).

RESULTS

Our academic healthcare system had a total of 31,858 patients diagnosed with dysphagia during the study period. Demographic data showed that the majority of patients diagnosed were female (56.36%), Caucasian (79.83%), non-Hispanic (96.2%), and publicly insured (63.16%). The median age for diagnosis was 60.35 years, and the average BMI was 30.25 (Table I). Geography/ZIP code analysis showed no significant or discernable difference in care delivery patterns across Southeast Wisconsin (Fig. 1).

Across all care pathways, the majority (57.2%) of patients diagnosed with dysphagia received some form of diagnostic testing (Fig. 2A). More than half (55.0%) of those individuals received VFSS and 51.3% of individuals received EGD. Only 29.5% of those patients received an esophagram. About 14.7% of individuals received both VFSS and EGD, 15.2% received an esophagram and EGD, and 11.5% received VFSS and an esophagram. A total of 5.9% of patients received all three forms of diagnostic testing (Fig. 2B).

Differences in utilization of different care pathways across race and age were analyzed. Across all identified races, excluding Native Hawaiian or Other Pacific Islander ($n = 11$), more patients obtained at least one form of testing following an initial diagnosis of dysphagia (Table II). Across age, more older patients obtained some form of testing. The median age for patients having no further diagnostic test was 57 (40.85, 70.99), whereas the median age for patients with some form of diagnostic testing was 62.3 (50.42, 74.58) ($p < 0.001$).

OR analysis was performed to further evaluate social and clinic determinants of health on dysphagia testing protocols. Individuals with public insurance were more likely to have diagnostic testing following an initial dysphagia diagnosis (OR 1.86, 95% CI [1.78, 1.96], $p < 0.001$). Individuals with private insurance were less likely to have diagnostic testing (OR 0.56, 95% CI [0.54, 0.59], $p < 0.001$) (Fig. 3A). Those individuals who identified as Black or African American were also more likely to complete any diagnostic testing modality for dysphagia evaluation (OR 1.41, 95% CI [1.33, 1.52], $p < 0.001$). Individuals who identified as White/Caucasian were less likely to have diagnostic testing (OR 0.81, 95% CI [0.77, 0.91], $p < 0.001$) (Fig. 3B). Male patients were more likely to have diagnostic testing (OR 1.10, 95% CI [1.05, 1.15], $p < 0.001$), whereas female patients were less likely to have diagnostic testing (OR 0.91, 95% CI [0.87, 0.95], $p < 0.001$) (Fig. 3C).

There was a greater proportion of White patients among those not having any testing (81.71%) than the proportion of White patients among those who had

TABLE I. Demographic Data of Patients Who Received an Initial Diagnosis of Dysphagia.		
Dysphagia		
Number of patients	31,858	
Average weight (lbs)	183.64	
Average body mass index	30.25	
Median age	60.35 (46.89,73.25)	
	Total	%
Sex		
Male	13,904	43.64
Female	17,954	56.36
Race		
White or Caucasian	25,431	79.83
Black or African American	4,748	14.9
Asian	388	1.22
Unknown	196	0.62
American Indian or Alaska Native	88	0.28
Patient refused	37	0.12
Multiracial	66	0.21
Native Hawaiian or Other Pacific Islander	11	0.03
Other	613	1.92
Ethnicity		
Not Hispanic or Latino	30,646	96.2
Hispanic or Latino	849	2.66
Unknown	246	0.77
Patient refused	36	0.11
NI	75	0.24
Insurance		
Private	11,069	34.74
Public	20,134	63.2
Other	261	0.82
Selfpay	220	0.69
Unknown	1	0

testing (78.44%). In contrast, the proportion of Black patients was higher in the group having at least one diagnostic test (16.72% [any test] vs. 12.44% [no test]). Chi-square analysis of the relationship between race and having diagnostic testing was significant (χ^2 [1, $N = 30,170$] = 105.6, $p < 0.00001$). Black patients are more likely than White patients to have at least one diagnostic test.

Insurance analysis across races showed a significant difference in insurance status of White individuals diagnosed with dysphagia. A total of 9776 (38.4%) were on private insurance and 15,251 (59.9%) were on public insurance ($p < 0.001$). There was also a significant difference in insurance status of individuals diagnosed with dysphagia who identified as Black or African American with 742 (15.6%) on private insurance and 3916 (82.5%) on public insurance ($p < 0.001$) (Table III).

Moreover, difference in insurance status (private vs. public) across different pathways are significant in both White and Black or African American individuals; of the White patients who obtained no further testing following a dysphagia diagnosis, 5092 (20.0%) were under private insurance and 5737 (22.6%) were under public insurance ($p < 0.001$). Of the Black or African American patients who obtained no further testing following a dysphagia diagnosis, 327 (6.9%) were under private insurance and 1304 (27.5%) were under public insurance ($p < 0.001$). On the other hand, of the White patients who obtained some form of further testing, 4684 (18.4%) of them were under private insurance and 9514 (37.4%) of them were under public insurance ($p < 0.001$). Of the Black or African American patients who obtained some form of further testing, 415 (8.7%) of them were under private insurance and 2612 (55.0%) of them were under public insurance ($p < 0.001$) (Table IV).

The majority of patients diagnosed with dysphagia that had public insurance obtained some form of diagnostic testing (63.1%), while less patients with private insurance had diagnostic testing (48.5%). The majority of

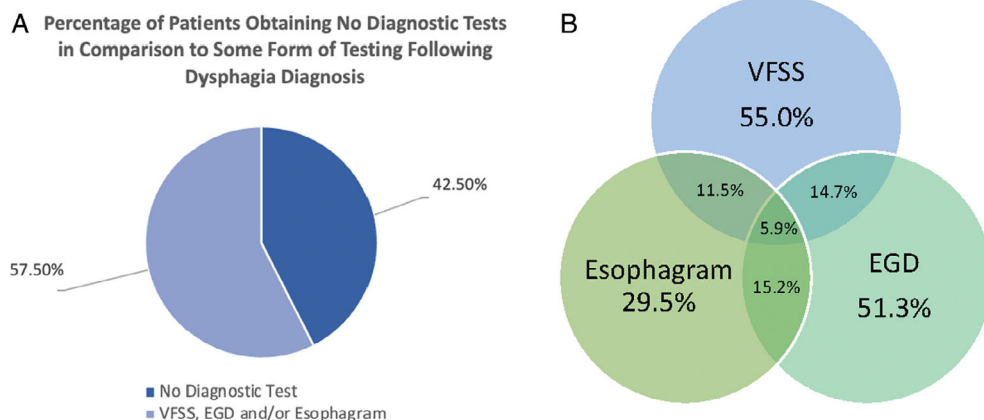


Fig. 2. (A) Percentage of patients pursuing different dysphagia care pathways. Compared with receiving no diagnostic tests, more patients received some form of diagnostic care, including VFSS, EGD, and esophagram. (B) Venn diagram of care pathways taken by individuals who pursued further care. Of the patients diagnosed with dysphagia who pursued further diagnostic tests, a majority obtained VFSS or EGD. EGD = esophagogastroduodenoscopy; VFSS = videofluoroscopic swallowing study [Color figure can be viewed in the online issue, which is available at www.laryngoscope.com.]

TABLE II.
Percentage of Individuals Diagnosed With Dysphagia Within Each Race and Their Utilization of Each Care Pathway.

Race	No Diagnostic Test (%)	VFSS (%)	EGD (%)	Esophagram (%)	Any Form of Testing (%)	p Value
White or Caucasian	43.50	30.80	28.40	16.70	56.50	<0.001
Black or African American	35.40	36.20	36.20	19.10	64.60	<0.001
Asian	42.80	31.40	29.10	14.20	57.20	0.901
Unknown	77.00	13.30	8.70	7.70	23.00	<0.001
American Indian or Alaska Native	39.80	35.20	30.70	15.90	60.20	0.608
Patient refused	48.60	13.50	37.80	16.20	51.40	0.444
Multiracial	45.50	22.70	31.80	15.20	54.50	0.624
Native Hawaiian or other Pacific Islander	63.60	27.30	18.20	9.10	36.40	0.156
Other	37.00	32.80	34.10	17.80	63.00	<0.001

Across the majority of race categorization, more patients diagnosed with dysphagia utilized some form of diagnostic testing. There was a significantly ($p < 0.001$) lower percentage of White/Caucasian patients that pursued some form of testing as compared to receiving no diagnostic test. Additionally, there was a significantly ($p < 0.001$) higher percentage of Black or African American patients that pursued some form of testing as compared with receiving no diagnostic test.

EGD = esophagogastroduodenoscopy; VFSS = videofluoroscopic swallowing study.

uninsured or self-pay patients did not have any form of diagnostic testing performed (60%) (Table V).

DISCUSSION

Milwaukee County is the most populous in the state of Wisconsin, yet a recent 2020 County Health Ranking survey showed that it is ranked 71 out of the 72 Wisconsin counties for overall markers of health and health care outcomes.¹¹ According to the 2022 census, 63.3% of the population in Southeast Wisconsin identified as White, 27.1% identified as Black or African American, and the remaining as other defined race.¹² The local history of intense and ongoing community segregation, in combination with the history of racial discrimination and medical mistrust among minorities across the country, makes analysis of care pathways across different races incredibly important and highly relevant to modern medical practice.¹³ Few prior studies have directly evaluated the effects of social determinants of health on dysphagia care. Adkins et al. did not find race to be independently associated with seeking care for swallowing difficulties in their population-based survey. Our study, however, demonstrates an increased likelihood in pursuing further dysphagia workup for Black/African American individuals and higher testing modality utilization for these patients.

This study is the first epidemiologic study to analyze social determinants of health on dysphagia diagnostic care pathways in a large localized tertiary care network. A recent nationwide population-based survey was performed on prevalence of self-reported dysphagia and treatment options which showed that only 19% of individuals who reported swallowing problems sought treatment.⁴ In our study, however, 57.50% of individuals diagnosed with dysphagia had some form of further diagnostic testing, including VFSS, EGD, and/or esophagram. This difference could be attributed to the fact that patients in our study received a medical diagnosis of dysphagia from a health care provider as opposed to it being a self-reported diagnosis by the individual themselves.

Very few prior studies have analyzed socioeconomic factors in dysphagia diagnosis and care pathways in a similar fashion to this study. However, our data reinforces findings that were noted in the prior nationwide self-reporting dysphagia surveys.

Several key factors were associated with increased prevalence of dysphagia in our study population include female sex, White/Caucasian race, non-Hispanic ethnicity, and public insurance status. The female sex and White/Caucasian race, however, were also associated with increased likelihood of not pursuing further diagnostic testing. Conversely, while Black/African American patients comprised a smaller percentage of the patients diagnosed with dysphagia, they were more likely to have further diagnostic testing.

In general, publicly insured patients were more likely to have diagnostic care pathways. This may be due to the fact that private and self-pay insurance patients may have higher out-of-pocket insurance payment costs that may prevent them from pursuing elective testing. On the other hand, individuals on public insurance may have lower out-of-pocket costs, making further testing more affordable. There is, however, a complex relationship between insurance status and health care utilization that goes beyond economic considerations. In addition, publicly insured patients may experience a greater burden of illness, making it more necessary for doctors to pursue diagnostic pathways actively. Alternatively, private insurance may entail additional administrative requirements and preauthorization requirements that may hinder access to care. The disparities in health care utilization among different insurance groups must therefore be considered in conjunction with these factors.

It was also important to consider insurance status across different races to determine whether this variable could contribute to the difference in pathway utilization. A significantly larger number of patients diagnosed with dysphagia who identified as White or Caucasian, Black/African American, and Asian were publicly insured as compared with privately insured patients. Moreover, of

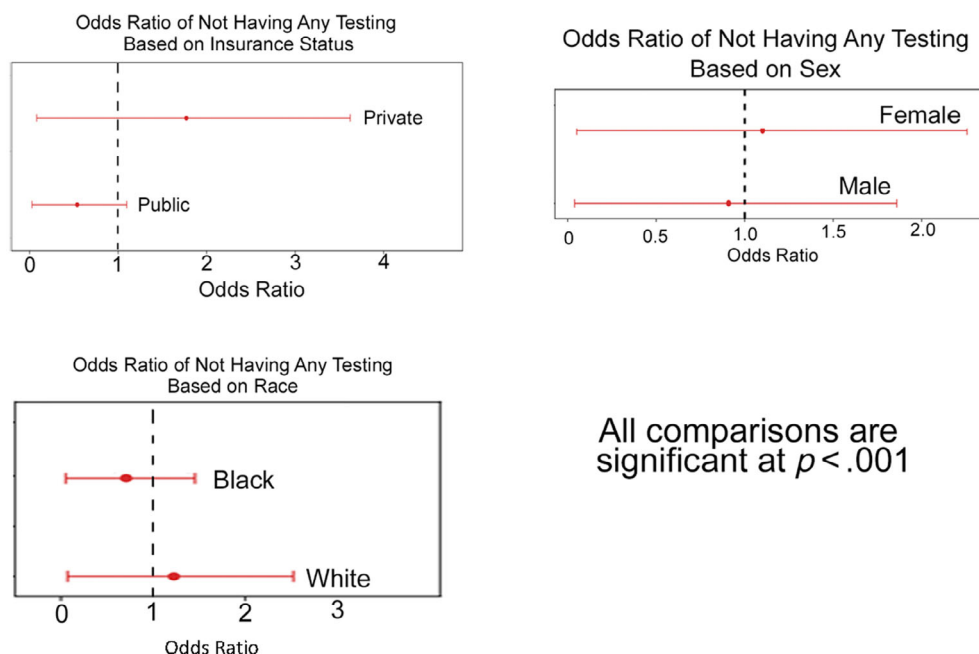


Fig. 3. Odds ratio of not having any testing based on insurance status, race, and sex. Individuals diagnosed with dysphagia on private insurance are less likely to have any diagnostic testing; Individuals with public insurance are more likely to pursue diagnostic testing $p < 0.001$. Individuals who identify as Black or African American are more likely to pursue diagnostic testing. Individuals who identify as White are more likely to not pursue diagnostic testing $p < 0.001$. Male patients are more likely to not have further diagnostic testing done. Female patients are more likely to pursue further diagnostic testing $p < 0.001$. [Color figure can be viewed in the online issue, which is available at www.laryngoscope.com.]

TABLE III.
Number of Individuals Diagnosed With Dysphagia of Each Race and Their Insurance Status.

Race	Private Insurance	Public Insurance	Selfpay	Other	Unknown	<i>p</i> Value
White or Caucasian	9776	15251	114	185	105	<0.001
Black or African American	742	3916	45	41	4	<0.001
Asian	174	200	7	5	2	<0.001
Unknown	152	225	35	11	53	0.057
American Indian or Alaska Native	27	59	1	1	0	0.491
Patient refused	23	13	0	1	0	<0.001
Multiracial	22	44	0	0	0	0.807
Native Hawaiian or Other Pacific Islander	4	7	0	0	0	1.000
Other	168	406	19	16	4	0.002

p values compare the number of individuals across a race that have private vs public insurance.
EGD = esophagogastroduodenoscopy; VFSS = videofluoroscopic swallowing study.

the White or Caucasian individuals who obtained some form of further testing, a significantly higher proportion of them were under public insurance. This was the same for the patients who identified as Black/African American, suggesting that insurance status may not be a significant variable for the higher probability of Black/African American patients obtaining further testing following a dysphagia diagnosis.

Most patients at our institution had some sort of diagnostic testing once a dysphagia diagnosis was made, with the majority of these tests being VFSS and EGD. There was, however, no detectable difference of care pathway utilization across ZIP codes within Southeastern

Wisconsin which suggests fairly equitable resource utilization rates between income and education levels.

Prior studies have associated increased age with a decrease in care utilization for voice and swallowing issues, perhaps due to patient unfamiliarity with treatment options.¹⁴ Our data showed that older individuals with an initial physician-led diagnosis of dysphagia were more likely to have some form of diagnostic testing. This association of dysphagia with increased age is likely related to the reduction in oropharyngeal muscle mass and strength with increasing age.^{15–17} A limitation to our study was that severity of dysphagia was not analyzed in our data, and we included both inpatient and outpatient

Race	Private Insurance	Public Insurance	Selfpay	Other	Unknown	<i>p</i> Value
No further testing						
White or Caucasian	5092	5737	63	86	77	<0.001
Black or African American	327	1304	24	24	4	<0.001
Asian	83	74	4	3	2	0.022261
Unknown	114	114	30	7	44	0.055853
American Indian or Alaska Native	0	13	22	0	0	0.55
Patient refused	12	5	0	1	0	0.045009
Multiracial	9	21	0	0	0	0.188542
Native Hawaiian or other Pacific Islander	3	4	0	0	0	1
Other	69	134	11	10	3	0.006954
Some form of further testing						
White or Caucasian	4684	9514	51	99	28	<0.001
Black or African American	415	2612	21	17	0	<0.001
Asian	91	126	3	2	0	<0.001
Unknown	38	111	5	4	9	0.301
American Indian or Alaska Native	14	37	1	1	0	0.843539
Patient refused	11	8	0	0	0	0.014656
Multiracial	13	23	0	0	0	0.508498
Native Hawaiian or other Pacific Islander	1	3	0	0	0	1
Other	99	272	8	6	1	0.221046

p values compare the number of individuals across a race that has private versus public insurance.

Insurance	No Diagnostic Test (%)	VFSS (%)	EGD (%)	Esophagram (%)	Any Form of Testing (%)	<i>p</i> Value
Private	51.7	18.4	30.2	15.7	48.5	<0.001
Public	36.8	38.9	29.6	17.9	63.1	<0.001
Other	50.2	34.5	20.7	8.4	49.4	<0.001
Selfpay	60	18.6	22.7	10.5	40.5	<0.001
Unknown	100	0	0	0	0	<0.001

p values compare percentage of individuals across insurance status that receives no diagnostic test with those that pursue any form of testing.
EGD = esophagogastroduodenoscopy; VFSS = videofluoroscopic swallowing study.

populations in our analysis without differentiation. Therefore, it is possible that older patients may present with more severe dysphagia complaints prompting more urgent testing and evaluation of their issues. Furthermore, several studies have shown that geriatric patients have higher overall health care utilization, which also supports our findings.¹⁸

While few prior studies exist that evaluate the impact of insurance status on dysphagia care, previous work has shown that patients with public insurance are more likely to undergo gastrostomy tube placement after a stroke.^{19,20} Zheng et al. found that individuals with public insurance are associated with a higher prevalence of self-reported dysphagia, and a higher prevalence of pursuing swallowing treatment.⁴ Our study supports these findings with a larger percentage of individuals with public insurance diagnosed with dysphagia and

pursuing further evaluation and testing modalities for this diagnosis. The potential explanations for this association are not clear but could relate again to severity of symptoms at presentation, as well as prevalence of other risk factors related to dysphagia in these populations such as tobacco and alcohol use.

Various forms of diagnostic testing can be used to analyze dysphagia complaints and help inform treatment options, and selection of these modalities may vary based on specific practitioner preference. VFSS is the traditional gold standard for diagnosis of oropharyngeal dysphagia. This dynamic real-time fluoroscopic technique allows for analysis of bolus transit, swallow physiology, and effectiveness of compensatory mechanisms.¹⁷ Gastroenterology and primary care physicians often recommend screening of dysphagia and gastroesophageal reflux complaints with EGD. Our data show much less utilization of

esophagram in this population, while VFSS and EGDs were the most common diagnostic tests utilized. Barium esophagram or MBS studies can be utilized as a good screening test for esophageal pathologies and do not require sedation, making them potentially a good option for screening of dysphagia complaints.¹⁰

Various additional factors may impact patient care pathways, including patient-provider communication and provider trust. These factors can play a role in patient comfort and facilitate shared decision-making, thus impacting patient care. There are no data collected on these aspects of patient care, representing a limitation to this study. In addition, this study only identified patients who pursued further diagnostic testing within our tertiary care facility. Therefore, our data do not reflect whether patients diagnosed with dysphagia pursued care pathways at outside facilities.

CONCLUSION

Patients who identify as African American or Black and those with public insurance had significantly higher utilization of subsequent testing and intervention for dysphagia care in our tertiary academic care network, while no significant differences were seen in dysphagia evaluation modalities based on ZIP code analysis. Further studies may help to delineate causes and potential care outcome differences for these measurable variations in dysphagia care pathways.

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