Swallowing Disorders in the Ambulatory Medical Setting

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Abstract

Objectives. The aims of this cross-sectional study were to explore the nationwide number and demographics of patient visits due to dysphagia and to investigate potential differences in their management between otolaryngologists and other physicians in the outpatient setting.

Study Design. Cross-sectional.

Setting. National Ambulatory Medical Care Survey.

Subjects and Methods. The data sets from 2007 to 2010 were queried to extract all cases with dysphagia as a reason for visit. Data regarding demographics, imaging studies, nonmedication therapies, diagnoses, medications, and patient disposition were compared between otolaryngologists, primary care physicians, and other specialists.

Results. Annually, 1,875,187 (95% confidence interval [CI], 1,443,876-2,307,204) outpatient visits were due to dysphagia, comprising 0.19% of all visits (95% CI, 0.14%-0.23%) and 1.55% (95% CI, 1.10%-2.0%) of the visits to otolaryngologists. The visits were mostly distributed between primary care physicians and other specialists, while 16.4% (95% CI, 11.3%-21.6%) visited an otolaryngology office. Otolaryngologists, primary care physicians, and other specialists ordered imaging studies in 22.8%, 10.2%, and 24.0% (P = .02); performed aerodigestive-specific procedures in 20.8%, 4.0%, and 36.2% (P < .0001); and referred the patient to another physician in 5.8%, 14.8%, and 2.8% (P = .003) of the visits, respectively.

Conclusions. Almost 0.2% of office visits to physicians have a complaint of dysphagia. Otolaryngologists are involved in the care of a minority of these visits. The differences in the management of dysphagic patients may be due to different etiologies of the disease.

Keywords
dysphagia, ambulatory care, otolaryngology–head and neck surgery, esophageal reflux

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Dysphagia is a serious condition affecting a large portion of society. The prevalence of dysphagia varies greatly, ranging from 2.3% to 12.9% of the adult population and from 13.8% to 33% of the aging population. Sequelae of dysphagia include dehydration, malnutrition, weight loss, and pneumonia. Patients with dysphagia have poor quality of life, anxiety, and avoidance of others. Despite the large number of patients with dysphagia and its medical and social effects, it has been found that many individuals with dysphagia do not seek medical care. However, the actual number of patients seeking medical care for this condition remains unknown.

While the care of patients with dysphagia may fall under physicians of different specialties, including primary care, internal medicine, gastroenterology, and otolaryngology–head and neck surgery, the distribution of patients among different specialty groups has not been well studied. Furthermore, it is not known if the care provided by different specialists varies.

To bridge these gaps, the 2007 to 2010 data sets of the National Ambulatory Medical Care Survey (NAMCS) were examined for patients who visited a physician for a complaint of dysphagia. The primary aim of this study was to investigate the number and demographics of ambulatory patient visits due to dysphagia nationwide. Given the numerous physicians who may treat dysphagia, a secondary goal of this study was to investigate differences in the management between physicians of different specialties.

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Methods

Data Sets

The NAMCS is an ongoing national survey performed by the National Center for Health Statistics (NCHS). It was created to provide objective and reliable information about the provision and use of ambulatory medical care services in the United States. The NAMCS surveys the offices of nonfederally employed physicians classified by the American Medical Association or the American Osteopathic Association as “office-based, patient care,” as well as community health centers using information from the Health Resources Services Administration and the Indian Health Service. During a 1-week period, when survey data are collected, participating physicians provide extensive data regarding each patient encounter. The institutional review board (IRB) at the NCHS has approved using the NAMCS data for research purposes. Documentation of the NAMCS instruments, methodologies, data files, and IRB approval is available elsewhere (http://www.cdc.gov/nchs/ahcd.htm). The NAMCS reports an adjusted sample weight for each visit using the complex probabilities of a record being selected. These sample weights were used to generate US population estimates.

Variables

The NAMCS data sets from 2007 to 2010 were obtained and merged. All visits that had “difficulty in swallowing (dysphagia)” listed as any of the 3 reasons for visit were included in this analysis. For each record, the sex, age (coded into 6 groups, <15, 15-24, 25-44, 45-64, 65-74, and ≥75 years), and ethnicity of the patient, in addition to the acuity of the chief complaint, were extracted. Ethnicity was recoded into white, African American, Hispanic (Mexican American and other Hispanic ethnicities), and “all other” reported ethnicities (including native Hawaiian/other Pacific Islander, American Indian/Alaska native, and multiple races). The presence of selected medical comorbidities (cancer, cerebrovascular disease, depression, diabetes, and tobacco use [coded as current vs not current smoker]) was assessed. Patient visits due to dysphagia were then compared with all other visits for reasons other than dysphagia in the NAMCS to determine if these comorbidities were associated with dysphagia.

The specialty of the treating physician was recoded into otolaryngology–head and neck surgery, primary care (including internal medicine, general/family practice, and pediatrics), and “other specialties.” The radiographic imaging studies, medications, and procedures ordered or performed with each visit were then compared between the 3 designated specialties.

Up to 4 procedures were associated with each NAMCS record and coded using the International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM). Since simultaneous unrelated procedures may have existed in each record, a separate group of aerodigestive-specific procedures was recoded. These were defined as ICD-9-CM volume III procedural codes with the first 2 digits starting with 29 to 34, and 42 to 54, in addition to 89.32, “esophageal manometry.” Other diagnostic and therapeutic interventions ordered or performed by the physicians, including speech/occupational therapy, psychotherapy, biopsy, and depression screening, were also analyzed.

Three ICD-9-CM diagnosis codes were recorded for each visit. As a result, visits might have been assigned to more than 1 diagnostic category. These codes were extracted and grouped as infectious (first 3 digits starting with 001-139), neoplastic (140-239), neuropsychiatric (290-359), respiratory system diseases (460-519), and digestive system diseases (520-579).

Prescribed medications were recoded using Multum-Lexicon classifications (http://www.multum.com/Lexicon.htm) to antimicrobials (Multum drug category 001, level 1; eg, antivirals, antibacterials), gastrointestinal agents (Multum drug category 087, level 1; eg, antacids, proton pump inhibitors, H2 antagonists), and analgesics (Multum drug category 058, level 2; eg, nonsteroidal anti-inflammatory agents, COX-2 inhibitors, narcotics).

The disposition status of each visit was also recorded.

Statistical Analysis

The NAMCS reported an adjusted sample weight for each visit based on the complex probabilities of a record being selected. The sample weight was used to produce population estimates. The Taylor series approximation was used to calculate the 95% confidence interval (CI) for each demographic variable and sublevels where the number of selected cases was greater than or equal to 30, and the relative standard error (standard error divided by the estimate) was less than 0.3. This method considered the effects of clustered design of the surveys. A multivariate logistic regression model was fit to calculate the odds ratio (OR) for each medical comorbidity, while adjusting for other comorbidities. A χ² test was used to compare the management of swallowing disorders among the 3 defined specialty groups. A P value <.05 was considered statistically significant. All statistical analyses were performed using SAS 9.3 for Windows (SAS Institute, Cary, North Carolina).

Results

Over the 4-year period from 2007 to 2010, the NAMCS gathered information on 125,029 patient visits, which extrapolated to about 999 million office visits annually. Dysphagia accounted for 1,875,187 (95% CI, 1,443,876-2,307,204) estimated annual visits (0.19% of all visits to physicians; 95% CI, 0.14%-0.23%).

Figure 1 illustrates the distribution of patient visits by physician specialty. Dysphagic patients were mostly seen by primary care physicians and “other specialists.” An estimated 1.55% (95% CI, 1.10%-2.0%) of patient visits to an otolaryngologist were due to dysphagia. In comparison, 0.16% (95% CI, 0.11%-0.22%) of the patient visits to primary care physicians and 0.16% (95% CI, 0.09%-0.23%) of the patient visits to other specialists were due to dysphagia.
This difference between the 3 specialty groups was statistically significant ($P < .0001$).

Table 1 lists the demographics of patient visits for dysphagia and the acuity of their complaints. The mean (SD) age of patients with dysphagia was 51.2 (23.7) years (range, <1-96). No significant difference was noted between the mean age of females and males. Diabetes was present in 10.7% (OR, 1.9; 95% CI, 0.5-1.9), smoking in 10.1% (OR, 0.8; 95% CI, 0.4-1.4), depression in 5.6% (OR, 0.7; 95% CI, 0.3-1.6), cancer in 5.1% (OR, 1.1; 95% CI, 0.5-2.4), and cerebrovascular disease in 2.1% (OR, 1.7; 95% CI, 0.7-4.5) of cases. None of these comorbidities was associated with an increased risk of dysphagia.

Table 2 illustrates the management, diagnosis, and disposition of patients. Over the 4-year period, physicians ordered speech/occupational therapy in 1.4%, ordered psychotherapy in 0.3%, ordered depression screening in 1.4%, and performed a biopsy in 2.4% of patient visits (no CI was calculated due to the low number of cases). The most common assigned ICD-9-CM diagnosis code was 787.20 (“dysphagia, unspecified”; 28.1% of total visits; 95% CI, 18.3-37.9), followed by 530.81 (“esophageal reflux”; 19.2% of the visits; 95% CI, 12.3-26.1). Patients were referred to other physicians in 8.5% of cases and to the emergency room or hospital in 1% of cases.

### Discussion

The ability to swallow normally is taken for granted by most individuals until problems develop. Dysphagia may lead to a number of medical problems, including dehydration, malnutrition, aspiration, and even death. The social, psychological, and emotional effects of dysphagia should not be underestimated and, for some individuals, are the most troublesome aspects of this condition.\(^5\) Patients with dysphagia may present to a number of physicians, including primary care doctors, otolaryngologist–head and neck surgeons, gastroenterologists, and neurologists. While the disease burden of dysphagia has been examined previously, most studies are limited to the perspective of a single type of treating physician or a specific subset of dysphagic patients. Despite the increasing recognition of the severity of dysphagia, the “burden” of dysphagia on the ambulatory medical care is not well documented.

The NAMCS is an excellent tool for evaluating this problem as it provides data for ambulatory care across multiple medical specialties, as well as a unique opportunity for studying the frequency, demographics, and outcomes of the ambulatory visits in the United States. These data sets include visit records from the entire country, from a variety of specialties, and for numerous reasons for the visit. This allowed for establishment of nationwide demographics and variability of the management of dysphagia-related visits.

Dysphagia was a reason for approximately 1.9 million ambulatory patient visits annually, accounting for 0.19% of all patient visits to a physician. In comparison, this was lower than the percentage of patients who presented with voice complaints (0.26%)\(^12\) or who were diagnosed with obstructive sleep apnea (0.46%)\(^13\) according to same database. The demographics of dysphagic patients in the current study were similar to those of the other previous studies.\(^14,15\) Complaints of dysphagia were most prevalent in individuals 45 to 64 years old. Sixty-eight percent of the patients were older than 45 years, and 37% were older than 65 years.

Review of this data set reveals that the number of patient visits due to dysphagia is far less than the reported prevalence of dysphagia in the community.\(^1-7\) These data support the findings of other studies that many people with
dysphagia are unlikely to seek medical care.\textsuperscript{5,7,16} Many reasons may exist for this. Turley and Cohen\textsuperscript{16} found that many individuals with dysphagia were unaware that treatment options exist, thought treatment was too expensive and time-consuming, and were not bothered enough by their symptoms to seek care. Ekberg et al\textsuperscript{5} found that only a minority of patients interviewed with dysphagia believed that their condition was treatable. They further found that unless individuals were asked by their physician to describe dysphagia, they would be unlikely to inform the provider themselves or even family members of their difficulties.\textsuperscript{5}

These data reveal that otolaryngologist–head and neck surgeons are involved in the care of a minority of patients with dysphagia. Otolaryngologist–head and neck surgeons provided care for 16.4% of dysphagic patients; in comparison, they provided care for only 10% of patient visits due to obstructive sleep apnea.\textsuperscript{13} Otolaryngologist–head and neck surgeons were almost 10 times more likely to see dysphagic patients in their daily practice than other physicians—patient visits with dysphagia comprised 1.55% of all visits to an otolaryngologist–head and neck surgeon vs 0.16% of visits to primary care and other physicians. An otolaryngologist was more than twice as likely to see a patient with voice changes as dysphagia, according to a study using the same database by Best and Fakhry.\textsuperscript{12}

This study also offers a number of suggestions to improve the delivery of care to dysphagic patients. While most patients with dysphagia present to their primary care physician, otolaryngologist–head and neck surgeons are uniquely poised to evaluate patients with dysphagia using flexible laryngoscopy, flexible endoscopic evaluation of swallowing, and unsedated esophagoscopy.\textsuperscript{8} In addition, with an intricate understanding of anatomy and physiology, otolaryngologists are able to evaluate patients in a unique manner relative to other clinicians. Increasing the awareness of the public, including both patients and referring physicians, may allow otolaryngologists to take a more active role in the care of patients with dysphagia.

Differences in management were noted between physicians of different specialties. Primary care physicians were more likely to prescribe antimicrobials, as patients with infectious etiologies were more likely to present to them. It is not a surprise that other specialists and otolaryngologists were more likely to perform/order an aerodigestive tract procedure such as esophagogastroduodenoscopy or laryngoscopy, as these are common reasons for specialist referral.

Given the variety of physician specialists, who participate in management of dysphagic patients, the model of a multidisciplinary team approach may be valid.\textsuperscript{17} Much like protocolization of management of inpatients with dysphagia has been proposed,\textsuperscript{18,19} coordination of multidisciplinary care of outpatients would be beneficial as well. Coordination and communication between physicians of different specialties will likely improve the quality of care that patients receive. This would assist in reducing the variability of management of this population. As an example, this data set revealed that primary care physicians ordered radiographic studies much less than the other 2 specialty physicians. With improved coordination of care, patients may be able to have appropriate imaging performed prior to visiting a specialist, potentially decreasing the time to treatment.

Findings of the current study should be interpreted with understanding of its limitations. The NAMCS implements a

### Table 2. Management of patient visits due to dysphagia grouped by physician specialty.\textsuperscript{a}

<table>
<thead>
<tr>
<th></th>
<th>% of All Visits (95% CI)</th>
<th>Otolaryngology–Head and Neck Surgery, %</th>
<th>Primary Care, %</th>
<th>Other Specialists, %</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Workup/diagnostic procedures</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Any imaging study</td>
<td>17.8 (12.9-22.7)</td>
<td>22.8</td>
<td>10.2</td>
<td>24.0</td>
<td>.02</td>
</tr>
<tr>
<td>Any performed procedure</td>
<td>54.3 (44.1-64.4)</td>
<td>58.3</td>
<td>49.3</td>
<td>58.0</td>
<td>.6</td>
</tr>
<tr>
<td>Aerodigestive-specific procedure</td>
<td>19.6 (12.4-26.9)</td>
<td>20.8</td>
<td>4.0</td>
<td>36.2</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td><strong>Diagnosis</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Infectious</td>
<td>9.1</td>
<td>&lt;0.1</td>
<td>17.3</td>
<td>3.22</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>Neoplastic</td>
<td>4.0</td>
<td>5.2</td>
<td>0</td>
<td>7.9</td>
<td>.4</td>
</tr>
<tr>
<td>Neuropsychiatric</td>
<td>9.2</td>
<td>5.3</td>
<td>13.3</td>
<td>6.2</td>
<td>.1</td>
</tr>
<tr>
<td>Respiratory system</td>
<td>29.7 (21.8-37.7)</td>
<td>40.0</td>
<td>43.7</td>
<td>10.3</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>Digestive system</td>
<td>29.9 (20.1-39.7)</td>
<td>30.9</td>
<td>13.5</td>
<td>47.4</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td><strong>Medication</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Antimicrobial medication</td>
<td>21.9 (11.9-31.9)</td>
<td>21.7</td>
<td>39.7</td>
<td>2.5</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>Gastrointestinal medication</td>
<td>34.7 (26.7-42.8)</td>
<td>37.6</td>
<td>33.9</td>
<td>34.5</td>
<td>.9</td>
</tr>
<tr>
<td>Analgesics</td>
<td>23.6 (12.5-34.8)</td>
<td>13.3</td>
<td>22.2</td>
<td>29.4</td>
<td>.4</td>
</tr>
<tr>
<td><strong>Patient disposition</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Referred to other physician</td>
<td>8.5</td>
<td>5.8</td>
<td>14.8</td>
<td>2.8</td>
<td>.003</td>
</tr>
</tbody>
</table>

\textsuperscript{a}Significant differences are in bold.
physician-based data collection method. Although this provides an objective and analytical basis for the NCHS, the accuracy of the entries is not validated by independent reviewers. Therefore, the records are subject to data entry bias. Each year of the surveys contained a limited number of office visits due to dysphagia, and this warranted merging multiple years of data to have a reasonable sample size. On the other hand, the low number of patient visits in some of the defined subgroups could have resulted in underestimation of a potential difference or association. Visits to subspecialists (including gastroenterologists) were classified under “other specialties” by the NCHS and, thus, did not allow us to further break down the data.

This study provides nationwide statistics for demographics, diagnosis, and management of patients with swallowing disorders by examination of all surveyed visits with a complaint of dysphagia during a 4-year period. Dysphagia is a disease that is prevalent within the worldwide population but one for which many do not seek medical care. Patients with dysphagia may present to any number of physicians, including primary care doctors, otolaryngologists, gastroenterologists, and neurologists. While the disease burden of dysphagia has been examined, most studies are limited to the perspective of a single type of treating physician or a specific subset of patients with dysphagia.

Conclusions

The number of patients who seek medical care for dysphagia is far less than the prevalence of dysphagia. Primary care physicians are most likely to evaluate and manage this patient population, and otolaryngologist–head and neck surgeons are involved in the care of only a minority of these patients. The differences in management of dysphagic patients may be due to the different etiologies of the disease.

Author Contributions

Hossein Mahboubi, designing, analysis and interpretation of data, drafting the article and final approval of the version to be published; Sunil P. Verma, designing and interpretation of data, drafting the article and final approval of the version to be published.

Disclosures

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