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Prevalence of Serious Diagnoses and Disposition Among Older Adults Presenting with a Chief Complaint of Constipation: A Retrospective Cohort Study

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ABSTRACT

A chief complaint of "constipation" in the emergency department (ED) is generally considered low-risk, and potentially suitable for lower acuity care. However, it may also indicate abdominal pain perceived as lower severity by triage staff, despite being relatively high-risk. We hypothesized that ED visits for constipation in older adults would more frequently result in the diagnosis of serious, treatable conditions compared to younger adults. We analyzed data from the National Hospital Ambulatory Medical Care Survey (NHAMCS) over an 8-year period (2013-2020). Older adults with constipation were more likely to be non-Hispanic White. Among adults with constipation, 25.6% (95% CI: 22.8-28.4) received intravenous fluids, 15.5% (95% CI: 11.9-19.1) had an emergency general surgical diagnosis, and 9.7% were admitted to the hospital. Older adults had less ultrasound use but more operative management compared to younger adults. In older adults, 15.2% of ED visits carried an emergency general surgical diagnosis, compared to 15.7% in younger adults. Leading diagnoses included intestinal impaction, gastro-esophageal reflux disease without esophagitis, ileus, diverticular disease of the large intestine without perforation or abscess, and anal dysplasia. Approximately one in ten patients presenting to the ED with constipation required significant medical intervention, a rate similar to atraumatic low back pain. While the admission rate for constipation-related visits is lower than for geriatric abdominal or chest pain, it remains common. Clinicians should maintain a high index of suspicion and order appropriate tests based on clinical evaluation, particularly in older adults. Further research may lead to a "red flag" approach to better identify serious conditions without excessive testing.

INTRODUCTION

A chief complaint of "constipation" in the emergency department (ED) is thought to represent a low risk visit potentially amenable to care in lower acuity settings.[1] Constipation represents a specific symptom—the inability to defecate three or more times a week.[2] However, as a chief complaint it may alternatively suggest abdominal pain deemed by triage staff to be lower severity. Because abdominal pain in older adults is known to be a high-risk condition,[3] and chronic constipation can result in significant sequelae,[4] we hypothesized that more visits for a chief complaint of constipation to US EDs would ultimately result in diagnosis of serious, intervenable disease in older adults compared to younger adults.

METHODS

We used the National Hospital Ambulatory Medical Care Survey (NHAMCS), aggregating 8 years of data (2013-2020) resulting in 136,141 ED visits from patients who were 18 and older. NHAMCS is a nationally representative survey conducted by the National Center for Health Statistics that collects data on the use and delivery of ambulatory care in hospital EDs. The survey is a multi-stage probability

sample survey, assembled by sampling approximately 350 EDs each year, and abstracting data from a random sample of 60-80 charts within each ED. NHAMCS documents several reasons for visit (RFV) for each ED visit. We limited this analysis to the primary reason for each visit, which we refer to as the chief complaint. In the dataset, complaints of "constipation" are coded as 243 (2013-2017) and 15900 (2018-2020). Participants presenting to the ED with abdominal pain and without a chief complaint of constipation were excluded. We used NHAMCS-provided survey weights to calculate descriptive statistics and two-tailed X^2 and ordinary least squares (OLS) regression hypothesis tests comparing older (≥65 years old) to younger (18-64) adults. Hypothesis tests were two-sided (α=0.05). Variable definitions were previously described.[2]

The University of Pennsylvania Institutional Review Board exempted this de-identified analysis from review.

RESULTS

We identified a total of 413 ED visits with a chief complaint of constipation over this time period from patients 18 years old or older. This consisted of 191 visits from older adults and 222 visits from the younger adult comparison group, which after weighting represented 1,210,955 and 1,712,645 visits nationally, out of the total weighted sample of 943,700,966 ED visits (Supplemental Figure 1).

Table 1. Personal and visit characteristics of older Adults (65+) presenting to US EDs, compared to younger adults (18-64), 2013-2020

Variable	Overall (18+) (n=413)	Older Adults (65+) (n=191)	Younger Adults (18-64) (n=222)	*P* Value
Weighted 8-year incidence of ED visits (N)[a]	n=2,923,600	n=1,210,955	n=1,712,645	
Age in years, M (SD)	56.7 (22.1)	78.9 (9.3)	40.9 (13.6)	N/A
Race/Ethnicity, %[b]				0.001
Non-Hispanic White	63.4	77.8	53.2	
Non-Hispanic Black	22.5	14.4	28.2	
Hispanic	12.3	6.3	16.5	
Other	1.9	1.5	2.1	
Female, %	57.2	54.4	59.2	0.498
Number of Chronic Conditions, M (SD)	1.5 (2.0)	2.4 (2.2)	0.8 (1.5)	<0.001
Payer type, %				<0.001
Medicare	39.8	76.4	14.0	
Private insurance	20.1	7.8	28.8	
Unspecified/Other	12.2	8.1	15.7	
Medicaid	19.6	5.4	29.6	
Self-pay	7.3	0.8	11.9	
Worker's compensation	0.6	1.5	0	
No charge/Charity	0.4	0	0.4	
Any Testing, % (SE)	69.4 (3.7)	72.6 (4.7)	67.2 (4.7)	0.359
Imaging				
Xray without ultrasound or CT, % (SE)	41.5 (3.9)	44.4 (5.2)	39.6 (5.2)	0.484
Abdominal CT, % (SE)	23.1 (3.1)	24.2 (4.0)	22.3 (4.0)	0.718
Ultrasound, % (SE)	3.9 (1.6)	0.9 (0.9)	6.1 (2.6)	0.035
Diagnostics				
EKG/ECG, % (SE)	9.2 (2.1)	12.8 (3.4)	6.6 (2.6)	0.150
Labs[d], % (SE)	48.4 (4.4)	41.6 (5.7)	53.0 (6.1)	0.155
IV fluids, % (SE)	25.6 (2.8)	26.3 (3.9)	25.1 (3.7)	0.830
Emergency General Surgical Diagnosis[e]	15.5 (3.6)	15.2 (4.3)	15.7 (5.3)	0.912
Disposition				
Admitted to Hospital, %	9.7	12.2	8.0	0.267
Admitted to operating room, %	2.2	3.9	1.1	0.018
Admitted to critical care, %	0.6	0.3	0.8	0.355
Died during care episode, %[f]	0.4	0.0	0.7	0.869

Abbreviations: SD, standard deviation; M, mean; N, number of visits; n, number of observations; ED, emergency department; NHAMCS, National Hospital Ambulatory Medical Care Survey.
a Estimate of number of ED visits nationally, using survey weights provided by the nationally representative survey NHAMCS. All estimates and percentages in this table are similarly nationally representative.
b NHAMCS estimates are derived from electronic health record data and therefore may not fully reflect patient self-reported race/ethnicity.
c Visits from patients triaged to ESI 1 are excluded as they are of sufficient acuity as to not systematically afford patients time to state a chief complaint.
d Data on patient labs was only available from 2013-2017
e EGS diagnoses are limited to those after 2015 due to the switch between ICD-9 and ICD-10.
f Dead on arrival, died in ED, or died during hospitalization.

Table 1 compares key sociodemographic, testing, management, and disposition variables across the groups. Of all adults with constipation, 25.6% (95% CI: 22.8-28.4) received intravenous fluids, 15.5% (95% CI: 11.9-19.1) had an emergency general surgical diagnosis, and 9.7% were admitted to the hospital. Older adults with constipation were more likely to be non-Hispanic White. There was less use of ultrasound and more operative management among older adults compared to younger adults.

Table 2 compares diagnoses across the two groups. In older adults presenting to the ED for constipation, 15.2% of ED visits nationally carried an emergency general surgical diagnosis. By comparison, 15.7% of younger adults carried an emergency general surgical diagnosis. Leading emergency general surgery (EGS) diagnoses included other impaction of the intestine, gastro-esophageal reflux disease without esophagitis, ileus, diverticular disease of the large intestine without perforation or abscess, and dysplasia of the anus.

Table 2. Top five EGS and non-EGS principal diagnoses among chief complaint of constipation, by age group

Diagnosis	Percent	Percent (Age 65+)	Percent (Age <65)	p-value
Emergency General Surgical Diagnosis (EGS)				
Total	**15.5**	**15.2**	**15.7**	***p=0.320***
Diagnosis		*(Percent of all EGS)*		
Other impaction of intestine	24.2	36.8	7.1	
Unspecified intestinal obstruction	18.2	21.1	14.3	
Ileus, unspecified	9.1	5.3	14.3	
Diverticular disease of large intestine without perforation or abscess	9.1	10.5	7.1	
Dysplasia of anus	9.1	10.5	7.1	
Non-Emergency General Surgical Diagnosis (EGS)				
Total	**84.5**	**84.8**	**84.3**	***p=0.138***
Diagnosis		*(Percent of all non-EGS)*		
Constipation	60.4	62.4	58.9	
Other functional intestinal disorders	12.2	9.4	14.3	
Unspecified abdominal pain	6.6	4.7	8.0	
Diseases of the digestive system complicating pregnancy, childbirth and the puerperium	1.5	0.0	2.7	
Other abdominal pain	1.5	1.2	1.8	

DISCUSSION

In this nationally representative repeated cross-section analysis of ED visits, one patient in every ten presenting to the ED with a chief complaint of constipation was admitted to the hospital, a rate of significant care needs similar to that of atraumatic low back pain.[5,6] While fewer patients visiting the ED for constipation were ultimately admitted compared to published national estimates for geriatric abdominal pain[2] or chest pain,[7] admission remains common. The difference we found in ultrasound utilization between the two age groups is likely due to increased pregnancy-related imaging in younger adults compared to older adults (6.1% vs. 0.9%) and is expected for these age groups. The increased operative management in older adults compared to younger adults (3.9% vs. 1.1%) is likely due to the combined effect of greater prevalence of more severe diagnoses and of greater severity of a given diagnosis in an older adult made vulnerable to acute health shocks through frailty. Other differences in care and disposition between age groups were not significant, but ED visits for constipation were more common among older adults compared to population size, suggesting more overall admissions on a per capita basis.

Constipation visits in the ED have continued to rise, however, diagnosis and treatment methods for the condition have remained largely consistent over time.[8] Patients who present with a true chief

complaint of constipation are reporting that they are not passing stool. The etiology of this could be due to bowel obstruction, and indeed, we find cases of ileus among the diagnoses. Even when the patient's self-assessment is correct and there was not an alternative obstructive process present, constipation can lead to stercoral colitis, a rare but serious condition that can lead to mortality, which this study was not powered to detect. Examples like these underscores the importance of encouraging clinicians to stay vigilant and order the appropriate tests based on the patient's history and physical examination, particularly in older adults.

This study has several limitations. First, we lack the power to determine small effects due to the small sample size of 413 total constipation chief complaint visits and we may not be able to detect statistical significance in some of the differences displayed. Further research should attempt to find and use data sources that can help elucidate these differences with greater statistical power. In addition, NHAMCS does not record post-discharge outcomes, precluding analysis of 30-day mortality and revisits. Second, NHAMCS data collection is based on chart abstraction, allowing for human error in recording. However, more recent years have relied more heavily on electronic collection, and chart abstractors are trained and monitored by the CDC. Third, triage nurses might sometimes substitute their own assessment of the patient's reported symptoms in recording a chief complaint of constipation rather than directly recording the patient's own words, which can lead to error. However, our research remains relevant to clinical care and research, as this is the data that is captured and presented to clinicians, consistent with prior work using chief complaint to define a population for research purposes. Finally, NHAMCS lacks measurements of geriatric syndromes, including fall risk, frailty, and cognitive impairment. Therefore, we chose not to apply a matching approach because the age difference with the comparison group would not allow for adequate balance in the presence of these age-associated unobserved determinants of the susceptibility to acute health shocks.

CONCLUSION

This study demonstrates that while a chief complaint of constipation is generally considered to be low acuity in ED settings, it can often signal more serious conditions, which are of particular risk to older adults. Our findings reveal that a significant proportion of older adults presenting with constipation require medical intervention, including hospital admission and emergency general surgery. Clinicians should maintain a high index of suspicion and order testing guided by their history and physical examination, especially among older adults. Prospective research may allow for the development of a "red flag"-based approach[6] to minimize missing significant disease without causing over-testing, similar to accepted approaches for back pain.

KEYWORDS

Constipation, Emergency Department, Emergency General Surgery, NHAMCS, Older Adults

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CONFLICTS OF INTEREST

ABF reports no conflict of interest. MNA reports no conflict of interest. RG reports no conflict of interest. RRK reports no conflict of interest. RRW reports no conflict of interest. ARC reports no conflict of interest.

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