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National Evaluation of Patient Preferences in Selecting Hospitals and Healthcare Providers

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Abstract

Background: Patient utilization of public reporting has been suboptimal despite attempts to encourage use. Lack of utilization may be due to discordance between reported metrics and what patients want to know when making healthcare choices.

Objectives: To identify measures of quality that individuals want presented in public reporting and explore factors associated with researching healthcare.

Research Design: Patient interviews and focus groups were conducted to develop a survey exploring the relative importance of various healthcare measures.

Subjects: Interviews and focus groups conducted at local outpatient clinics. Survey administered nationally on anonymous digital platform.

Measures: Likert scale responses were compared using tests of central tendency. Rank-order responses were compared using analysis of variance testing. Associations with binary outcomes were analyzed using multivariable logistic regression.

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Meeting Information: Results were presented at the 14th Annual Academic Surgical Congress, February 5-7, 2019 in Houston, TX.

Results: Overall, 4,672 responses were received (42.0% response rate). Census balancing yielded 2,004 surveys for analysis. Measures identified as most important were hospital reputation (considered important by 61.9%), physician experience (51.5%), and primary care recommendations (43.2%). Unimportant factors included guideline adherence (17.6%) and hospital academic affiliation (13.3%, $p < 0.001$ for all compared to most important factors). Morbidity and mortality outcome measures were not among the most important factors. Patients were unlikely to rank outcome measures as the most important factors in choosing healthcare providers, irrespective of age, gender, educational status, or income.

Conclusions: Patients valued hospital reputation, physician experience, and primary care recommendations while publicly reported metrics like patient outcomes were less important. Public quality reports contain information that patients perceive to be of relatively low value, which may contribute to low utilization.

Introduction:

Over the past two decades, there has been a push towards increased information transparency and public reporting within healthcare.¹ Goals of enhanced transparency in healthcare quality reporting include greater provider accountability, increased quality measures, improved outcomes, and ability for patients to make informed decisions regarding where to seek care.²⁻⁴ Despite the importance of healthcare quality reporting, the emphasis on transparency has led to a substantial increase in publically available data with varying quality metrics of unclear significance.⁵ Furthermore, patient utilization of healthcare quality reporting has been suboptimal despite attempts to encourage its use.⁶

Several theories regarding the underutilization of publicly available healthcare quality reports by patients include an excess of information made available to patients, the lack of a comprehensive source of information, or available information does not represent patient preferences.⁷ While efforts have been made to address the first two issues⁵, concerns persist regarding patient preferred metrics to inform healthcare decisions. Therefore, potential discordance between reported quality metrics and the information individuals value when making healthcare choices represents an area for improvement. Previous work has shown that patients value access to information regarding quality of care as well as comparisons between sources of care.⁷⁻⁹ However, specific metrics and how patients prioritize those metrics when choosing providers or hospitals remains unclear.

As the push for transparency in healthcare quality reporting continues, improvements in patient utilization of publicly available reports remain essential. However, causes of patient underutilization of available data remain poorly studied. Therefore, evaluating specific patient preferences may provide tools to improve current healthcare quality reporting and utilization. The objectives of this study were to (1) quantify how often individuals research healthcare, (2) identify hospital- and physician-level measures of quality that individuals want presented in public reporting, and (3) explore factors that may drive individuals to research healthcare.

Methods:

Identification of Patient-Centered Concepts of Healthcare Quality

Semi-structured interviews were conducted with patients in general surgery clinics to identify preliminary concepts, categories, and language for subsequent survey development. Next, focus groups were used to complete exploration of hospital quality concepts. Patients were excluded if legally blind, pregnant, or seeking consultation for potential surgery. These exclusion criteria were due to logistical constraints regarding informational material and concern for vulnerable populations. Physicians in target clinics granted approval to contact their patients for the study. All participants were provided written informed consent and compensated for their time with a \$40 Visa gift card prior to participation.

During semi-structured interviews, participants were asked to describe the process they used to select a hospital for surgery, to identify hospital factors that influenced their choice, and to discuss the utility of both available and hypothetical hospital quality measures. During focus groups, participants were asked to identify and suggest hospital factors and quality measures that influenced a patient's hospital choice for surgery. Interviews were conducted until thematic saturation was achieved.

Survey Development

Themes identified were subsequently built into a survey designed to explore patient-centered concepts of healthcare and surgical quality. Concepts repeatedly identified or endorsed during patient interviews were written as survey questions. Interview results indicated that insurance coverage was a dominant factor in choosing where to receive healthcare (i.e., patients would not consider going to a facility that was not covered by their insurance, regardless of quality). As such, questions were constructed to identify those factors that patients would consider in choosing between hospitals and providers that accepted their insurance. For the purposes of the survey, questions were grouped into hospital factors, physician factors, and outcome measures. Respondents were asked to first select those factors they would consider in choosing where to receive care. Subsequently, respondents were asked to assess the importance of all factors they would consider in choosing where to receive care on a 5 point Likert Scale (Very Unimportant to Very Important). Finally, respondents were asked to assess the relative importance of the most important factors. Respondents were also asked general questions about their health history (e.g., previous hospitalizations, previous attempts at researching healthcare) and functional status (4-item PROMIS Short Form for Physical Function).¹⁰ After initial construction of the survey, pretest cognitive interviews were conducted with additional patients in general surgery clinics to assess survey coherence, balance, and clarity. The survey was iteratively revised and re-tested in additional patient volunteers prior to online pilot testing.

Outcomes

Two outcomes of interest were assessed: previous attempts at researching healthcare and prioritization of outcome measures in choosing where to receive healthcare. Respondents were considered to prioritize outcome measures if outcome measures were among the three most important factors identified by that patient in choosing where to receive healthcare.

Qualitative Analysis

A researcher trained in qualitative research analyzed the interview transcripts. QDA Miner 4 (Provalis Research, Montreal, Quebec, Canada) was used to facilitate coding. Semi-structured interview and focus group participant responses were analyzed using thematic analysis, a systematic search for themes, patterns, and repetitions throughout and across the interviews.¹¹ Using a line-by-line approach,¹² a preliminary codebook was developed until saturation was reached. Two independent analysts then applied the codes to all transcripts (including the transcripts used for codebook development).

Statistical Analysis

The final survey was disseminated via the SurveyGizmo platform (Boulder, CO) to preexisting, standing survey panels. Responses were collected until 2,000 census-balanced responses were available for analysis. Due to the structure of the public survey platform, the process of census optimization involved continued distribution of the survey until a minimum number of responses was achieved from each relevant demographic subgroup. A random sample was taken from any subgroup that was over-sampled during the survey dissemination to create the final survey dataset. Response rate was calculated based on the total survey responses, not only those available for analysis. Likert scale responses were compared using non-parametric tests of central tendency. Rank order responses were compared using analysis of variance testing adjusted for multiple comparisons. Multivariable logistic regression models were estimated to examine the association between patient health history, demographics, functional status, and both previous attempts to research healthcare and prioritization of outcome measures in choosing where to receive care. Point estimates are reported without confidence intervals, and level of significant was set to 0.05. Data analyses were performed using STATA 15.1 (StataCorp LP, College Station, TX). This study was approved by the Northwestern University Institutional Review Board.

Results:

Patient Interviews and Focus Groups

In order to reach saturation, ten semi-structured interviews and three focus groups were conducted. Focus groups included two, two, and seven participants, respectively. This yielded several factors that patients consider both important and unreliable in assessing where to receive care. Factors that patients most frequently identified as important drivers included hospital reputation or ranking; hospital appearance and cleanliness; hospital location; referrals by primary care physicians, friends, or family; physician and staff personality; physician credentials; and the quality of follow up after care. Qualities that were often mentioned but generally considered unreliable or unnecessary by patients included infection rates, hand washing, and complications rates. Representative hospital factors, physician factors, and outcome measures derived from these encounters were then used to construct a survey to quantitatively explore these themes.

Survey Cohort

Online surveys were distributed to 11,125 individuals with 4,672 completed responses (42.0% response rate). Census optimization yielded 2,004 surveys for analysis. Overall, 66.0% of respondents were under the age of 45 and 51.1% were female. More than two-thirds (68.5%) had undergone surgery and 69.7% had been admitted to a hospital. Most respondents reported previously researching healthcare in some way (60.5%), with 91.5% of those that had previously researched healthcare stating the research helped them to make their healthcare decision. Additional cohort characteristics can be found in Table 1.

Choosing Where to Receive Care

Among hospital factors, respondents most often considered the reputation of the hospital (61.9%), the location of the hospital (50.6%), and primary physician recommendations (53.2%) to be important factors in choosing between hospitals that accept their insurance. The least important hospital factors included university affiliations (85.0% would not consider), familiarity with faculty (82.6%), hospital amenities (76.9%), and the ability for family to stay near the hospital (76.4%). Relative importance of additional hospital factors can be found in Table 2.

Among physician factors, the most important were years of experience (51.1% considered important), primary physician recommendations (49.2%), and overall satisfaction of previous patients (48.1%). The least important physician factors included physician race (93.0% would not consider), the presence of trainees (87.1%), physician gender (86.2%), and how well the physician follows national guidelines (80.6%). Additional information on the importance of physician factors can be found in Table 3.

Among outcome measures, only how quickly patients feel back to normal after a hospital stay (43.3%) and how quickly patients are fully functional after a hospital stay (43.0%) were considered important by more than 40% of patients. Less important outcome measures included the risk of requiring temporary nursing home care (81.3% would not consider), the risk that their problem is not fixed by the hospitalization (64.8%), the risk of death (64.3%), and the risk of readmission (64.2%). Additional information on the importance of outcome measures can be found in Table 4.

Respondents were then asked to rank the relative importance of eight factors in choosing where to receive care: hospital location, hospital reputation, recommendations from primary physicians, physician experience, overall satisfaction of previous patients, risk of death, risk of complications, and how quickly patients were fully functional after hospitalization. These eight factors were chosen based on being the most frequently selected factors in pilot testing. There were no significant differences in the ranks of any factors, with the mean and median rank of all eight factors being between 4.0 and 4.9 (Supplemental Digital Table 1).

Factors Associated with Previous Healthcare Research and Prioritizing Outcome Measures

Overall, 60.5% of respondents reported previously researching healthcare online. Respondents were more likely to have previously performed research if <35 years old (aOR 2.23, 95% CI: 1.65-3.00, P<0.001; vs >55 years old), female (aOR 1.30 vs male, 95% CI:

1.07-1.58, $P=0.009$), Hispanic or Latino (aOR 1.94, 95%CI: 1.30-2.89; vs non-Hispanic White), had advanced degrees (aOR 2.09, 95%CI: 1.53-2.86, $P<0.001$; vs those with high school or less education), or had income \geq \$100,000 (aOR 1.75, 95%CI: 1.33-2.30, $P<0.001$; vs income $<$ \$50,000). Respondents were also more likely to endorse previously researching healthcare if they had previously had surgery (aOR 1.56, 95%CI: 1.25-1.96, $P<0.001$), previously been admitted to the hospital (aOR 1.70, 95%CI: 1.36-2.14, $P<0.001$), or had relatively low function status (aOR 1.64, 95%CI: 1.27-2.12, $P<0.001$; vs high functional status; Table 5).

Outcome measures were prioritized (among top three choices in factor rankings) by 38.7% of respondents. There were no significant demographic or health-related factors that predicted respondents prioritizing outcome measures in choosing where to receive healthcare (Table 5).

Discussion:

In this study, we used a national survey of internet users to define how often individuals research healthcare and what factors individuals valued in making decisions about where to receive care. While more than half of survey respondents had previously researched healthcare, a large number of these cited simple online searches without utilization of validated measures. While respondents were more likely to consider hospital reputation and recommendations from primary care physicians, no single factor was considered important by more than two thirds of respondents. While individuals were more likely to perform research if younger, more educated, or had previous experience with the healthcare system, there were no factors associated with prioritizing hospital quality or outcome measures such as complication or mortality rates.

The most striking result of this study is the relative indifference with which respondents viewed measures of healthcare quality that are commonly thought to be the important, such as complication and death rates. Patients were even less likely to consider risk of inaccurate medical reconciliations or readmissions, both of which are commonly used quality measures.^{13, 14} While previous studies have shown relatively low but slowly increasing utilization rates of quality-based healthcare research overall,^{15, 16} this study provides granular information on the patient preferences that underlie decision making. While some have hypothesized that the complexity and presentation of quality measures may make it challenging for patients to navigate this space and interpret publicly available data,¹⁷ these results imply that patients may not value the underlying raw numbers. This conclusion is further supported by the lack of demographic factors (e.g., education, income, previous healthcare) associated with prioritization of tangible healthcare outcome measures, which implies that prioritization of healthcare quality or outcome measures is not simply a matter of education or experience.

These results were supported on a smaller scale through our qualitative results. Throughout the study, participants used personal experiences to estimate hospital quality. For example, multiple participants believed third-party measures of infection rates and hand washing were unreliable. Instead, participants interested in postoperative complication rates looked directly

to their surgeon, primary care provider, or family members with more experience in healthcare for answers.

An additional interesting finding of this study is what the general population considers researching healthcare. While more than 60% of respondents stated they had researched healthcare and more than 90% of those said the research helped their decision, a large amount of this research appeared to involve simple online searches or exploring hospital websites. These results imply that patients may not even conceptualize “researching where to receive care” in the same way as those designing hospital rankings and quality measures, further highlighting the chasm that must be bridged in order to increase thorough, patient-based interpretation of healthcare quality data.

While these results may be discouraging to those working to develop and disseminate healthcare quality measures and hospital rankings, they do provide some insight into steps that may improve utilization of healthcare quality measures. First, the factor most commonly selected by respondents was Hospital Reputation, which is difficult to quantify but likely at least partially derived from hospital quality measures and rankings (e.g., U.S. News Rankings). Additional research on how patients ascertain or conceptualize hospital reputation are warranted, and development of reporting systems focused on relevant, patient-centered information may improve patient utilization of quality data.^{18, 19} Second, this study highlights the integral role of primary care physicians in guiding the decisions of patients that may be uncomfortable interpreting data primarily. The role of patients as consumers in the traditional sense has been extensively discussed in the literature, and primary care physicians clearly play a role in helping their patients navigate the complicated healthcare market.²⁰⁻²² Educational efforts aimed at primary care physicians to encourage their utilization of quality measures when recommending where to receive complex care may improve indirect dissemination of these data to patients. Finally, this study highlights that some measures commonly employed to describe hospital quality (e.g., readmission rates) may need to be reframed in more patient-centered or functional terms in order to improve patient use of quality data. This may involve incorporation of measures that the public finds most compelling (e.g., return to functionality after illness), simple rewording of how the existing metrics are presented, and additional educational efforts to explain the importance of certain measures. The mechanism of dissemination for such research should be further investigated, but could include government sponsored report cards of continued outreach from private research enterprises.

This study must be viewed in light of its limitations. First, this cross-sectional study can only explore associations and cannot identify causal relationships. Second, the online survey mechanism limits responses to only internet users, and thus may not reflect the entirety of the population. However, we believe this population would bias the study towards younger and potentially more technologically savvy respondents, and thus these results likely overestimate how much healthcare research is performed. Third, we did not specifically define the concept of “previous healthcare research” which may have artificially inflated the number of respondents reporting that outcome. However, we believe allowing respondents to classify what they considered to be “research” was equally interesting and demonstrates a fundamental gap in understanding among some respondents. Fourth, the relatively low rates

of individuals marking factors as “unimportant” implies that many individuals may not have distinguished between “would not consider” and “unimportant,” which may limit the distinction between the two survey responses. However, this is unlikely to affect final models as the outcomes were those that considered certain factors important or very important. Finally, we were unable to provide any more than a rudimentary exploration of the role of insurance coverage in healthcare decisions. This is intuitive given the high out-of-pocket cost of healthcare in the United States, but future research should continue to explore patient-based healthcare research in the context of the American insurance structure.

Conclusions:

While more than half of individuals may have performed some amount of healthcare research, this research often does not include robust measures of healthcare quality. This may be at least partially driven by differences between what data patients prioritize in making healthcare decisions and what is presented by healthcare quality sites and rankings. Development of reporting systems focused on relevant, patient-centered information may improve patient utilization of quality data.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Table 1.

Respondent Characteristics (N=2,004)

Variable	n, (%)
Age	
<34	778 (38.8)
35-44	544 (27.2)
45-54	397 (19.8)
>55	285 (14.2)
Gender	
Female	1023 (51.1)
Male	966 (48.2)
Other/Prefer not to say	15 (0.7)
Region	
Northeast	457 (22.8)
Southeast	462 (23.1)
Midwest	475 (23.7)
Southwest	202 (10.1)
West	408 (20.4)
Ethnicity	
Non-Hispanic White	1464 (73.1)
Non-Hispanic Black	219 (10.9)
Hispanic/Latino	141 (7.0)
Asian	113 (5.6)
Other/Prefer Not to Say	67 (3.4)
Education	
Advanced (MD, PhD, MS)	355 (17.7)
Bachelor's Degree	530 (26.5)
Associates Degree	208 (10.4)
High School Diploma	911 (45.5)
Income	
>\$100,000	531 (26.5)
\$50,000-\$99,999	622 (31.0)
<\$50,000	851 (42.5)
Health History	
Has Undergone Surgery	1373 (68.5)
Has Been Admitted >1 Night	1397 (69.7)
Health Status *	
A (4-13)	455 (22.2)
B (14-19)	524 (26.1)
C (20)	1035 (51.7)
Previous Healthcare Research	

Variable	n, (%)
Has researched healthcare	1213 (60.5)
Google	1071 (53.4)
Hospital Websites	725 (36.2)
Online Rankings	422 (21.1)
Yelp	163 (8.1)
Insurance Sites	34 (1.7)
Other	15 (0.8)
Researched helped decision **	1150 (91.5)
Why No Research	
No Need for Care	227 (11.3)
Have Relationship	139 (6.9)
Relied on Family	39 (2.0)
Relied on PCP	129 (6.4)
Emergency	98 (4.9)
Insurance Only	92 (4.6)
Other	67 (3.3)

* Based on four item PROMIS measure (tertiles with a perfect score 20/20 being group C)

** Denominator of 1213 (number who performed research)

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Table 2:

Hospital Factors

	Very Important n, (%)	Important n, (%)	Neutral n, (%)	Unimportant n, (%)	Very Unimportant n, (%)	Would Not Consider n, (%)
Location of the hospital	509 (25.4)	504 (25.2)	64 (3.2)	1 (0.1)	5 (0.3)	921 (46.0)
Reputation of the hospital	919 (45.9)	321 (16.0)	15 (0.8)	2 (0.1)	3 (0.2)	744 (37.1)
How often your specific problem is taken care of at that hospital	481 (24)	253 (12.6)	26 (1.3)	1 (0.1)	3 (0.2)	1240 (61.9)
Recommendations from family and friends regarding the hospital	324 (16.2)	431 (21.5)	71 (3.5)	3 (0.2)	2 (0.1)	1173 (58.5)
Recommendations from your primary doctor regarding the hospital	684 (34.1)	382 (19.1)	43 (2.2)	0 (0.0)	2 (0.1)	893 (44.6)
Ability of family to stay near the hospital	195 (9.7)	220 (11.0)	55 (2.7)	3 (0.2)	0 (0.0)	1531 (76.4)
Hospital amenities (television, WiFi internet access, etc)	163 (8.1)	228 (11.4)	69 (3.4)	2 (0.1)	1 (0.1)	1541 (76.9)
Private hospital rooms	322 (16.1)	273 (13.6)	44 (2.2)	6 (0.3)	0 (0.0)	1359 (67.8)
Hospital ranking on ratings website	347 (17.3)	300 (15.0)	35 (1.8)	4 (0.2)	1 (0.1)	1317 (65.7)
Hospital is affiliated with a major university	115 (5.7)	153 (7.6)	26 (1.3)	4 (0.2)	2 (0.1)	1704 (85.0)
Familiarity with faculty and staff working at the hospital	124 (6.2)	167 (8.3)	56 (2.8)	2 (0.1)	0 (0.0)	1655 (82.6)

* No factors were considered important by 122 (6.1%) patients

Table 3:

Physician Factors

	Very Important n, (%)	Important n, (%)	Neutral n, (%)	Unimportant n, (%)	Very Unimportant n, (%)	Would Not Consider n, (%)
Years of experience	617 (30.8)	406 (20.3)	30 (1.5)	1 (0.1)	1 (0.1)	949 (47.4)
Reputation of the doctor's medical school or residency training program	320 (16.0)	244 (12.2)	24 (1.2)	2 (0.1)	1 (0.1)	1413 (70.5)
Overall satisfaction of previous patients	621 (31.0)	342 (17.1)	30 (1.5)	3 (0.2)	1 (0.1)	1007 (50.3)
How well the doctor follows national guidelines	244 (12.2)	125 (6.2)	18 (0.9)	1 (0.1)	1 (0.1)	1615 (80.6)
Recommendations from family and friends regarding the doctor	382 (19.1)	442 (22.1)	58 (2.8)	2 (0.1)	2 (0.1)	1118 (55.8)
Recommendations from your primary doctor regarding the doctor	613 (30.6)	373 (18.6)	27 (1.4)	2 (0.1)	2 (0.1)	987 (49.3)
Doctor's race	63 (3.1)	49 (2.5)	18 (0.9)	8 (0.4)	2 (0.1)	1864 (93.0)
Doctor's gender	110 (5.5)	127 (6.3)	36 (1.8)	1 (0.1)	3 (0.2)	1727 (86.2)
Doctor's scheduling flexibility	451 (22.5)	412 (20.6)	31 (1.6)	5 (0.3)	1 (0.1)	1104 (55.1)
A doctor in training will not participate in my care	135 (6.7)	81 (4.0)	29 (1.5)	10 (0.5)	3 (0.2)	1746 (87.1)
Personal familiarity with the doctor	230 (11.5)	279 (13.9)	86 (4.3)	4 (0.2)	2 (0.1)	1403 (70.0)
Doctor's rating on ratings website	331 (16.5)	346 (17.3)	36 (1.8)	3 (0.2)	2 (0.1)	1286 (64.2)

* No factors were considered important by 109 (5.4%) patients

Outcome Factors

Table 4:

	Very Important n, (%)	Important n, (%)	Neutral n, (%)	Unimportant n, (%)	Very Unimportant n, (%)	Would Not Consider n, (%)
Risk of death following treatment	602 (30.0)	102 (5.1)	8 (0.4)	1 (0.1)	2 (0.1)	1289 (64.3)
Risk of requiring temporary nursing home care after treatment	204 (10.2)	146 (7.3)	21 (1.1)	3 (0.2)	1 (0.1)	1629 (81.3)
Risk of having a complication (example: infection, blood clot)	685 (34.2)	181 (9.0)	19 (1.0)	1 (0.1)	1 (0.1)	1117 (55.7)
How quickly patients feel back to normal after a hospital stay	476 (23.8)	391 (19.5)	30 (1.5)	0 (0.0)	0 (0.0)	1107 (55.2)
How often patients receive all appropriate medications after a hospital stay	467 (23.3)	260 (13.0)	24 (1.2)	0 (0.0)	0 (0.0)	1253 (62.5)
How often patients receive appropriate follow up appointments after a hospital stay	401 (20.0)	331 (16.5)	29 (1.5)	3 (0.2)	1 (0.1)	1239 (61.8)
How quickly patients are fully functional after a hospital stay	536 (26.8)	325 (16.2)	37 (1.9)	2 (0.1)	1 (0.1)	1103 (55.0)
Risk of having to return to the hospital for the same problem within the next month	467 (23.3)	222 (11.2)	28 (1.4)	1 (0.2)	0 (0.0)	1286 (64.2)
Risk that my problem is not completely fixed by the hospitalization	479 (23.9)	207 (10.3)	17 (0.9)	3 (0.2)	0 (0.0)	1298 (64.8)

* No factors were considered important by 236 (11.8%) patients

Table 5:

Multivariable Analysis of Factors Associated with Previous Healthcare Research and Prioritization of Outcome Measures

	Performed Research			Prioritize Outcome Measures		
	Unadj Rate	OR (95% CI)	P value	Unadj Rate	OR (95% CI)	P value
Overall	60.5			38.7		
Demographics						
Age Group						
<35	61.4	2.23 (1.65-3.00)	<0.001	40.6	1.04 (0.77-1.40)	0.805
35-44	66.5	2.24 (1.64-3.07)	<0.001	36.6	0.86 (0.63-1.18)	0.350
45-54	59.2	1.84 (1.32-2.55)	<0.001	37.6	0.92 (0.66-1.28)	0.618
55	48.4	1.0 Ref		39.0	1.0 Ref	
Gender						
Male	57.6	1.0 Ref		38.2	1.0 Ref	
Female	63.8	1.30 (1.07-1.58)	0.009	39.3	0.98 (0.81-1.19)	0.841
Other/Prefer Not	26.7	0.59 (0.17-2.01)	0.397	30.8	0.45 (0.12-1.66)	0.230
Ethnicity						
Non-Hispanic White	60.1	1.0 Ref		37.9	1.0 Ref	
Non-Hispanic Black	59.8	1.27 (0.93-1.75)	0.136	42.3	1.22 (0.89-1.66)	0.210
Hispanic/Latino	72.3	1.94 (1.30-2.89)	0.001	35.7	0.89 (0.60-1.32)	0.548
Asian	56.6	0.86 (0.56-1.32)	0.492	35.7	0.92 (0.59-1.43)	0.703
Unknown	53.7	0.93 (0.51-1.66)	0.795	54.1	2.18 (1.28-3.73)	0.004
Location						
Northeast	63.9	1.30 (0.98-1.72)	0.074	38.8	1.02 (0.77-1.36)	0.871
Southeast	63.0	1.36 (1.03-1.80)	0.030	39.2	1.04 (0.78-1.38)	0.793
Midwest	52.4	1.0 Ref		38.6	1.0 Ref	
Southwest	64.4	1.47 (1.01-2.12)	0.042	41.2	1.14 (0.80-1.62)	0.478
West	61.5	1.34 (1.01-1.80)	0.049	36.8	0.92 (0.69-1.24)	0.601
Education						
Advanced Degree	73.2	2.09 (1.53-2.86)	<0.001	36.7	0.90 (0.66-1.21)	0.482
Bachelors	69.1	1.94 (1.50-2.50)	<0.001	40.8	1.07 (0.84-1.38)	0.571
Associates	62.0	1.50 (1.08-2.08)	0.015	34.7	0.82 (0.59-1.15)	0.247
High School or Less	50.3	1.0 Ref		39.1	1.0 Ref	
Income						
100,000	60.6	1.75 (1.33-2.30)	<0.001	36.9	1.02 (0.78-1.34)	0.877
50k-49.9k	66.2	1.70 (1.34-2.16)	<0.001	41.9	1.24 (0.98-1.57)	0.075
<50k	50.1	1.0 Ref		37.4	1.0 Ref	
Health History						
Previously Had Surgery						
No	48.8	1.0 Ref		40.0	1.0 Ref	
Yes	65.9	1.56 (1.25-1.96)	<0.001	38.1	0.96 (0.77-1.21)	0.753

	Performed Research			Prioritize Outcome Measures		
	Unadj Rate	OR (95% CI)	P value	Unadj Rate	OR (95% CI)	P value
Previous Admission						
No	47.9	1.0 Ref		40.8	1.0 Ref	
Yes	66.0	1.70 (1.36-2.14)	<0.001	37.7	0.91 (0.72-1.13)	0.387
Health Scale						
A (Unhealthy)	64.3	1.64 (1.27-2.12)	<0.001	39.1	1.03 (0.81-1.32)	0.801
B	66.8	1.64 (1.29-2.09)	<0.001	36.7	0.93 (0.74-1.18)	0.545
C (Healthy)	55.8	1.0 Ref		39.5	1.0 Ref	

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