

Why Travel for Complex Cancer Surgery? Americans React to ‘Brand-Sharing’ Between Specialty Cancer Hospitals and Their Affiliates

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ABSTRACT

Introduction. Leading cancer hospitals have increasingly shared their ‘brand’ with smaller hospitals through affiliations. Because each brand evokes a distinct reputation for the care provided, ‘brand-sharing’ has the potential to impact the public’s ability to differentiate the safety and quality within hospital networks. The general public was surveyed to determine the perceived similarities and differences in the safety and quality of complex cancer surgery performed at top cancer hospitals and their smaller affiliate hospitals.

Methods. A national, web-based KnowledgePanel (GfK) survey of American adults was conducted. Respondents were asked about their beliefs regarding the quality and safety of complex cancer surgery at a large, top-ranked cancer hospital and a smaller, local hospital, both in the presence and absence of an affiliation between the hospitals.

Results. A total of 1010 surveys were completed (58.1% response rate). Overall, 85% of respondents felt ‘motivated’ to travel an hour for complex surgery at a larger hospital specializing in cancer, over a smaller local hospital. However, if the smaller hospital was affiliated with a top-ranked cancer hospital, 31% of the motivated respondents changed their preference to the smaller hospital. When asked to compare leading cancer hospitals and their smaller affiliates, 47% of respondents felt that surgical safety, 66% felt guideline compliance, and 53% felt cure rates would be the same at both hospitals.

Conclusions. Approximately half of surveyed Americans did not distinguish the quality and safety of surgical care at top-ranked cancer hospitals from their smaller affiliates, potentially decreasing their motivation to travel to top centers for complex surgical care.

The quality and safety of cancer care varies considerably from hospital to hospital.¹ As a result, a patient’s choice of hospital for cancer care is a major determinate of their outcome. Complex cancer surgery is particularly prone to outcome variability across hospitals, and the risk of dying after an operation can be up to four times greater at hospitals that perform procedures infrequently.^{2,3} Therefore, the factors that influence patient choice for hospitals not only have the potential to influence the economics of cancer care but they may also influence survivorship.

Of the attributes patients consider when selecting hospitals for cancer surgery, hospital reputation ranks among the most important.⁴ Each hospital’s identity or ‘brand’

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evokes an impression of the quality and safety of care that is provided. Particularly favorable hospital reputations can fuel brand recognition among healthcare consumers, potentially affecting hospital market share.⁵ However, brand recognition can also be confusing to patients, particularly when smaller hospitals advertise using the brand of the larger, specialty hospitals with which they affiliate.⁶ In particular, this ‘brand-sharing’ may make it difficult to discern which of the two brands (that of the smaller hospital or the specialty hospital) is more indicative of the quality and safety of care provided at the smaller hospital.

We hypothesized that a subset of people would interpret brand-sharing by larger hospitals specializing in cancer care, and their affiliates, as a reflection of care *equality*. In an effort to estimate the potential impact that brand-sharing might have on the motivation of patients to seek care at specialty hospitals, a nationally representative cohort was surveyed to identify perceptions of safety and quality of complex cancer surgery at top-ranked cancer hospitals and the smaller hospitals with which they affiliate.

METHODS

Survey Design

A focus group was conducted to identify potentially important care elements that could differ across hospital types, as well as to develop and refine survey questions. Pilot-phase testing of survey questions was performed to assess question clarity and comprehension (electronic supplementary Table 1). Survey respondents were given a hypothetical scenario in which they were diagnosed with cancer and told that complex surgery was their best chance for cure. Respondents were then asked to consider three care environments for their complex cancer surgery: (1) a small, unaffiliated, ‘local’ hospital close to home; (2) a larger, ‘top-ranked’ hospital specializing in cancer care (as designated by publicly available rankings such as the *U.S. News and World Report*) that would require 1 additional hour of travel beyond that of the local hospital; and (3) a small, local hospital that was affiliated with the top-ranked hospital. By referring to the larger hospital as ‘top-ranked’, we intended to elicit a particularly favorable impression of care, as hospital ranking has been shown to influence patient choice.⁵ The travel time to the larger hospital was differentiated to be 1 h longer based on prior estimates that an hour of travel time would allow 90% of people to comply with surgical regionalization efforts.⁷

Respondents were asked to differentiate elements of surgical quality and safety at a top-ranked cancer hospital, an affiliated local hospital, and an unaffiliated local hospital. Quality was characterized by (1) the provision of recommended tests and treatments, and (2) the perceived

likelihood their cancer would be cured by surgery. Safety was characterized by rates of (1) surgical complications, (2) mortality, (3) readmission, and (4) extended length of stay. The perceived use of minimally invasive surgical techniques was also queried. Respondents were asked to indicate their hospital preference for complex cancer surgery between the larger top-ranked hospital and a smaller local hospital, first in the absence of an affiliation and then in the presence of an affiliation between the two hospitals.

Sampling Methodology

An online KnowledgePanel survey was conducted in English in November 2017 by the GfK group (GfK Custom Research North America, New York, NY, USA). As previous studies have described in detail, GfK uses probability-based sampling (based on zip code and area code) to maintain a nationally representative cohort of potential survey respondents.^{8–12} GfK randomly sampled their national cohort multiple times until a target number of surveys (> 1000) were completed. In all, the survey was fielded to 1738 individuals, of whom 1026 responded. Sixteen surveys were excluded due to incomplete data, leaving a total of 1010 completed surveys (58.1% response rate). To account for different response rates among various sociodemographic strata within the cohort, completed surveys were weighted post hoc to ensure a nationally representative sample. Weights were established based on respondent sex, age, race/ethnicity, education level, income, region of residence, residence in a metropolitan area, and home ownership status.¹³ To compensate survey participants, GfK awards incentive points that can be redeemed for cash, merchandise, or entry into various sweepstakes.

‘Demotivated’ Respondents

A proportion of respondents indicated that they would choose to travel an additional hour to have complex cancer surgery at the top-ranked hospital specializing in cancer care rather than stay at an unaffiliated local hospital. However, when next presented with the option of a smaller hospital that was affiliated with a larger hospital specializing in cancer, a subset of these (previously motivated) respondents changed their preference in favor of the smaller local hospital. These respondents were considered to have been ‘demotivated’ as a result of the affiliation (and potentially brand-sharing) from aligning with the larger top-ranked hospital.

Sensitivity Analyses

For certain populations, cancer-related medical decisions may be more relevant, and to determine if their views

were different than the population at large, sensitivity analyses were performed. Particular populations of interest included respondents in the age group most commonly needing complex cancer surgery (average age 53–77 years) and respondents with a personal history of cancer or prior surgery.¹⁴ Overall, there was no significant difference in beliefs on hospital quality and safety or choice of hospital among the age group of interest ($n = 479$), those with a relevant medical history ($n = 529$), and the general population (electronic supplementary Table 2).

Statistical Considerations

All descriptive analyses are presented as weighted percentages, as described above. Differences among categorical variables were evaluated using Chi-square tests. Logistic regression models were adjusted for respondent age, sex, race/ethnicity, education level, income, region, and metropolitan area. All tests were two sided, and p values < 0.05 were considered significant. The study was approved by the Yale University Human Investigations Committee, with need for consent waived.

RESULTS

Demographics

A total of 1010 completed surveys (58.1% response rate) were analyzed. Respondents were 51.6% female, 64.0% White, 11.8% Black, and 15.9% Hispanic. The mean age was 50.9 years (standard deviation 17.4), and the majority of respondents (60.1%) had obtained at least some college education (Table 1).

Perceived Differences in Care between Top-Ranked Hospitals and Their Affiliates

When asked to consider the safety of complex cancer surgery at a top-ranked hospital compared with one of their smaller, affiliated hospitals, 67.5% of respondents believed the rate of complications would be the same, 68.3% thought the readmission rate would be the same, 70.7% believed they would have the same length of stay, and 69.3% believed they would have the same postoperative mortality rate (Table 2). Of those who identified a safety difference, the vast majority believed the larger, top-ranked hospital was superior. Overall, 46.8% of respondents believed that the surgical care at a top-ranked hospital and its affiliates would be the same across *all* four safety outcomes presented.

In terms of surgical quality, 53.4% of respondents felt the provision of recommended tests and treatment would

TABLE 1 Respondent demographics

Characteristic	<i>N</i>	Weighted %
Age group (years)		
18–29	168	21.1
30–44	202	25.0
45–59	285	26.0
> 60	355	27.9
Sex		
Male	494	48.4
Female	516	51.6
Race		
White, non-Hispanic	731	64.0
Black, non-Hispanic	79	11.8
Other, non-Hispanic	50	5.7
Hispanic	128	15.9
2 + races, non-Hispanic	22	2.6
Education		
Less than high school	78	8.3
High school	318	31.6
Some college	262	28.6
Bachelor's degree or higher	352	31.5
Marriage status		
Married	610	57.0
Widowed	41	3.4
Divorced	92	8.4
Separated	18	1.9
Never married	192	22.6
Living with partner	57	6.7
Income (US\$)		
< 40k	274	27.1
40–74k	253	25.1
75–124k	243	24.1
> 125k	239	23.7
Metro area		
Non-metro	150	14.6
Metro	860	85.4
Region		
Northeast	188	17.8
Midwest	225	20.8
South	365	37.7
West	232	23.7
History of cancer		
No	911	91.7
Yes	99	8.3
History of prior surgery		
No	491	52.0
Yes	519	48.0
Total	1010	

TABLE 2 Perceived differences in care between a top ranked cancer hospital and an affiliate hospital [$n = 1010$]^a

Respondent belief	More often at the smaller, affiliated hospital [% (95% CI)]	The same at both hospitals [% (95% CI)]	More often at the top ranked hospital [% (95% CI)]
Patients have a major complication after surgery (safety outcome)	26.9 (24.1–29.8)	67.5 (64.5–70.5)	5.6 (4.0–7.1)
Patients die because of complications from surgery (safety outcome)	26.3 (23.5–29.2)	69.3 (66.3–72.3)	4.3 (2.9–5.7)
Patients have to be admitted again in the hospital after surgery for a complication (safety outcome)	26.5 (23.6–29.3)	68.3 (65.3–71.3)	5.2 (3.7–6.7)
Patients need to stay longer than normal in the hospital after surgery (safety outcome)	23.1 (20.4–25.8)	70.7 (67.7–73.6)	6.2 (4.5–7.8)
All four safety outcomes the same ^b		46.8 (43.6–50.0)	
Patients get all the tests and treatment that experts think are the best for them (quality measure)	4.9 (3.4–6.4)	53.4 (50.2–56.6)	41.6 (38.4–44.7)
Surgery cures cancer (quality measure)	3.6 (2.3–4.8)	65.6 (62.5–68.7)	30.8 (27.8–33.7)
Both quality measures the same ^b		43.5 (40.3–46.7)	
Surgeons use small incisions and a camera for surgery	6.5 (4.8–8.2)	54.0 (50.8–57.2)	39.5 (36.3–42.7)
All seven care items the same		26.6 (23.8–29.4)	

CI confidence interval

^aFor each question, the proportion of respondents choosing not to answer was < 1%. Non-responses not shown, therefore the row total may not equal 100%

^bPercentage of respondents who indicated that either hospital had inferior safety outcomes with respect to all of the four safety outcome or two quality measure questions listed

be the same at a top ranked hospital and an affiliated hospital, and 65.7% answered that their cancer was equally likely to be cured by surgery at both hospitals (Table 2). Overall, 43.5% of respondents thought the affiliated hospital would be equivalent in *both* quality metrics as the top-ranked hospital. The perceived use of minimally invasive surgery also mirrored that of other indicators, and 54.0% felt that it would be offered at the same frequency at both hospitals, while 39.5% felt the top-ranked hospital would be more likely to offer it.

Impact of Hospital Affiliation on Motivation to Align with a Specialty Hospital

When given the option between a smaller hospital without affiliations and a larger, top-ranked cancer hospital 1 h further away, 84.7% ($n = 859$) of respondents were ‘motivated’ to travel to a top-ranked hospital for complex surgical care. However, when given the option of a smaller local hospital that was affiliated with the top-ranked hospital, 31.4% of respondents ($n = 273$) who were originally motivated to travel, changed their preference in favor of being cared for at the smaller, local hospital. These respondents appeared to have been ‘demotivated’ to travel as a result of the affiliation. In general, those who were demotivated were significantly more likely to believe the quality and safety at the affiliated hospital was equivalent to the top hospital compared with those who remained motivated (Fig. 1).

Predictors of ‘Demotivation’

In an effort to identify sociodemographic strata with the greatest potential to be influenced by hospital affiliation status, a multivariable logistic regression was performed for predictors of ‘demotivation’ among those initially choosing to travel to the top-ranked hospital (Table 3). Respondents with a higher level of education {bachelor’s degree or higher vs. less than high school [odds ratio (OR) 3.50, 95% confidence interval (CI) 1.43–8.60]} and those residing in a metropolitan area [vs. non-metropolitan area (OR 1.98, 95% CI 1.21–3.24)] were significantly more likely to be influenced by affiliation status and ‘demotivated’ to travel to a top-ranked hospital. No differences were identified across age, income, race/ethnicity, cancer history, or surgical history.

DISCUSSION

Approximately half of all surveyed Americans felt that either the safety or the quality of complex cancer surgery would be the same at top-ranked cancer hospitals and the smaller hospitals with which they affiliate. To our knowledge, this is the first survey to focus on the differences in the public’s perceptions of care in these two environments. The current study also suggests that perceived similarity in safety and quality between top-ranked cancer hospitals and their local affiliates has the power to affect hospital choice.

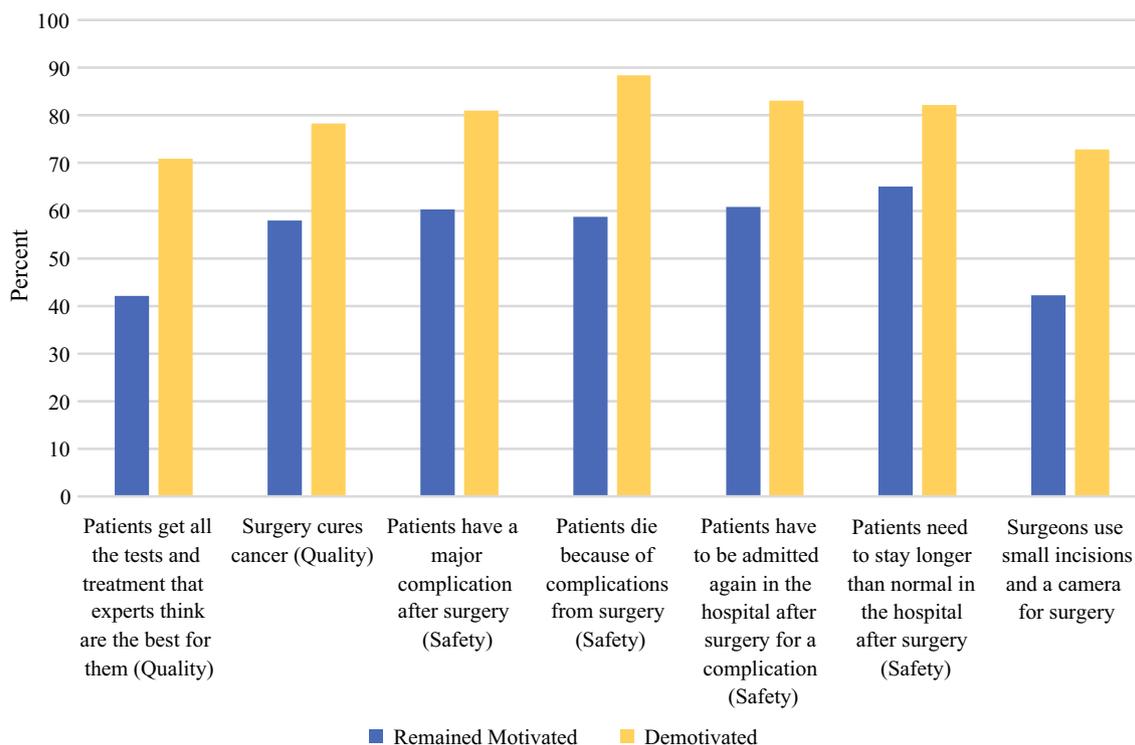


FIG. 1 Perceptions of quality and safety at top-ranked cancer hospitals and their affiliates, among respondents who remained motivated or became demotivated to travel. The percentage of respondents believing the top-ranked cancer hospital and affiliate hospital are equivalent among the quality and safety measures is presented. Respondents who indicated they would chose the larger hospital specializing in cancer care over a smaller unaffiliated hospital were considered to be ‘motivated’ to travel to the larger hospital. A

proportion of ‘motivated’ respondents changed their preference when presented with a smaller hospital that was affiliated with the larger hospital—becoming ‘demotivated’ to travel as a result of the affiliation (perceptions shown in *yellow*). The remaining ‘motivated’ respondents continued to prefer to have surgery at the larger hospital even if the smaller hospital was affiliated—this group ‘remained motivated’ to travel (perceptions shown in *blue*)

Nearly one-third of respondents who reported a willingness to travel to a larger, top-ranked cancer hospital for complex surgery over staying at an *unaffiliated* local hospital, changed their minds when presented with the option of a local hospital that was affiliated with the top ranked cancer hospital. In an age where US hospitals are affiliating with one another at rapid rates, it is likely that affiliation status and co-branding has already impacted the distribution of patients across healthcare markets.¹⁵ Ironically, the development of affiliations (which in theory could bring cancer expertise closer to patients) could potentially undermine several efforts currently underway to direct patients to larger hospitals for complex surgery.^{16,17}

It is critical to acknowledge that we currently have no way of knowing whether our respondents are making wise or poor decisions by choosing to stay at a local, affiliated hospital. Our prior work has identified a number of improvements that are perceived to take place at smaller hospitals once they affiliate with larger hospitals (e.g. surgeons from a larger hospital travel to operate at a smaller hospital), but the extent to which these improvements actually occur is unknown.¹⁸ It is also possible that

top-ranked cancer hospitals are selective in the hospitals with which they affiliate, and that their decision to brand-share is a testament to the safety and quality known to already exist at the smaller hospital. To our knowledge, no studies have evaluated the specific impact hospital affiliations have on the quality or safety of complex cancer surgery at small hospitals. Prominent studies of characteristics of smaller hospitals associated with superior surgical outcomes have not examined affiliation status, and more general evaluations of hospital mergers have demonstrated mixed financial and clinical outcomes.^{15,19–22} A recent evaluation of the impact of hospital network associations on surgical outcomes reported that hospitals that join networks do not demonstrate improvements in quality and in fact possess outcomes equivalent to non-network hospitals; however, the impact of direct hospital affiliations remains unknown.²³

Respondents most likely to become ‘demotivated’ from traveling to a top-ranked hospital when given the option of utilizing a local, affiliated hospital were those with high levels of education and residing in urban areas. Prior evidence has shown that well-educated populations are the

TABLE 3 Predictors of being ‘demotivated’ to travel to a top-ranked hospital compared with remaining motivated to travel

Characteristic	OR	95% CI
Education		
Bachelors’ degree or higher	3.50	1.43–8.60
Some college	2.76	1.15–6.60
High school	2.77	1.15–6.68
Less than high school	Ref	Ref
Age (years)		
18–29	1.07	0.67–1.71
30–44	0.95	0.61–1.47
45–59	1.09	0.73–1.62
60+	Ref	Ref
Income (US\$)		
< 40,000	1.16	0.74–1.81
40,000–74,999	Ref	Ref
75,000–124,999	0.83	0.53–1.29
> 125,000	0.67	0.42–1.08
Race		
2 + races, non-Hispanic	0.96	0.32–2.87
Black, non-Hispanic	0.88	0.46–1.68
Hispanic	0.89	0.54–1.47
Other, non-Hispanic	1.67	0.80–3.50
White, non-Hispanic	Ref	Ref
Sex		
Female	1.13	0.83–1.55
Male	Ref	Ref
Metro area		
Metro area	1.98	1.21–3.24
Non-metro area	Ref	Ref
Region		
Midwest	0.99	0.61–1.59
South	0.84	0.54–1.29
West	0.63	0.38–1.03
Northeast	Ref	Ref
History of cancer	1.31	0.77–2.24
History of surgery	0.99	0.71–1.37

OR odds ratio, CI confidence interval

most aware of hospital ranking status, and as a consequence are more likely to be influenced by this characteristic.²⁴ This is true even though data suggest that outcomes at top-ranked hospitals can vary widely, and are not always superior to non-ranked hospitals.^{25,26} It appears that the influence of a hospital’s ranking is powerful enough to also extend to affiliates of a ranked hospital. In all, this result likely reflects the fact that hospital rankings are influential (regardless of education), and those with higher education are simply more attuned to these publications. Additionally, early concerns about regionalization

of surgical care focused on the burden it could place on rural patients, who would be required to travel longer distances to reach specialty centers; however, rural populations have long shown willingness to travel great distances for care (while bypassing their local hospitals), and similarly remained motivated to travel to top cancer centers, even if their local hospital was an affiliate.^{7,27–30} On the other hand, urban residents, who are more likely to live in close proximity to a top cancer center and therefore able to benefit more feasibly from regionalization, appear to be more influenced by hospital affiliations, potentially impeding the benefits of such efforts. However, these data may also reflect the fact that most top centers are located in urban areas, and for urban dwellers their ‘local hospital’ may already be a top center, or traveling to a top center would take far less than an hour, which could influence the way they conceptualize the question prompt.

Our study had a number of limitations. For one, the extent to which the findings are representative of the entire population is unclear. Although the GfK methodology aims to capture nationally representative data (through both probability-based respondent recruitment and respondent weighting based on demography), it is possible that important differences exist between the study cohort and that of the overall US population. In particular, our sample has a lower percentage of the lowest household earners than the US population, which could skew our results. Furthermore, the survey focused on the general population, rather than specifically targeting actual patients facing such decisions. All care preference surveys face the same dilemma of questioning patients versus the general population. Among the advantages of using a cohort that mirrors the general population (access, feasibility, etc.), surveying a healthy population also avoids the bias of existing care sentiments. Many patients who have undergone treatment may form strong impressions of their providers and hospital and, as a result, find it difficult to make decisions based purely on hypothetical hospital options. A classic example is a study at a Veteran’s Administration (VA) hospital, which showed that nearly 20% of patients scheduled for surgery at the VA would not travel to a distant hospital for complex cancer surgery, even if the mortality was six times lower.³¹ This can also extend to their experience with affiliated hospitals, which could influence their opinions of affiliations more generally. On the other hand, actual patients have more experience with illness and have a more thorough understanding of the specific outcomes mentioned in the survey, which may be specific unfamiliar to respondents who have never been hospitalized. To address this, sensitivity analyses were conducted among the age group most likely to undergo cancer surgery and respondents who were more experienced users of health care (i.e. had been patients

previously, either with a prior cancer or had a prior surgery), and the results were similar (electronic supplementary Table 2).

CONCLUSIONS

Approximately half of respondents in a nationally representative survey believed the quality and safety of surgery to be equivalent at top-ranked cancer hospitals and the smaller hospitals with which they affiliate. Furthermore, nearly one-third of the population who were initially motivated to travel to a specialty hospital could be ‘demotivated’ to travel if their local hospital developed an affiliation with a top-ranked cancer center. Further study to better understand the impact of brand-sharing on patient choice for complex cancer care is indicated.

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