

Parental Awareness and Use of Online Physician Rating Sites



WHAT'S KNOWN ON THIS SUBJECT: Public awareness and usage of physician-rating Web sites have been increasing over the last few years. Such ratings can influence adults' decisions about choosing a physician, but their influence on decisions for children's physicians has not been characterized.



WHAT THIS STUDY ADDS: In this nationally representative survey of parents, we found that the majority (74%) are aware of rating Web sites and slightly more than one-quarter (28%) had sought information on rating Web sites when choosing a primary care physician for their children.

abstract

FREE

BACKGROUND AND OBJECTIVE: The US public is increasingly using online rating sites to make decisions about a variety of consumer goods and services, including physicians. We sought to understand, within the context of other types of rating sites, parents' awareness, perceptions, and use of physician-rating sites for choosing primary care physicians for their children.

METHODS: This cross-sectional, nationally representative survey of 3563 adults was conducted in September 2012. Participants were asked about rating Web sites in the context of finding a primary care physician for their children and about their previous experiences with such sites.

RESULTS: Overall, 2137 (60%) of participants completed the survey. Among these respondents, 1619 were parents who were included in the present analysis. About three-quarters (74%) of parents were aware of physician-rating sites, and about one-quarter (28%) had used them to select a primary care physician for their children. Based on 3 vignettes for which respondents were asked if they would follow a neighbor's recommendation about a primary care physician and using multivariate analyses, respondents exposed to a neighbor's recommendation and positive online physician ratings were significantly more likely to choose the recommended physician (adjusted odds ratio: 3.0 [95% confidence interval: 2.1–4.4]) than respondents exposed to the neighbor's recommendation alone. Conversely, respondents exposed to the neighbor's recommendation and negative online ratings were significantly less likely to choose the neighbor children's physician (adjusted odds ratio: 0.09 [95% confidence interval: 0.03–0.3]).

CONCLUSIONS: Parents are beginning to use online physician ratings, and these ratings have the potential to influence choices of their children's primary care physician. *Pediatrics* 2014;134:e966–e975

AUTHORS: David A. Hanauer, MD, MS,^{a,b,c,d,e,f} Kai Zheng, PhD,^{b,d,e,f,g} Dianne C. Singer, MPH,^h Achamyeleh Gebremariam, MS,^h and Matthew M. Davis, MD, MAPP^{f,g,h,i,j}

^aDivision of General Pediatrics, Department of Pediatrics; ^bCenter for Computational Medicine and Bioinformatics; ^cComprehensive Cancer Center; ^dMichigan Institute for Clinical and Health Research; ^eSchool of Information; ^fInstitute for Healthcare Policy and Innovation; ^gSchool of Public Health, Department of Health Management and Policy; ^hChild Health Evaluation and Research (CHEAR) Unit, Division of General Pediatrics; ⁱDivision of General Medicine, Department of Internal Medicine; and ^jGerald R. Ford School of Public Policy, University of Michigan, Ann Arbor, Michigan

KEY WORDS

child, clinical competence, consumer health information, health care, Internet, online systems, parents, patient satisfaction, physicians, primary care physicians, quality indicators, surveys

ABBREVIATIONS

CI—confidence interval

NPCH—National Poll on Children's Health

Dr Hanauer and Dr Zheng conceptualized and designed the study, designed the data collection instrument, drafted the initial manuscript, and critically reviewed and revised the manuscript; Ms Singer and Dr Davis conceptualized and designed the study, designed the data collection instrument, supervised the data collection of the online survey, and critically reviewed and revised the manuscript; Mr Gebremariam conducted the statistical analyses and critically reviewed and revised the manuscript; all authors approved the final manuscript as submitted.

Dr Davis serves as the chief medical executive for the State of Michigan Department of Community Health (MDCH). MDCH was not involved in this study, and the views expressed herein are those of the authors and are not necessarily the views of MDCH.

www.pediatrics.org/cgi/doi/10.1542/peds.2014-0681

doi:10.1542/peds.2014-0681

Accepted for publication Jun 25, 2014

Address correspondence to David A. Hanauer, MD, MS, Department of Pediatrics, 5312 CC SPC 5940, 1500 E. Medical Center Dr, Ann Arbor, MI 48109-5940. E-mail: hanauer@med.umich.edu

PEDIATRICS (ISSN Numbers: Print, 0031-4005; Online, 1098-4275).

Copyright © 2014 by the American Academy of Pediatrics

(Continued on last page)

The Internet has become a primary destination for consumers seeking information on a wide variety of products and services, including cars, cameras, and carpenters. Many Web sites provide product details and reviews, and they aggregate feedback from consumers. Such sites are often described as “reputation systems,”¹ and the ratings can influence purchasing decisions.^{2–5}

Over the last decade, rating sites have expanded beyond traditional consumer goods and services to other areas not historically described with consumer ratings, including health care providers. This trend is not surprising, because patients and families (ie, “consumers”) are increasingly turning to the Internet for health-related information.^{6–8} Consumers now have multiple online venues for seeking information on the pricing of health care services,⁹ as well as the quality of physicians.

The convenience and instant availability of online physician ratings have the potential to empower patients and families by providing them with information to make more informed decisions about health care costs and quality, and to encourage improved care among physicians.^{10–12} Online sites could also provide venues for families to express views that they might not otherwise feel comfortable sharing.¹³ However, the value of these Web sites and the ratings they provide have been questioned on multiple grounds,^{14–17} with criticisms that they lack standardization of rating methods, fail to ensure that ratings include a representative sample of patients for each provider, and have insufficient safeguards against excessively positive comments (eg, physicians’ self-promotion) or negative comments (eg, patients’ defamatory language).

We have previously reported on adults’ use of online physician ratings for themselves.¹⁸ Little is known, however,

about the extent to which parents are aware of or use online physician ratings for selecting a child’s primary care physician. Although rating sites for general consumer goods have been well accepted by the public, the popularity of physician-rating sites is less clear,¹⁹ and it is common to find that restaurant ratings far outnumber physician ratings.²⁰ To examine these issues in greater detail, we surveyed a nationally representative sample of parents about their views on physician-rating sites and how they have used them in selecting a primary care physician for their children.

METHODS

Study Design

As part of the C.S. Mott Children’s Hospital National Poll on Children’s Health (NPCH), we conducted a cross-sectional survey of adults (parents and nonparents) by using a nationally representative sample of the US population. The present study reports on parents in the sample who had ≥ 1 child aged < 18 years living in the household. The NPCH is a recurring survey conducted by using the GfK KnowledgePanel, which covers $\sim 97\%$ of the US population, including households that only have cell phones.²¹ The KnowledgePanel has been used for other NPCH peer-reviewed publications related to health,^{22–26} including a recent publication associated with the present survey that focused on factors connected to adults choosing a physician for themselves.¹⁸ Surveys are conducted by using a Web browser, and participants complete the survey at their convenience during the study period. The survey completion rate was calculated according to the American Association for Public Opinion Research standard (response rate 1), and “break-offs” were not included. The University of Michigan institutional review board approved this study, with

a waiver of informed consent because of de-identified data collection.

Participants

For the GfK KnowledgePanel, survey participants are initially identified randomly by using telephone numbers and residential addresses and are then invited by telephone or mail to join the survey panel. To mitigate bias toward building a panel that is more technologically savvy than the average person, free Internet access and a computer are provided for those without existing online survey access who wish to participate in the panel. KnowledgePanel participants are sent periodic e-mails inviting them to participate in various surveys, including those for the NPCH. Participants are compensated with “participation points” that can be redeemed for various goods and services offered by GfK. To address naturally occurring panel attrition and shifting demographic characteristics of the US population, the KnowledgePanel is refreshed with new participants on a routine basis.

A unique set of participants is drawn from the larger panel of candidates for each NPCH survey. The NPCH oversamples households with ≥ 1 child aged < 18 years (hereafter referred to as “parents”) to ensure that such households are adequately represented in the sample. To avoid bias related to the subject matter, individuals invited to participate in the survey were not told ahead of time that the questions addressed the use of online rating sites or physician ratings.

Survey Items

A set of 23 questions related to physician-rating Web sites were included in the NPCH survey. The questions were developed by the study team who collectively had expertise in health services research, survey methods, and consumer and health informatics. Some

questions were directed at all respondents (parents and nonparents), and other questions were only for parents.

Vignettes

Parents were randomized to receive 1 of 3 vignettes about online physician ratings, designed to elucidate the relative importance of peer (neighbor) recommendations versus ratings on a Web site. Randomization to 1 of the 3 vignettes was performed by GfK with a random number generator implemented at the time that each respondent initiated the survey.

In each vignette, parents were presented with a scenario describing a situation requiring them to select a new primary care physician for their youngest child. In all 3 scenarios, a neighbor recommended her children's physician, Dr Lee, and the participant was told that the new physician accepted their health insurance. In the first vignette, no language was included related to physician ratings. In the second vignette, the participant was told that Dr Lee had one of the top ratings on a physician-rating Web site. In the third vignette, the participant was told that Dr Lee had one of the lowest ratings on a physician-rating site. Participants were then asked how likely they were to pick the physician recommended by their neighbor, using a 4-point Likert scale (ie, very likely, somewhat likely, somewhat unlikely, very unlikely).

Survey Administration

The NPCH survey was piloted by GfK in August 2012 by using a convenience sample of 117 KnowledgePanel members. The pilot was conducted to ensure that the questions could be understood and answered adequately by the respondents, and it included a free-text section for pilot survey participants to enter additional responses that they felt would be appropriate for answering the questions. The final survey

removed the free-text boxes and only included the original coded choices because the pilot showed that they were sufficient for the participants to answer the questions. Responses from the pilot survey were not retained. The final survey was administered in September 2012.

Statistical Analyses

The study team was given de-identified survey results by GfK, and the results were weighted by using census-based weights to match the US population distribution based on factors that included respondent age, gender, race/ethnicity, and census region. All analyses were conducted by using Stata version 12 (Stata Corp, College Station, TX), and differences among groups were determined by using the χ^2 test. For the results reported, the denominator varied by item, partly because of the conditional nature of some questions based on previous responses and because of isolated nonresponses (all <1%) for other items. Adjustments for nonresponses to individual items were not made, and no data were imputed.

RESULTS

Of the 3563 participants invited to take the survey, 2137 (60%) completed it. Among these respondents, 1619 (76%) were parents, and these were included in the present analysis. Demographic characteristics of the respondents are presented in Table 1.

Parents reported incorporating a variety of sources when making decisions about selecting a primary care physician (Table 2). The factor most commonly endorsed as "very important" was whether the physician accepts their children's health insurance (92%). In terms of crowd-sourced factors (ie, those generally aggregated from a group of "nonexperts") that were considered very important, word-of-mouth

recommendations from family and friends were endorsed twice as often as rating sites (50% vs 25%, respectively; $P < .001$). Among the 7 choices in the survey, online physician ratings were the source least commonly endorsed as very important.

Awareness about common types of rating sites and usage rates by parents are presented in Table 3. Nearly three-quarters (74%) of all parents were aware of rating sites for physicians; this amount is lower than the proportions aware of rating sites for cars (92%) and restaurants (87%) but higher than the proportion aware of rating sites for hospitals (63%). Among all parents, 28% (95% confidence interval [CI]: 25–32) had sought online ratings in the previous year; this group represented 39% of the parent group who were aware of the sites.

Few respondents had posted ratings on sites they visited. The most common category for which ratings were posted was for restaurants (13%), with the 4 least common categories being physicians (6%), schools (4%), dentists (4%), and hospitals (3%). For all categories, posted ratings were generally positive or neutral. Cars (80%) and movies/books (79%) received the highest proportion of positive ratings from parents, whereas non-health care service providers and restaurants received the highest proportion of negative ratings (37% and 30%, respectively). Sixty percent of the parents who left ratings regarding physicians provided positive feedback, whereas 18% left negative feedback.

When all parents (including those who had never left ratings or comments) were asked to consider the implications of leaving a negative comment about a physician, 34% (95% CI: 31–37) had concerns about their identity being disclosed, and 23% (95% CI: 21–26) were concerned about the physician taking action against them. Thirty percent

TABLE 1 Characteristics of Study Participants (*N* = 1619)

Characteristic	Unweighted (<i>n</i>)	Weighted (%)
Gender		
Female	878	56
Male	741	44
Race/ethnicity		
Non-Hispanic white	1173	64
Non-Hispanic black	137	11
Hispanic	192	17
Non-Hispanic other	117	8
Age, y		
18–29	261	20
30–39	535	36
40–49	591	33
50–59	212	11
≥60	20	1
Education		
<High school	91	10
High school	396	26
Some college	498	29
≥Bachelor's degree	634	34
Annual household income, \$		
<30 000	284	20
30 000–60 000	408	26
60 001–100 000	460	29
≥100 000	467	25
US census region of residence		
Northeast	265	16
Midwest	407	22
South	556	38
West	391	25

Proportions may not sum to 100% because of rounding.

(95% CI: 24–36) of parents who had gone online to seek physician ratings reported having selected a physician for their children based on positive ratings or reviews on a Web site, and another 30% (95% CI: 24–36) reported that they

had avoided a physician due to negative ratings.

Table 4 presents findings for a subset of survey questions and response categories from Tables 2 and 3, stratified according to respondent characteristics.

TABLE 2 Importance of Various Factors for Parents Selecting a Primary Care Physician for Their Children: When Selecting a Primary Care Physician for Your Children, How Important Is Each of the Following?

Factor	Very Important	Somewhat Important	Not Important
Accepts health insurance	1482 (92) 90–94	78 (5) 4–7	34 (3) 2–5
Convenient office location	1009 (65) 61–68	525 (33) 30–36	54 (3) 2–4
Physician's years of experience	770 (52) 48–55	714 (42) 36–46	101 (6) 5–8
Word of mouth (from family/friends)	752 (50) 46–53	666 (39) 36–42	171 (12) 9–14
Part of a trusted group practice	722 (48) 45–51	647 (40) 36–43	217 (13) 11–15
Referral from another physician	567 (40) 37–44	757 (44) 40–47	260 (16) 14–19
Physician's rating on Web sites	326 (25) 22–29	642 (37) 34–41	612 (37) 34–41

Data are presented as *n* (%) and 95% CI.

Compared with men, women had significantly higher odds of reporting online physician ratings to be very important when selecting a primary care physician for their children, were more likely to have found the ratings useful, and were more likely to have posted ratings themselves. In contrast, men were more likely to have left negative ratings than women. We also found a trend regarding age: compared with older respondents, parents in the youngest age group (18–29 years) were more likely to have considered the sites very important in selecting a physician and were also more likely to have posted ratings.

Responses to the 3 vignettes are presented in Table 5. Based on only a recommendation of a children's physician by a neighbor (vignette 1), 22% (95% CI: 17–27) of parents were very likely to choose the recommended physician for their children. When combining a neighbor's recommendation with the additional information of highly positive ratings on a Web site (vignette 2), the proportion of parents very likely to choose the recommended physician more than doubled to 46% (95% CI: 40–51; *P* < .001). In contrast, when combining a neighbor's recommendation for a physician with a highly negative rating on a Web site (vignette 3), only 3% (95% CI: 1–7; *P* < .001) were very likely to choose the physician for their children.

In multivariate analyses adjusting for respondents' age, gender, race/ethnicity, education, annual income, and census region, respondents exposed to vignette 2 (neighbor's recommendation and positive online ratings) were significantly more likely to choose the neighbor children's physician (adjusted odds ratio: 3.0 [95% CI: 2.1–4.4]) than were respondents exposed to vignette 1 (neighbor's recommendation alone). Conversely, respondents exposed to vignette 3 (neighbor's recommendation and negative online ratings) were significantly

TABLE 3 Parental Awareness and Usage Characteristics for Various Categories of Ratings Web Sites

Category	A: Are You Aware That Review Sites Exist?		B: Among Those Who Answered "Yes" to A: Have You Sought Online Ratings in the Past Year?		C: Among Those Who Answered "Once" or "Once" to B: How Useful Were Ratings to Decision-Making Process?			D: Have You or Your Family Ever Given Ratings or Written Comments?		Among Those Who Answered "Yes" to D: What Was the Sentiment? ^a		
	Yes	More Than Once	Once	Very Useful	Somewhat Useful	Not Useful	Yes	Positive	Neutral	Negative		
Cars	1467 (92)	420 (28)	305 (19)	354 (52)	353 (46)	15 (2)	102 (7)	76 (80)	24 (24)	12 (12)		
Restaurants	90-93	25-31	17-22	47-57	41-51	1-4	5-9	68-88	14-38	5-25		
Movies/books	1400 (87)	543 (37)	211 (15)	342 (44)	387 (52)	24 (3)	221 (13)	168 (71)	53 (28)	72 (30)		
Electronics/appliances	85-89	33-40	12-17	40-49	48-57	2-5	11-15	61-79	20-38	23-38		
Other service providers (eg, mechanic, plumber, electrician)	1398 (87)	594 (39)	204 (16)	366 (44)	413 (53)	18 (2)	210 (12)	165 (79)	43 (24)	34 (13)		
Physicians	84-89	35-42	14-19	40-49	48-58	1-4	10-14	69-87	16-35	9-19		
Schools	1383 (86)	541 (38)	277 (20)	437 (53)	368 (45)	10 (2)	209 (12)	157 (70)	54 (28)	50 (25)		
Dentists	84-88	34-41	17-23	49-58	41-50	1-4	10-15	61-78	20-37	18-33		
Hospitals	1209 (76)	189 (17)	217 (17)	150 (38)	232 (57)	24 (5)	116 (8)	61 (43)	32 (32)	42 (36)		
	73-79	14-20	14-20	32-44	50-63	3-8	6-10	32-56	21-45	25-49		
	1133 (74)	222 (19)	209 (19)	163 (39)	238 (55)	24 (6)	98 (6)	62 (60)	20 (25)	21 (18)		
	71-76	17-23	16-23	33-46	48-61	4-9	5-9	45-73	14-41	11-30		
	1091 (71)	211 (19)	202 (20)	181 (47)	208 (48)	23 (5)	64 (4)	46 (65)	19 (41)	7 (14)		
	68-74	16-23	17-23	40-54	42-55	3-8	3-5	45-80	24-60	6-31		
	1098 (71)	94 (9)	172 (16)	99 (41)	145 (52)	22 (7)	63 (4)	39 (66)	14 (34)	15 (11)		
	68-74	7-12	13-19	33-49	44-60	4-12	3-67	48-80	18-54	6-22		
	969 (63)	74 (10)	128 (12)	83 (46)	106 (50)	13 (4)	47 (3)	29 (56)	11 (32)	10 (17)		
	60-66	7-13	9-15	37-56	41-60	2-7	2-5	33-76	14-56	6-41		

Data are presented as n (%) and 95% CI.
^a More than 1 category could be selected.

less likely to choose the neighbor children's physician (adjusted odds ratio: 0.09 [95% CI: 0.03–0.3]) than were respondents exposed to vignette 1. These findings were consistent across the entire study sample, including those who had and had not already viewed online physician ratings.

DISCUSSION

Recent research regarding online physician ratings has focused on adults' awareness about, and utilization of, such ratings for themselves.^{27–30} Our national study focused on parents seeking a physician for their children, whereas other studies have not made that distinction. About three-quarters (74%) of parents in our survey were aware of rating sites for physicians, and more than one-quarter (28%) had sought information on physician ratings for their children within the past year. These levels of awareness and use are notably higher than what has been reported elsewhere for adults regarding their own physician choices from only a few years ago, suggesting that awareness and usage are increasing.

A Kaiser Family Foundation study reported in 2008 that 12% of adults had sought physician ratings in the previous year, and 6% had made a decision based on the information.²⁷ These findings are similar to the rates found in a 2010 study by the Pew Research Center in which 12% sought ratings.²⁸ In the present study, focusing on parents may have selected for a somewhat younger, and more Internet-savvy, cohort than the overall population of health care consumers. Two more recent studies from Europe also reported lower rates of engagement with online physician ratings than what we report here. In a 2012 study from the United Kingdom, 15% were aware of physician-rating sites, with 3% usage reported,²⁹ and a 2013 study from Germany found

TABLE 4 Differences Among Respondent Characteristics for Various Factors Related to Online Physician Rating Sites

Respondent Characteristic	A: Importance of Physician's Rating on Web Sites for Selecting a Primary Care Physician for Your Children		B: Are You Aware That Review Sites Exist for Physicians?		C: Among Those Who Answered "Yes" to B: Have You Sought Online [Physician] Ratings in the Past Year?		D: Among Those Who Answered "Once or More" to C: How Useful Were Ratings to Decision-Making Process?		E: Have You or Your Family Ever Given Ratings or Written Comments [for Physicians]?		F: Among Those Who Answered "Yes" to E: What Was the Sentiment?	
	n (%)	OR (95% CI)	n (%)	OR (95% CI)	n (%)	OR (95% CI)	n (%)	OR (95% CI)	n (%)	OR (95% CI)	n (%)	OR (95% CI)
Gender												
Female	205 (30)	<i>P</i> = .0003 ^a	639 (76)	<i>P</i> = .12	269 (40)	<i>P</i> = .34	108 (45)	<i>P</i> = .04 ^a	64 (9)	<i>P</i> = .004 ^a	13 (12)	<i>P</i> = .02 ^a
Male	121 (19)	1 [Ref]	494 (71)	1 [Ref]	162 (37)	1 [Ref]	55 (31)	1 [Ref]	34 (4)	1 [Ref]	8 (37)	1 [Ref]
Race/ethnicity												
Non-Hispanic white	175 (18)	<i>P</i> = .0001 ^a	821 (72)	<i>P</i> = .16	297 (36)	<i>P</i> = .41	103 (36)	<i>P</i> = .11	67 (6)	<i>P</i> = .63	19 (30)	<i>P</i> = .03 ^a
Non-Hispanic black	54 (47)	1 [Ref]	98 (81)	1 [Ref]	40 (40)	1 [Ref]	20 (59)	1 [Ref]	5 (5)	1 [Ref]	0 (0)	—
Hispanic	67 (39)	4.1 (2.4–6.8)	130 (74)	1.7 (1.0–2.8)	60 (43)	1.2 (0.7–2.1)	28 (42)	2.5 (1.1–5.6)	16 (9)	0.9 (0.3–2.8)	2 (6)	0.1 (0.02–0.8)
Non-Hispanic other	30 (27)	2.9 (1.9–4.7)	84 (78)	1.1 (0.7–1.7)	34 (47)	1.3 (0.8–2.2)	12 (28)	1.3 (0.6–2.9)	10 (8)	1.6 (0.7–3.6)	0 (0)	—
Age, y												
18–29	94 (44)	<i>P</i> = .0001 ^a	204 (81)	<i>P</i> = .13	96 (47)	<i>P</i> = .13	45 (52)	<i>P</i> = .21	34 (13)	<i>P</i> = .003 ^a	6 (14)	<i>P</i> = .57
30–39	111 (25)	1 [Ref]	376 (72)	1 [Ref]	136 (38)	1 [Ref]	51 (37)	1 [Ref]	27 (6)	1 [Ref]	7 (22)	1 [Ref]
40–49	91 (19)	0.4 (0.3–0.6)	391 (71)	0.6 (0.4–0.9)	146 (38)	0.7 (0.4–1.1)	47 (32)	0.6 (0.3–1.1)	26 (4)	0.4 (0.2–0.9)	7 (24)	1.7 (0.3–9.1)
50–59	26 (14)	0.3 (0.2–0.5)	148 (74)	0.6 (0.4–0.9)	47 (29)	0.7 (0.4–1.1)	18 (35)	0.4 (0.2–0.9)	10 (3)	0.3 (0.2–0.6)	1 (7)	1.9 (0.4–9.6)
≥60	4 (16)	0.2 (0.1–0.4)	14 (66)	0.7 (0.4–1.2)	6 (23)	0.5 (0.3–0.9)	2 (59)	0.5 (0.2–1.3)	1 (2)	0.2 (0.1–0.5)	0 (0)	0.4 (0.04–4.9)
Education												
<High school	33 (39)	<i>P</i> = .07	57 (73)	<i>P</i> = .34	18 (38)	<i>P</i> = .14	15 (77)	<i>P</i> = .11	5 (10)	<i>P</i> = .66	0 (0)	<i>P</i> = .09
High school	91 (26)	1 [Ref]	272 (73)	1 [Ref]	98 (32)	1 [Ref]	42 (38)	1 [Ref]	29 (6)	1 [Ref]	8 (40)	—
Some college	102 (24)	0.6 (0.3–1.1)	341 (71)	1.0 (0.5–1.8)	131 (39)	0.8 (0.4–1.6)	47 (35)	0.2 (0.04–0.9)	30 (7)	0.5 (0.2–1.6)	7 (18)	1 [Ref]
≥Bachelor's degree	100 (22)	0.5 (0.3–1.0)	463 (77)	0.9 (0.5–1.6)	184 (43)	1.0 (0.5–2.2)	59 (34)	0.2 (0.03–0.8)	34 (6)	0.6 (0.2–2.0)	6 (12)	0.3 (0.1–1.7)
Annual household income, \$												
<\$30 000	86 (39)	<i>P</i> = .0001 ^a	195 (73)	<i>P</i> = .98	75 (35)	<i>P</i> = .06	36 (55)	<i>P</i> = .19	24 (7)	<i>P</i> = .93	6 (10)	<i>P</i> = .47
\$30 000–60 000	92 (28)	1 [Ref]	278 (74)	1 [Ref]	103 (33)	1 [Ref]	39 (38)	1 [Ref]	27 (6)	1 [Ref]	4 (18)	1 [Ref]
\$60 000–100 000	83 (21)	0.6 (0.4–1.0)	320 (73)	1.1 (0.7–1.7)	108 (40)	0.9 (0.5–1.6)	36 (34)	0.5 (0.2–1.1)	20 (7)	0.8 (0.3–1.8)	4 (17)	2.1 (0.4–11.7)
≥100 000	65 (25)	0.4 (0.3–0.7)	340 (74)	1.0 (0.7–1.6)	145 (46)	1.2 (0.7–2.0)	52 (36)	0.4 (0.2–1.0)	27 (7)	0.9 (0.4–2.1)	7 (28)	1.9 (0.3–11.9)

Reported *P* values represent tests for overall associations among each respondent characteristic.

^a Statistically significant *P* values.

TABLE 5 Parent Responses to 1 of 3 Hypothetical Vignettes Designed to Assess the Influence of Online Ratings on Decisions Related to Selecting a Child's Primary Care Physician

Vignette	Very Likely	Somewhat Likely	Somewhat Unlikely	Very Unlikely
Vignette 1 (baseline vignette) Imagine that your health insurance changes, and you can no longer see your [x-month/year-old] ^a child's usual doctor. Your neighbor recommends her children's doctor, Dr Lee, for your [x-month/year-old] child. You also find out that Dr Lee accepts your new health insurance. Based on this information, how likely is it that you would choose Dr Lee for your [x-month/year-old]?	107 (22); 17–27	353 (65); 59–70	48 (11); 8–16	13 (2); 1–4
Vignette 2 Baseline Vignette and In addition, you go to a Web site called RateKidsDoc.com. There, you find out that Dr Lee is rated as "Excellent," the highest rating. Only 15% of the doctors on the Web site are rated that high.	271 (46); 40–51	222 (42); 36–48	40 (8); 6–13	18 (4); 2–8
Vignette 3 Baseline Vignette and In addition, you go to a Web site called RateKidsDoc.com. There, you find out that Dr Lee is rated as "Poor," the lowest rating. Only 15% of the doctors on the Web site are rated that low.	7 (3); 1–7	102 (19); 15–24	193 (36); 30–41	234 (43); 38–49

Data are presented as *n* (%) and 95% CI.

^a The age of the participant's youngest child was substituted for [x-month/year-old] in the vignette (eg, "2-year-old"). The ages had been entered by participant parents earlier in the survey.

that 32% were aware of such sites, and 25% had used these sites.³⁰

It has been said that one's "online reputation" is now just as important as one's reputation among the general community,³¹ and the results from our 3 vignettes seem to support that perspective. Regardless of whether respondents had viewed physician ratings in the past, and independent of the respondents' individual characteristics (eg, age, gender, educational level), both positive and negative online ratings strongly influenced the likelihood of selecting a child's physician recommended by a neighbor. Furthermore, about one-third of parents who had previously sought online ratings reported either selecting or avoiding a physician due to the ratings.

Other results from our survey indicate the multifactorial context in which parents take into account multiple factors when selecting a physician (Table 2). Although ratings may influence these decisions, additional factors such as office location and insurance coverage also matter, which is consistent with

what has been reported in the literature.³² A national survey of parent decision-making in 2008 noted that about one-half of parents reported that high ratings from patients and families were very important in selecting a child's physician but were lower in importance than other factors such as clinical quality and malpractice issues.³³

Although physicians may believe that negative ratings outnumber positive ones on physician-rating Web sites,³⁴ numerous studies have found that not to be the case.^{20,35–44} This finding is consistent with what is known about consumer-sourced rating systems in general. In our study, parents reported posting positive ratings for physicians more often than negative ratings, by a factor of 3 to 1. We did not ask the parents in our survey what type of relationship they had with the physicians they rated, but a recent study reported that longer term (>1 year) relationships with an adult primary care physician resulted in mostly positive online reviews.⁴⁵

Physician concerns about negative content on rating Web sites^{34,44,46–49} has led to multiple strategies for mitigating and preventing damaging ratings.^{50–52} For example, some physicians have attempted to prevent patients from leaving comments by having them sign a "contract of mutual privacy" that forbids them from commenting on rating sites without permission.^{53,54} Other physicians have even sued patients for posting negative comments on ratings sites.⁵⁵ Our analysis indicates that parents have corresponding concerns about posting negative comments, with 23% of parents worried that the physician might take action against them.

Despite the preponderance of positive reviews, the small number of individuals posting reviews overall likely leads to biased representation.³⁸ This concern is prevalent for traditional (ie, not online) satisfaction surveys as well.⁵⁶ In fact, the bias may be most prominent among physicians who have the least number of satisfied patients.⁵⁷ We found that among our sample, only a small

proportion (6%) of parents had ever left a rating about a physician, but this amount was still double what had been reported from a 2010 survey.²⁸

Thus, it is not surprising that most physicians have very few reviews from which parents could form an opinion. A recent study found that on one major ratings site, the majority (67%) of physicians had no reviews, and very few (2%) had >5 reviews, raising questions about representativeness.⁵⁸ Similarly, another study reported that among 33 different rating sites, >70% of physicians did not have a single review on any of the sites.²⁰ However, the number of physicians with ratings, as well as the number of ratings per physician, is increasing.³⁸ In addition, it is not clear that this bias and lack of representativeness matters much to parents who may already be familiar with similar issues in ratings of consumer goods such as books and movies. Simply having some information readily available to help inform a decision about a physician may still be perceived as useful. Indeed, in our survey, 94% of parents who visited a physician-rating site within the previous year found the ratings to be at least somewhat useful.

The present study has several limitations. We focused on primary care physicians, not on specialists, and differences may exist between these different types of health care providers with respect to rating sites. In addition,

all responses were self-reported, and actual use of online physician ratings was not observed, nor do we know what sites the respondents had visited. Similarly, responses to the vignettes were based on hypothetical scenarios, and we did not assess whether parents had experienced such situations in the past. Furthermore, although we attempted to contextualize parents' decision-making within a spectrum of potential influences, there may be additional factors affecting decisions about choosing a physician that were not incorporated in the survey. Importantly, this survey was conducted at a single point in time in a rapidly changing landscape of online access and usage. The participation rate is consistent with that of other published NPCH-based studies,^{22–26} but in survey research, there is always the potential for unmeasured sources of participation bias that may have affected our findings. We attempted to mitigate such bias by providing an invitation that did not mention the subject matter. The online nature of our survey may have hindered responses from less Internet-facile respondents; however, the survey vendor attempted to lessen this potential bias by providing Internet-connected computers to volunteers who wished to participate but did not have the necessary hardware and Internet access at the time they were invited to become members of the panel.

CONCLUSIONS

Although “choosing a doctor will always be a more complex decision than choosing a place to have dinner,”⁴⁶ review sites that present physician reviews in much the same way as restaurant reviews may become increasingly used as a source of information for families seeking information on health care providers. Review sites have the potential to change the patient–physician relationship, by transforming it into more of a service consumer–provider relationship.¹³ The ongoing debate about online physician ratings will likely be affected by how both the public and physicians perceive the value of these sites and their willingness to accept them as another tool for making informed health care–related decisions.

Our study underscores the importance of examining awareness about, as well as use of, online physician ratings when parents are making physician choices for their children. As a subgroup among all adults, parents of children aged <18 years represent a generally more Internet-engaged demographic group whose familiarity with Internet-based sources of information may facilitate their more rapid adoption of ratings Web sites as strong influences in their decision-making for multiple consumer goods and services. For that reason, online ratings Web sites for children's physicians may serve as the leading edge for public incorporation of online physician ratings in general.

REFERENCES

1. Resnick P, Zeckhauser R, Friedman E, Kuwabara K. Reputation systems. *Commun ACM*. 2000; 43(12):45–48
2. Hu N, Liu L, Zhang JJ. Do online reviews affect product sales? The role of reviewer characteristics and temporal effects. *Inf Technol Manage*. 2008;9(3):201–214
3. Vermeulen IE, Seegers D. Tried and tested: the impact of online hotel reviews on consumer consideration. *Tour Manage*. 2009;30(1): 123–127
4. Ye Q, Law R, Gu B. The impact of online user reviews on hotel room sales. *Int J Hospit Manag*. 2009;28(1):180–182
5. Zhu F, Zhang X. Impact of online consumer reviews on sales: the moderating role of product and consumer characteristics. *J Mark*. 2010;74(2):133–148
6. Percheski C, Hargittai E. Health information-seeking in the digital age. *J Am Coll Health*. 2011;59(5):379–386
7. Powell J, Inglis N, Ronnie J, Large S. The characteristics and motivations of online health information seekers: cross-sectional survey and qualitative interview study. *J Med Internet Res*. 2011;13(1):e20
8. Fox S, Duggan M. Health Online 2013. Available at: www.pewinternet.org/~media/Files/Reports/PIP_HealthOnline.pdf. Accessed July 15, 2013
9. Price Transparency. Available at: <http://truvenhealth.com/NPR-Trueven-Health-Poll/>

PRICE-TRANSPARENCY-04-2012.pdf. Accessed July 1, 2013

10. Miller TP, Brennan TA, Milstein A. How can we make more progress in measuring physicians' performance to improve the value of care? *Health Aff (Millwood)*. 2009; 28(5):1429–1437
11. Segal J, Sacopulos M, Sheets V, Thurston I, Brooks K, Puccia R. Online doctor reviews: do they track surgeon volume, a proxy for quality of care? *J Med Internet Res*. 2012;14(2):e50
12. Trigg L. Patients' opinions of health care providers for supporting choice and quality improvement. *J Health Serv Res Policy*. 2011;16(2):102–107
13. Jain S. Googling ourselves—what physicians can learn from online rating sites. *N Engl J Med*. 2010;362(1):6–7
14. Bacon N. Will doctor rating sites improve standards of care? Yes. *BMJ*. 2009;338:b1030
15. Cassel C. No stars for satisfaction ratings. Patient surveys should take a back seat to true measures of clinical skill. *Mod Healthc*. 2008;38(15):22
16. Hotopf M. How patients' review sites will change health care. *J Health Serv Res Policy*. 2013;18(4):251–254
17. McCartney M. Will doctor rating sites improve the quality of care? No. *BMJ*. 2009; 338:b1033
18. Hanauer DA, Zheng K, Singer DC, Gebremariam A, Davis MM. Public awareness, perception, and use of online physician rating sites. *JAMA*. 2014;311(7): 734–735
19. Lieber R. The web is awash in reviews, but not for doctors. Here's why. *New York Times*. March 10, 2012: B1
20. Lagu T, Hannon NS, Rothberg MB, Lindenauer PK. Patients' evaluations of health care providers in the era of social networking: an analysis of physician-rating websites. *J Gen Intern Med*. 2010;25(9): 942–946
21. Dennis JM. KnowledgePanel design summary. Available at: [www.knowledgenetworks.com/knpanel/docs/KnowledgePanel\(R\)-Design-Summary-Description.pdf](http://www.knowledgenetworks.com/knpanel/docs/KnowledgePanel(R)-Design-Summary-Description.pdf). Accessed July 2, 2013
22. Dempsey AF, Singer D, Clark SJ, Davis MM. Parents' views on 3 shot-related visits: implications for use of adolescent vaccines like human papillomavirus vaccine. *Acad Pediatr*. 2009;9(5):348–352
23. Freed GL, Clark SJ, Butchart AT, Singer DC, Davis MM. Parental vaccine safety concerns in 2009. *Pediatrics*. 2010;125(4): 654–659
24. Freed GL, Clark SJ, Butchart AT, Singer DC, Davis MM. Sources and perceived credibility of vaccine-safety information for parents. *Pediatrics*. 2011;127(suppl 1): S107–S112
25. Leo HL, Clark SJ, Butchart AT, Singer DC, Clark NM, Davis MM. 2009 Seasonal and H1N1 influenza vaccination compliance in asthmatic children and adults. *J Allergy Clin Immunol*. 2010;126(1):166–168
26. Macy ML, Clark SJ, Freed GL, et al. Carpooling and booster seats: a national survey of parents. *Pediatrics*. 2012;129(2): 290–298
27. Kaiser Family Foundation. 2008 Update on consumers' views of patient safety and quality information. Available at: <http://kaiserfamilyfoundation.files.wordpress.com/2013/01/7819.pdf>. Accessed October 19, 2013
28. Fox S. The social life of health information, 2011. Available at: www.pewinternet.org/~media/Files/Reports/2011/PIP_Social_Life_of_Health_Info.pdf. Accessed November 20, 2013
29. Galizzi MM, Miraldo M, Stavropoulou C, et al. Who is more likely to use doctor-rating websites, and why? A cross-sectional study in London. *BMJ Open*. 2012;2(6):pii: e001493.
30. Emmert M, Meier F, Pisch F, Sander U. Physician choice making and characteristics associated with using physician-rating websites: cross-sectional study. *J Med Internet Res*. 2013;15(8):e187
31. Collier R. Professionalism: logging on to tell your doctor off. *CMAJ*. 2012;184(12):E629–E630
32. Lagu T, Lindenauer PK. Putting the public back in public reporting of health care quality. *JAMA*. 2010;304(15):1711–1712
33. Freed GL, Dunham KM, Clark SJ, Davis MM. Perspectives and preferences among the general public regarding physician selection and board certification. *J Pediatr*. 2010;156(5):841–845, 845.e1
34. Pasternak A, Scherger JE. Online reviews of physicians: what are your patients posting about you? *Fam Pract Manag*. 2009;16(3): 9–11
35. Andrews M. Grading doctors online. *US News World Rep*. 2008;144(7):54
36. Black EW, Thompson LA, Saliba H, Dawson K, Black NM. An analysis of healthcare providers' online ratings. *Inform Prim Care*. 2009;17(4):249–253
37. Ellimoottil C, Hart A, Greco K, Quek ML, Farooq A. Online reviews of 500 urologists. *J Urol*. 2013;189(6):2269–2273
38. Gao GG, McCullough JS, Agarwal R, Jha AK. A changing landscape of physician quality reporting: analysis of patients' online ratings of their physicians over a 5-year period. *J Med Internet Res*. 2012;14(1): e38
39. Greaves F, Pape UJ, Lee H, et al. Patients' ratings of family physician practices on the internet: usage and associations with conventional measures of quality in the English National Health Service. *J Med Internet Res*. 2012;14(5):e146
40. Hicks A. Positive patient reviews are possible. *Fam Pract Manag*. 2009;16(4):10
41. Hopkins Tanne J. How patients rate doctors. *BMJ*. 2008;337:a1408
42. Kadry B, Chu LF, Kadry B, Gammas D, Macario A. Analysis of 4999 online physician ratings indicates that most patients give physicians a favorable rating. *J Med Internet Res*. 2011;13(4):e95
43. López A, Detz A, Ratanawongsa N, Sarkar U. What patients say about their doctors online: a qualitative content analysis. *J Gen Intern Med*. 2012;27(6): 685–692
44. Mackay B. RateMDs.com nets ire of Canadian physicians. *CMAJ*. 2007;176(6):754
45. Detz A, López A, Sarkar U. Long-term doctor-patient relationships: patient perspective from online reviews. *J Med Internet Res*. 2013;15(7):e131
46. Gupta S. Rating your doctor. *Time*. 2008;171(2):62
47. Meyer C. My web rating: oh no! *Med Econ*. 2007;84(19):51, 55
48. Segal J, Sacopulos MJ, Rivera DJ. Legal remedies for online defamation of physicians. *J Leg Med*. 2009;30(3):349–388
49. Tufts A. German doctors fear that performance rating websites may be libellous. *BMJ*. 2007;335(7614):276
50. Aungst H. Patients say the darnedest things. You can't stop online ratings, but you can stop fretting about them. *Med Econ*. 2008;85(23):27–29
51. Rice B. Trashed on the Web: now what? *Med Econ*. 2007;84(1):32–34, 36–37
52. Galegos A. Doctors' legal remedies can defeat online attacks. *American Medical News*. December 12, 2011
53. Segal J. The role of the Internet in doctor performance rating. *Pain Physician*. 2009; 12(3):659–664
54. Woodward C. "Anti-defamation" group seeks to tame the rambunctious world of online doctor reviews. *CMAJ*. 2009;180(10): 1010

55. Maass B. Doctor suing former patient over online criticism. Available at: <http://denver.cbslocal.com/2012/07/19/doctor-suing-former-patient-over-online-criticism/>. Accessed July 2, 2013
56. Patwardhan A, Patwardhan P. Are consumer surveys valuable as a service improvement tool in health services? A critical appraisal. *Int J Health Care Qual Assur*. 2009;22(7):670–685
57. Mazor KM, Clauser BE, Field T, Yood RA, Gurwitz JH. A demonstration of the impact of response bias on the results of patient satisfaction surveys. *Health Serv Res*. 2002;37(5):1403–1417
58. Mostaghimi A, Crotty BH, Landon BE. The availability and nature of physician information on the internet. *J Gen Intern Med*. 2010;25(11):1152–1156
59. Hardey M. Consuming professions: user-review websites and health services. *J Consum Cult*. 2010;10(1):129–149

(Continued from first page)

FINANCIAL DISCLOSURE: The authors have indicated they have no financial relationships relevant to this article to disclose.

FUNDING: Support for this study was provided by the C.S. Mott Children's Hospital National Poll on Children's Health (<http://www.med.umich.edu/mott/npch>), which was sponsored by the Department of Pediatrics and Communicable Diseases at the University of Michigan and the University of Michigan Health System.

POTENTIAL CONFLICT OF INTEREST: The authors have indicated they have no potential conflicts of interest to disclose.

COMPANION PAPER: A companion to this article can be found on page e1169, online at www.pediatrics.org/cgi/doi/10.1542/peds2014-2351.

Parental Awareness and Use of Online Physician Rating Sites

David A. Hanauer, Kai Zheng, Dianne C. Singer, Achamyeleh Gebremariam and Matthew M. Davis

Pediatrics 2014;134:e966; originally published online September 22, 2014;

DOI: 10.1542/peds.2014-0681

Updated Information & Services	including high resolution figures, can be found at: /content/134/4/e966.full.html
References	This article cites 49 articles, 14 of which can be accessed free at: /content/134/4/e966.full.html#ref-list-1
Citations	This article has been cited by 1 HighWire-hosted articles: /content/134/4/e966.full.html#related-urls
Subspecialty Collections	This article, along with others on similar topics, appears in the following collection(s): Administration/Practice Management /cgi/collection/administration:practice_management_sub Media /cgi/collection/media_sub
Permissions & Licensing	Information about reproducing this article in parts (figures, tables) or in its entirety can be found online at: /site/misc/Permissions.xhtml
Reprints	Information about ordering reprints can be found online: /site/misc/reprints.xhtml

PEDIATRICS is the official journal of the American Academy of Pediatrics. A monthly publication, it has been published continuously since 1948. PEDIATRICS is owned, published, and trademarked by the American Academy of Pediatrics, 141 Northwest Point Boulevard, Elk Grove Village, Illinois, 60007. Copyright © 2014 by the American Academy of Pediatrics. All rights reserved. Print ISSN: 0031-4005. Online ISSN: 1098-4275.

American Academy of Pediatrics

DEDICATED TO THE HEALTH OF ALL CHILDREN™



PEDIATRICS®

OFFICIAL JOURNAL OF THE AMERICAN ACADEMY OF PEDIATRICS

Parental Awareness and Use of Online Physician Rating Sites

David A. Hanauer, Kai Zheng, Dianne C. Singer, Achamyeleh Gebremariam and
Matthew M. Davis

Pediatrics 2014;134:e966; originally published online September 22, 2014;
DOI: 10.1542/peds.2014-0681

The online version of this article, along with updated information and services, is
located on the World Wide Web at:
[/content/134/4/e966.full.html](http://content/134/4/e966.full.html)

PEDIATRICS is the official journal of the American Academy of Pediatrics. A monthly publication, it has been published continuously since 1948. PEDIATRICS is owned, published, and trademarked by the American Academy of Pediatrics, 141 Northwest Point Boulevard, Elk Grove Village, Illinois, 60007. Copyright © 2014 by the American Academy of Pediatrics. All rights reserved. Print ISSN: 0031-4005. Online ISSN: 1098-4275.

American Academy of Pediatrics

DEDICATED TO THE HEALTH OF ALL CHILDREN™

