INFORMATION TECHNOLOGY AND
OTHER FACTORS IN PHYSICIAN SELECTION

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ABSTRACT

A study has been conducted to determine the factors that influence primary care physician selection and the extent to which patients take an active role in the selection process. Public opinion concerning American health care and health insurance industries by study participants has been included and provides insight on the primary care physician selection process. In addition, the role of information technology in this selection process is examined. Written questionnaires consisting of 92 questions were the research tool used for this study. Three hundred eleven questionnaires were returned resulting in a successful response rate of 49 percent. The high response rate provided the necessary data to conduct the study. Ten factors were identified in the physician selection process with "Cosmetics and Emergency Availability" as the most important.

Keywords: Health care, information technology, physician selection, technology.

INTRODUCTION

The United States is undergoing dramatic changes in health care including increasing costs and dissatisfaction with the inconsistencies in the quality of health care services (5). There is, therefore, a growing body of literature regarding patient choice of health care plans, patient satisfaction, and patient evaluation of health care quality. However, there is little information concerning the factors that influence the selection of a primary care physician (3, 1).

Even with the advent of managed care, patients can choose their PCP. The importance of knowing the factors impacting physician choice cannot be overstated considering the increasing competition among health plans and providers (11). One recent study cited in the New England Journal of Medicine (8) noted that a large percentage of the studies' respondents reported a change of health plans during a recent three-year period, one third of which also had to find a new PCP.

As the last five years have brought the World Wide Web into our schools, libraries and homes, information is more available and conveniently gathered than ever before. With the availability of so much information, the Internet has empowered consumers to gather information concerning health care and the health care system. The Internet and information technology are gradually making their way into the slow-to-move medical industry, providing doctors, insurance companies, hospitals, drug companies and medical suppliers with a convenient mechanism for communication, ordering, purchasing, medical records maintenance and research. While Internet sources range in their validity of information, many governmental and professional organizations of integrity provide information to aid consumers in their research.

Knowing the factors impacting PCP selection would contribute to better methods of communication flow to patients in the physician selection stage. It could also impact patient loyalty by understanding both the medical and non-medical aspects of the initial patient/physician encounter.

All human beings, including physicians, make mistakes. Some physicians display an affinity for research while others have a superior bedside manner. Therefore, consumers have the power of discretion when choosing a physician. What is important to consumers? What attributes would consumers like for a physician to possess and how do they ascertain if their physician of choice

meets their minimum requirements? How much time do consumers spend researching physicians before allowing them to make diagnoses concerning their state of health? Do consumers use the Internet to conduct this research? Do they want to use the Internet? If so, how do they want to use the Internet? To answer these questions we must understand not only what information consumers use in physician selection, but also their method of obtaining this information.

The purpose of this study is to determine the extent to which patients take an active role in primary care physician selection and what information sources they choose to utilize in this selection process. In addition, the study is designed to determine the role of information technology in making educated decisions in PCP selection.

BACKGROUND

The Internet has provided consumers with the opportunity to exert their influence on medical facilities. In doing so, hospitals, clinics, and doctors are participating in more self-evaluative practices. In the past, we have been at the mercy of the medical profession. Now consumers not only have the ability, but also a forum to voice their opinions and experiences. HealthGrades.com uses a one through five star rating system to rank healthcare organizations including hospitals, health plans, nursing homes and physicians (12). On this site a visitor is also able to look up potential physicians and check for any sanctions that have been filed against a doctor and what "star rating" they have received from other patients.

100TopHospitals.com is a site listing the top 100 hospitals as judged by a set of eight risk-adjusted and severity-adjusted categories (12). A group of about 30 or 40 hospitals make the list every time, however the remaining slots are often very different. In fact, only one hospital, Brigham and Woman's Hospital, has made the list all seven times. This site has a profound effect on hospital administrators. Once they found out about the list everybody wanted to be on it. By its mere existence the list has prompted hundreds of hospitals to shape up in an effort to make the top 100.

BestDoctors.com uses a different approach to provide good, web-based information for consumer perusal. A research team at Woodward/White contacted over 30,000 physicians and asked them one question: "If you or a loved one needed a doctor in your specialty and you couldn't treat them yourself, to whom would you refer them?" The results revealed that 94 percent of the physicians recommended were certified through the American Board of Medical Specialists (12). Findings were published as a book and made available to the public. BestDoctors.com stopped publishing their book in 1997 and started AcuMatch. This site provides critically ill patients with information about specialists. The service costs $975 and provides a patient advocate to work as a go-between to help find the specialist who is the best match for the patient (12).

The Joint Commission on Accreditation of Health Care Organizations (JCAHO) has a Web site where consumers can search by type of organization, geographic location, accreditation decision or current status (12). Consumers then receive performance reports showing how the organization scored on 46 different areas including patient rights, organizational ethics and infection control.

CareGroup, a network of six hospitals in the Boston area, has developed a web site, PatientSite, where patients are able to access their medical records. Physicians have discretion regarding what is revealed to the patient online, in case there are sensitive test results (10). Since physicians feel pressure to fit more patients into a business day, having the ability to post information via a web site or e-mail enables the physician to maintain communication links with the patient without taking as much time or requiring an office visit. This also benefits patients (10).

At Beth Israel Deaconess Medical Center in Boston doctors use laptops to log on to the medical records system to review their patients for the day and the reason for their visit. They have full access to previous diagnoses, insurance information, a list of specialists the patient has seen, and medications he/she is currently taking. If the physician prescribes any medication that would have an adverse interaction with another prescription the system alerts the physician. Patients can also access their own medical records online. At Brigham & Women's Hospital more than 380 orders out of an average of 15,000 are changed each day due to suggestions by the computerized system (6). That is nearly 400 medical orders that are not deemed appropriate according to the medical information stored in the computer.

A survey conducted by WebSurveyMD.com, (part of Zimnet) found only one third of physicians surveyed had the desire to use the Internet to communicate with patients. Only 27 percent believed that the Internet would save the health care industry money over the next five years. Surprisingly, younger physicians were as unenthusiastic about using Information Technology in their professions as older physicians (10).

According to a survey conducted by Harris (4), 15% of doctors use handheld computer, with 10% using them as an integral part of their everyday practice, 52% use computers to receive lab results and 28% use computers to access patient information. According to a 2000 US Bancorp survey examining the source from which patients desire information, 62% of respondents want health information directly from their physician, 58% from the hospital, 45% from the insurance company, 43% from a drug company and 42% from an Internet company (7). The study indicates that patients want to hear from their own physicians. With the increasing number of patients seen every day by physicians it would seem reasonable that the Internet would be the perfect means of communication.

Despite its convenience, only 63 percent of doctors polled by Modern Physician are using the Internet in their practice, but not to talk to patients. Fewer than 17 percent of physicians report using the Internet to communicate with patients (7). What are physicians doing on the Internet? According to the same Modern Physician poll 91.5% of physicians are accessing clinical information, 68.3% are continuing medical education, 34.5% are exchanging e-mail with specialists, 16.6% are communicating with patients, 12.7% are doing consultations and referrals, and 4.6% are ordering prescriptions and refills (7). In addition, 2.2% are avoiding anything to do with the Internet (7).

RESEARCH FRAMEWORK AND METHODOLOGY

As information technology and the Internet become increasingly important in the medical field, the role of information technology in the relationship between physician and patient needs to be examined. This paper focuses on the factors that are important to patients when choosing a physician and the importance of information technology in that decision making process.

The objectives of this paper are to determine the factors that influence primary care physician selection and to determine the role of information technology in the PCP selection process. To this end a questionnaire was designed consisting of 92 questions and was administered to 656 potential respondents. The questionnaire had eight parts. Part I had questions concerning the provider of health care, payment of health care, insurance and reasons for switching physicians. Additionally, if a respondent had a PCP, they were asked to answer questions about their current physician, including location, how often they visit the physician and their own knowledge about their physician and his/her credentials. Part II and III had questions concerning the source respondents used to obtain information about their physician. Part IV and V had questions to determine the items that are important in the physician selection process. Part VI had questions to determine the level of satisfaction with respondent's current physician. Part VII had questions relating to demographic information. Part VIII provided the respondent with a comment section.

Because the responses in Part IV and V are directly related to the objectives of this paper these were the only parts used in our analysis.

The data gathered for this study was obtained by using a convenience sample of 309 respondents. Questionnaires were mailed to a sample of 525 persons in 24 states and handed out to a sample of 131 persons in New York, Alabama and North Carolina. Twenty of the 525 mailed questionnaires were returned undeliverable, providing 636 questionnaires actually distributed to potential participants. All respondents were over the age of 18. Recipients were asked, via cover letter, to complete the questionnaire and return it within one week of receipt. Three hundred eleven surveys were returned either completed or partially completed affording a response rate of 49 percent. Not all of the respondents answered every question in the survey. Therefore, missing answers could not be included in the statistical analysis.

Data was collected through a written questionnaire consisting of 92 questions corresponding to 120 variables. The items on the survey corresponding to physician selection were measured by listing statements with a five point Likert scale to indicate the level of agreement with the statement or listing criteria with a five point scale to indicate the importance of the criteria in the physician selection process.
The sample proves to be demographically diverse. Respondents fit all ranges of race, income, age, and profession. While the majority of respondents are residents of the Commonwealth of Kentucky, 19 states are represented in the survey results. The demographics of the respondents are: 65% female; 44% age 18 – 35; 50% of the respondents have a college degree or have done post-graduate studies; 52% live in towns or cities with populations of 50,000 or less; 30% list their primary occupation as "professional", followed by 19% as "retired"; 96% are Caucasian; 57% with gross annual income under $50,001; 60% consider themselves to be in an "excellent" or "very good" state of health.

As the goal of the research is to identify the underlying structure of the variables which correspond to the physician selection process and to reduce the number of variables, exploratory factor analysis was chosen as the statistical technique used for analysis of the data.

DATA ANALYSIS AND RESULTS

Of the 92 questions on the survey, 39 questions corresponded to physician selection. Surveys with missing data in any of these 39 questions were disregarded, leaving 268 useable surveys. The measure of sampling adequacy (MSA) value was examined for each of the 39 variables. Two variables had MSA values below 0.50, the minimum level at which variables merit inclusion in the analysis (2). The overall MSA for the remaining 37 variables was 0.818 and the Bartlett test of sphericity was significant at 0.001, indicating that factor analysis was meritorious on the remaining 37 variables (2). In addition, the sample size is sufficiently large compared to the number of variables to use factor analysis (2).

Principle component analysis was done using SPSS 11.5 for Windows. Applying the latent root criterion (2), 10 factors were identified and retained. The ten-factor solution was interpreted using a varimax rotation with Kaiser normalization. Following the guidelines in (2), factor loadings above 0.35 were considered significant based on the sample size of 268 in this study. All 37 variables had factor loadings above 0.35, with almost all variables above 0.50. The results are presented in Table 1. The ten-factor model explains 59.5% of the variance in the variables.

In accordance with the primary objective of this study ten clear factors or dimensions were identified in the factor selection process. The dimensions and explanations of each are provided in Table 1. The secondary objective was to identify the role of Information Technology in the PCP selection process. The results in Table 1 show that the "Technology" factor is seventh in

importance out of ten factors, accounting for only 3.65% of the variance in the variables relating to the physician selection process.

Table 1. Factors

Factor	Question on Survey	% of Variance Explained
1. Cosmetics & Emergency Availability	**Ease of getting appointment** **Office location** **Courtesy of staff** **Appearance of office** **Up-to-date equipment** **Availability for emergencies**	**19.76**
2. Patient Confidence	**Felt knowledgeable about selecting physician** **Being a smart consumer is worth extra time to choose a physician** **Selecting a physician is important** **Spend extra time searching to get best fee** **Concerned about health consequences of making a poor choice**	**7.70**
3. Physician's Qualifications	**Recommended by other physicians** **Reputation** **Board certified** **Access to preferred hospital**	**5.89**
4. Physician's Communication	**Spends time explaining health issues** **Spends time answering my questions** **Values my opinion** **Good personality or bedside manner** **Discusses issues in language I understand**	**5.49**
5. Physician's Demographics	**Age** **Gender** **Has specialty** **Medical school attended** **Number of years in practice**	**4.16**
6. Insurance & Patient Research	**Problems getting my insurance comp to pay for appropriate treatment.** **Difficulty getting referrals** **Physician in my insurance network** **Research my medical condition before visiting my physician.**	**3.81**
7. Technology	**Email access** **Computerized system for records** **Participates in research**	**3.65**
8. Physician's Personal Beliefs	**Moral standing on medical issues** **Makes house calls**	**3.19**
9. Perceived Performance Difference in Physicians	**There are wide differences in performance between physicians**	**2.97**
10. Medical Philosophy	**Medical philosophy agrees with my own** **Malpractice charges**	**2.84**
Total Variance Explained by Ten Factor Solution:		**59.46**

Surprisingly, cosmetics and emergency availability is the most important, explaining 19.76% of the variance, while physician's qualifications in only the third most important factor, explaining only 5.89% of the variance. Medical philosophy, which includes any record of charges of

medical malpractice against a physician, is the least important, accounting for only 2.84% of the variance.

CONCLUSION

This study was exploratory in nature and served to develop a framework for subsequent research on selection of a PCP. Some conclusions can be drawn from the current study. One of the key findings is that a ten dimensional model accounts for 59.5% of the variance in patient selection of a PCP. Additionally, technology was one of the dimensions of lower importance in the ten dimensional model. This may be due to the lack of information available to patients about individual physicians, the perceived difficulty of locating this information or patient's unfamiliarity with using technology for physician selection.

We can also compare the results found in this paper to other relevant studies on physician selection or patient satisfaction/dissatisfaction. Moore and Bopp, (9), found that a large percentage of respondents indicated that "How well the doctor communicates with me and shows a caring attitude" was the most influential in choosing a new physician which compares to the fourth factor, physician communication, of this study. Yucelt (13) found that elements of time spent with patients and physician response to questions were critical elements of satisfaction. Hanna, Schoenbachler, and Gordon (3) found that factors deemed most important in choosing a generalist physician were fees charged, related to the second factor in this study, and physician willingness to explain, part of our fourth factor on physician communication.

Based on the current study, the process of physician selection is important to people. The most critical factors appear to be the cosmetics of the office and availability of the physician for emergency and/or house calls, the patient's confidence in their ability to select a physician and their perceived importance of that selection, the qualifications of the physician, and the physician's ability and willingness to communicate with the patient.

The limitations of this study include lack of a random sample for generalization purposes and lack of a more rigorous validation of the scale. These activities are recommended for future research. In addition, the current study could be used as a foundation for further analysis to develop alternative methodology that would assist consumers of health care in selecting a physician. The ubiquitous nature of the Web and accessibility for most people would make this an ideal entry-point for consumers to record their opinion of the health care they received from both hospitals and physicians. We maintain quality of service (QoS) records through the Better Business Bureau on businesses why not maintain a QoS on health care practitioners and hospitals?

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