Studying the Way People Rate Their Physicians *Online*

[Extended Abstract]

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1. ABSTRACT

- Many patients turn to rating websites to share their experience with a health care provider they just visited. Main objective of this study is to use the reviews related to health care providers who specialize on prostate cancer and erectile dysfunction on Google and Yelp online.

- We will collect and analyze each individual ratings and comments of urologists posted by their patients. We will use API(Application Programming interface) to collect the available information about the physician, reviewer and the review posted. These collected information will be studied and analyzed using....

2. INTRODUCTION

With a huge increase in number of people investigating health related issues online, [5] online rating sies have become more influential then ever. These internet rating sites that give patients an opportunity to rate a health care provider they visited. Rating websites can benefit both physicians and patients because the ratings provide patient perspective that health care providers can use to improve their practice and prospective patients can choose a suitable physician by analyzing the reviews and ratings posted online. [7] If online ratings reflect patient care and health care provider's treatment, are there differences in how patients rate health care providers when outcomes are not similar. Health care providers argue that these reviews may not represent an accurate appraisal of surgeon quality. [?] For example, the prostate cancer is high in Mississippi and Louisiana where the incidence is greater than 24%, than Colorado and Alaska, where the incidence is under 20%. [3] Does the type of health care people receive make any impact on the rate of prostate cancer mortality rate ? what is the difference in opinion of the people who receive their health care in states

with high prostate cancer mortality rates and the people who live in states with low prostate cancer mortality rates ? In this study, we investigate if health care provider ratings give insights into how health care providers treat their patients which may impact their willingness to be seen for screening and treatment. By studying the ratings and reviews of the patients from different states we can get some information of the type of health care they receive.

Researchers have analyzed health care professional online ratings and found that it is difficult to identify reviews based on actual experiences [11]. In addition, with the exception of [8, 9], most research on health care professional ratings have not documented the locations where the reviews were collected - which is important because outcomes and care may vary based on location. We analyzed ratings and reviews from Yelp and Google in the field of prostate cancer and erectile dysfunction in states with high prostate cancer mortality rates. To this end, we used an Application Programming Interface (API) to collect information about the health care provider, patient demographics, reviews,ratings and metadata. .

The contributions of this paper are:

- A work flow that utilize APIs to collect, store, and analyze health care provider reviews

- A qualitative analysis of how patients perceive their care from health care providers in areas with high and low incidence of male-oriented health conditions

- A discussion about how incidence may impact patient treatment and willingness to be diagnosed

3. RELATED WORK

Online health care provider rating websites play a vital role when it comes to choosing a suitable health care provider. [4]. There has been debates on the issue that whether the patients should be allowed to rate their health care providers online. A study by Emmert showed that patients are highly influenced by the information presented on an online rating site [2]. Physicians argue that the health care providers should not be reviewed like the way grocery stores or restaurants are reviewed online [10]. There are no any means to figure out if the review is posted by a real customer or someone who wants to rip off the physician [7]and in some cases even the real review doesn't reflect the quality of the health care

provider [10]. But, policy makers believe that these sort of rating websites help to create a transparency in health care sector by circulating enough information about the health care providers [6].

Study shows that most reviewers give good ratings to their health care providers. Researchers analyzed the reviews of 23 health care providers in 25 major U.S. cities from 10 of the most used doctor rating sites based on Google Trend data. They found out that more than 65% of the reviews were positive [8]. It is found that the people who write reviews are comparatively more educated, younger and healthier then the ones who don't [9]. When it comes to health care providers, younger physicians without malpractice claims and physicians who graduated from top -50 medical schools had somewhat higher ratings then the other physicians [6]. Rosenbaum found that negative reviews can adversely impact the practice of highly qualified cardiologists [11], thus review accuracy and ratings are important to patients *and* health care providers.

4. METHODS

We have divided the methods into two sections, in the the first section we will talk about the types of research that has been done so far, our data collection process and the factors that mattered throughout the process. Whereas, in the second part we will explain how we analyzed the collected data.

4.1 Data Collection

The following tables represent the work that has been done so far by other researchers in this field. We found out that most of the researchers used websites like Yelp, RateMd, Healthgrades to analyze the ratings and reviews of the health care providers. Some researchers conducted cross sectional survey where as some used data from non-profit news room like Propubica. When it comes to type of research most of the researchers conducted both qualitative and quantitative analysis, few of them did qualitative analysis. None of the papers mentioned how the data were collected. Most of the researchers were focused on common health care providers which may or may not include all specialities and very few researchers were focused in categorizing the data according to specialization of health care providers. All the data are included in the table below.

We collected the ratings and reviews of the health car providers posted by their patients. Reviews were collected from two popular rating websites Google and Yelp. Our research solely is based on the diseases like Prostate cancer and [fill in] that are mostly abundant in male population, we narrowed down the research area to twenty states. We used the data from the website of Center for Disease Control(CDC) [3] and selected the ten states each for highest and lowest prostate cancer mortality rates. WE used Yelp API and Google API to access the information from Yelp and Google. Google allows us to pull all of the business reviews. [1] Yelp has some restrictions when it comes to allowing the users to access their data. Yelp only allows three reviews and each review is restricted to 160 characters [12].Then, we wrote different python scripts for Yelp and Google that would pull the ratings and reviews of health care providers and write them in a csv file. Scripts were written in such a way that they would

only pull the information of those health care providers that have at least one rating.

4.2 Data Analysis
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5. LIMITATIONS
- Sampling Issue - worse care associated with income and possibly this demographic is not online

- Sampling Issue - some areas, (if we go with erectile dysfunction), are for higher socioeconomic status groups; some health outcomes may be impacted by socioeconomic status (e.g., people only go to the doctor when they are really sick and, in some cases for cancer, this may be too late for treatment)

6. REFERENCES

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Paper	Google	Facebook	Yelp	RateMD	other
Kadry et al. [8]			*	*	healthgrades,vitals, checkbook, angieslist, ratemd
Lopez, et al. [9]			*	*	
Gao et al. [6]				*	Physician's database of Virginia
sciencedaily et al [?]				*	vitals, health grades
Emmert et al. [2]					cross-sectional survey
NYT et al. [10]			*		
Jain et al. [7]					vitals
Gebauer et al			*		propublica
Rosenbaum et al. [11]					probublica
Fox Fox et al [5]					

Table 1: Sites Used

Paper	Qualitative Analysis	Quantitative Analysis	API	Web Scraping
Kadry et al.[8]	mostly positive ratings	average rating = 77%	-	-
Lopez et al. [9]		61% positive and 39 % negative	-	-
Gao et al. [6]	most reviews were positive	46% got 5/5 12% got below 2	-	-
sciencedaily et al. [?]	female surgeons and surgeons with affiliation gor good ratings		-	-
Emmert.[2]	more people are using doctor rating sites in Germany	23% of internet users look for physicians online		
NYT et al. [10].![10]			-	-
Jain et al. [7]	most people are positive on using internet for health purpposes		-	-
Gabeuer et al.	physician rating sites should be more systematic		-	-
Rosenbaum et al. [11]	there is no transparency in online rating sites		-	-
Fox et al [5]	positive	72% of internet users use internet for health info	-	-

Table 2: Type of Analysis

website	Real Name	Pseudoname	Location	Age	Past Reviews	Gender	Pictures	Date reviewed
Yelp	*	*	*	-	*	-	*	*
Google	*	-X	X	X	*	-	-	*
Ratemds	X	X	X	X	X	X	X	*
Healthgrades	X	X	*	X	X	X	X	*
Angieslist	X	X	X	X	X	X	X	*
Facebook	*	-	*	-	X			

Table 3: Reviewer Data by API where * indicates most likely available; - indicates may be available; and X indicates not available

website	Doctor Name	Location	Edu History	Star Rating	Review Text	Reviewer Name	Review post Date	Reply to Review	Liking/ Useful	API
Yelp	*	*	X	*	*	*	*	-	*	*
Google	*	*	X	-	-	*	*	-	-	*
Ratemds	*	-	*	*	*	*	*	-	*	X
health grades	*	*	*	*	*	*	*	-	*	X
Angieslist	*	*	X	*	*	X	*	-	X	X
Facebook										*

Table 4: Review Data by API where * indicates most likely available; - indicates may be available; and X indicates not available

paper	no.reviews/ reviewers	no.doctors	rural	sub-urban	urban	speciality
Kadry, Analysis of 4999 physicians.[8]	4999 reviews				*	23 specialities
Lopez, what patients say about their doctors. [9]	712 reviews	445			*	
Gao, Are doctors created equal..		18,174				fam/ped, ob/gy, surgery, hospital, other
Study finds little consistency in doctor reviews. [?]	2,813 reviews	275				sports medicine surgeons
Emmert, Physician choice making and characteristics associated with physician rating websites..... [2]	3052 reviewers.					
Negative online reviews leave doctors with little recourse						
Jain, Googling ourselves-what physicians can learn from from online rating sites. [7]						
Gabeuer, Is it time for HIPPA physicians						
Rosenbaum, scoring no goal further adventures in transparency. [11]						cardiologists
Fox, Social life of health information .Fox2011						

Table 5: Number of Doctors and Demographics