ADHD WEBSITE DISCLOSURES BY LEADING HOSPITALS

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Abstract

Based on the Web disclosures on ADD and ADHD by leading hospitals in the United States, this study found that these diseases can be classified under pediatrics, psychiatry, psychology, and even neurology. In a limited number of leading hospitals, these diseases are treated under a special center comprising of experts from multiple fields. However, the search for Web information pertaining to ADD and ADHD information in leading hospitals can be quite a challenge in itself. A good number of the leading hospitals do not even have the capabilities for online searches. Chances are, among those hospitals that have online capabilities, the novice user will still have to master sufficient knowledge to access the type of information desired because these illnesses are often classified by their multiple dimensions and causal effects.

Keywords: ADD, Attention Deficit Disorder, ADHD, Attention Deficit Hyperactivity Disorder, Web Disclosures, Web Information, Web Content, and Hospital Information Systems.

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Introduction

Web content that are posted by hospitals can serve two major functions. Firstly, it is a relatively reliable source of information to the public. Secondly, it is a means for hospitals to passively publicize their medical experts and areas of specialization. After all, most web content about a certain illness can be found with a search engine easily. For physicians, hospital administrators, and healthcare marketers, the Internet had definitely afforded them a broad spectrum of advantages that are hard to beat (Eysenbach, 2001; Eysenbach & Diepgen, 1998). First, this media has enormous reach and with it, the potential to affect the health of large populations. Second, since the users are able to retrieve information "just-in-time", they are also more likely to apply it immediately. Third, such interactivity often leads to higher involvement of the users and a greater impact on individuals. Best of all, the extremely cheap publishing process makes it easy to publish online without the need to make revenue.

For most illnesses, an end-user can easily access the desired information with merely a few key words. Most of the time, the name of the illness is sufficient. Unfortunately, all Websites are not constructed using the same yardstick. Some Websites are richer than others in content. Others may be better constructed and are thus easier to navigate. Like it or not, some diseases are more complex in nature and thus can be classified under different domains so it is highly possible that information about those physicians, treatment options, and facilities, may be housed in different departments or locations.

Attention Deficit Disorder (ADD) and Attention Deficit Hyperactivity Disorder (ADHD) are examples of two diseases that share many similarities and yet are not necessarily the same. Sometimes ADHD is considered as a subtype of ADD. Irrespective of how it is viewed, both are fairly new discoveries that have a debilitating neurological disorder and their core problem is hyperactivity. ADD and ADHD patients has three principal traits, namely; (a) poor sustained attention or vigilance, (b) impulsivity or difficulty delaying gratification, and (c) hyperactivity or poorly regulated activity (Newton, 1997). Apart from these three traits, ADD and ADHD have generally accepted differences. ADD patients are described as "learning disabled" or "lazy." In other words, ADD is a developmental disorder or neurobiological disorder (Anonymous, 1999). For this reason, ADD patients do not always show their symptoms in all situations (Armstrong, 1996). ADHD patients are described as "conduct or behavior disordered". Persons with ADHD have been found to have "slightly smaller brains" (Cromarie and Mocivnik; 2003).

In most cases, ADD and ADHD are treated with medication such as Ritalin, Strattera, Concerta, Adderall, Metadate, Dexedrine, Focalin, Cylert, and Wellbutrin ((Slate, Meyer, Burns, and Montgomery; 1998). Like in the case of most medicine, the costs per pill are fairly high and there are known side effects. In some cases, patients have died taking these drugs. Recently, several alternative treatments have surfaced. The best known among them are CarnioSacral Therapy and ADHD Diet (Boon, 2003; Weathers, 2003). The former is a holistic massage therapy and the latter focused on certain foods that some children may have severe reactions to. Finally and more recently, several software packages have been developed to help ADD and ADHD patients. Some have even claimed to have demonstrated success. BrainBuilder is an example of such software packages available.

Statement of the Problem

According to the National Institute of Health, some 3.5 million or about 3 to 5 percent of children in the United States are diagnosed with ADD or ADHD (Anonymous, 2004). Among school age children six to eleven years old, the rate of affected children can be as high as seven

percent in some countries (Gottlieb; 2002). While it is true that these disorders are more common in boys, adults may also suffer from these illnesses. Once diagnosed, 80 to 90 percent of children with ADHD are prescribed medication even though there are other treatment options available (Slate, Meyer, Burns, and Montgomery; 1998).

For patients and their affected families, the Web is one of the most common means to search for the best attending physician, treatment alternatives, and facilities. However, the Web can also be a dangerous place to get information. The problem with online information is that of quality assurance. A lot of medical information extracted from the Internet are incomplete, misleading, and incorrect (Desai, Dole, and Yeatman: 1997, Impicciatore, Pandolfini, Casella and Bonati; 1997, Kiley; 1998). In addition, their availability may not necessarily be readily available in the Website searched because those companies or organizations may offer only a limited number of products or services in order to reap economies of scale (Koong, Koong, Liu and Yu, 2005). Finally, most novice users are known to use only those keywords that there common in the search process. Sometimes, the search can be developed unintentionally from a knowledgeable user's view only because the illness may fall under multiple domains or departments. When the illness is placed under a Center using the primary keyword, it is easy to find. However, when the product or service is housed in multiple departments, the search for information can be a challenge in itself. To access the desired information, the user must now know the respective domains related to the disease instead of just the illness's name.

Statement of Objectives

More and more individuals are using online medical information to get general information about certain illnesses or to gather treatment options as well as experts and physician. Access to such knowledge can provide patients and their affected families with better decision making in their selection of treatment options, medical facilities, and attending physicians. The best and most logical choice to look for information is the nation's leading research hospitals because they are supposed to have the largest number of knowledgeable and experienced physicians, the most modern and innovative technologies as well as facilities, and the best treatment options available.

While it is true that access to most online information is readily available, some Web-based hospital portals may not necessarily have the features as well as capabilities. Moreover, illness can fall under multiple domains (departments in particular). Searching for the desired information can then become a challenge in itself. The objective of this study is to examine the Web disclosures on ADD and ADHD by hospitals in the United States. Specifically, this study deals with how information on ADD and ADHD, diseases that can be classified under multiple domains, can be accessed by end-users. In particular, three types of techniques are used to extract the data set that will answer issues dealing with how, who, and where those experts can access online.

Obviously, this study should be of major interested to affected patients and their families. In addition, hospital administrators, hospital publicity staff members, physicians, insurance providers, and medical students will find this study useful. Computer analysts, systems designers, Web developers, business consultants, and health decision support system experts will find the results of this study to be helpful. Finally, the results reported here may also be of interests to staff writers, educators, and students who have grant-writing responsibilities or who are doing research in the area of medical informatics, Websites development, and hospital information systems assessment.

Methodology

The targeted population of this study is research hospital Web sites that provided medical information. Specifically, this study examined the Web sites of leading research hospitals that were in the ***U. S. News and World Report*** (2005). The Web sites of the nation's leading research hospitals were included in this study because they represent the most respected and prestigious group of medical establishments in the world for their expertise in specific areas. However, it must be pointed out that the research hospitals in this study included affiliated medical centers, hospitals, clinics, and healthcare network systems because the latter belong to the clinical part of a medical school and often, they are mutually inclusive. Actually, most of the sites will service all three functions; namely, clinic, research, and education. For this reason, it is extremely important that all the latter affiliations also be examined when a research hospital is to be properly evaluated.

As pointed out earlier, ADD and ADHD are classified as a behavioral or a developmental illness and can affect men and women of all ages even though children are the most affected. For this reason, three categories of leading research hospitals specialties are selected for inclusion in this study, namely; neurology, psychiatry, and pediatrics. According to the ***U. S. News and World Report*** for 2005, there were 25 leading hospitals in the area of neurology, 27 in psychiatry, and 29 in pediatrics. Using the World Wide Web address of the respective research hospitals, it was found that all the Web sites of these research hospitals were operational. Three primary methods were used for extracting the data:

- Illness Search - A search for physicians was made using the key words "ADD", "ADHD", "Attention Deficit Disorder", and "Attention Deficit Hyperactivity Disorder" in cases where this type of a search option is available. Based on the list of physicians extracted, their affiliated departments and areas of specialty were recorded.
- Department Search - If the first option was not available or it failed to yield results, a second search for physicians was done using the keywords "neurology", "psychiatry", or "pediatrics". Each physicians in those departments were examined and their information was recorded when ADD and ADHD were included as areas of specialty in their profiles.
- Individual Search – A last attempt was made to search for physicians using the link that connects to hospital staff, if one is available. This represents the most tedious search method because every physician will have to be accessed and examined in order for the information to be extracted.

Findings

Based on the ***U. S. News and World Report*** for 2005, there were 29 leading children's hospitals in the United States. Even though all the hospitals can be assessed online, 6 hospitals or about 21 percent of them do not have any search capabilities. In other words, over a-fifth of these hospitals merely have a simple Website with limited features and usefulness. These searches were considered unsuccessful and were eliminated from additional analysis. Of the remaining 23 hospitals, two did not have any ADD or ADHD experts. One is searchable by the names of the illness and the other by departments. These two hospitals were included in some of the analysis dealing with Website characteristics. After removing these two groups of hospitals, number of medical institutions with at least one ADD or ADHD expert was 21. Details about each hospital examined and the items extracted from the respective Websites are presented in Table 1 and discussed below:

Table 1. ADD/ADHD Web Disclosures from Top Children's Hospitals in the United States

Rank	Hospital	Total	Department	Nbr.	Search	*Terms*
1	Children's Hospital of Philadelphia	11	Neurology	2	Directory	*ADHD*
			Pediatrics	1		
			Psychiatry	2		
			Psychology	6		
2	Children's Hospital of Boston	3	General Medicine	1	Specialty	*ADHD*
			General Pediatrics Medicine	1		
			General Pediatrics	1		
3	Johns Hopkins Hospital, Baltimore	7	Children/Adolescent Psychiatry	7	Department	*ADHD*
4	Texas Children's Hospital, Houston	0	N/A	0	Specialty	*ADD*
5	Hospital of New York Presbyterian	8	Unlisted Specialty	1	Specialty	*ADD/ ADHD*
			Psychology	1		
			Pediatrics	1		
			Psychiatry	5		
6	Rainbow Babies and Children's Hospital, Cleveland	1	Pediatric Psychology	1	Specialty	*ADHD*
7	Children's Hospital Medical Center, Cincinnati	10	Psychology	7	Department	*ADHD*
			Psychiatry	3		
8	Children's Hospital, Denver	N/A	N/A	N/A	N/A	*N/A*
9	Children's Memorial Hospital, Chicago	27	General Pediatrics	22	Department	*ADD/ ADHD*
			Neurology	1		
			Psychiatry	4		
10	Children's National Medical Center, Washington DC	3	Psychology	2	Department	*ADHD*
			Developmental Pediatrics	1		
11	University of California, San Francisco Medical Center	2	Psychology	1	Specialty	*ADHD*
			Children/Adolescent Psychology	1		
12	Lucile Packard Children's Hospital at Stanford, Palo Alto, California	1	Psychiatry	1	Department	*ADD*
13	Children's Hospital Los Angeles	N/A	N/A	N/A	N/A	*N/A*
14	Children's Hospital of Pittsburg	N/A	N/A	N/A	N/A	*N/A*
15	Mattel Children's Hospital at UCLA, Los Angeles	N/A	N/A	N/A	Department	*N/A*
16	Children's Hospital and Medical Center, Seattle	4	Pediatrics Primary Care	4	Department	*ADD/ ADHD*
17	Massachusetts General Hospital, Boston	2	Pediatric Neurology	1	Specialty	*ADHD/ Attention Deficit Disorder*
			Psychology	1		

18	Mayo Clinic, Rochester, Minnesota	1	Developmental & Behavioral Pediatrics	1	Department	*ADHD*
19	St. Louis Children's Hospital	3	Psychiatry	3	Department	*ADD/ ADHD*
20	St. Jude Children's Research Hospital	N/A	N/A	N/A	N/A	*N/A*
21	Duke University Medical Center, Durham, NC	5	Psychiatry	4	Department	*ADHD*
			Psychology	1		
22	Barnes-Jewish Hospital, St. Louis	2	Pediatric Psychiatry	2	Department	*ADHD*
23	Children's Healthcare Atlanta	N/A	N/A	N/A	N/A	*N/A*
24	Children's Hospital Medical Center of California, Oakland	N/A	N/A	N/A	N/A	*N/A*
25	Yale-New Haven Hospital, New Haven, Connecticut	1	Pediatric Psychiatry	1	Department	*ADHD*
26	University of Chicago Hospitals	5	General Pediatrics	1	Specialty	*ADD/ ADHD*
			Child Psychiatry	4		
27	Children's Hospital of Michigan, Detroit	N/A	N/A	N/A	N/A	*N/A*
28	Shands at the University of Florida, Gainesville	2	Pediatrics	1	Department	*ADD/ ADHD*
			Child Psychiatry	1		
29	Miami Children's Hospital	2	Neurology	1	Department	*ADHD*
			Psychiatry	1		

- Based on all the three search techniques, there were 99 ADD or ADHD experts extracted from the 21 hospitals that have at least one physician specializing in these illnesses. On average, that computes to about 5 physicians per hospital that can treat ADD or ADHD patients.
- Children's Memorial Hospital of Chicago has the largest number of ADD and ADHD experts, some 27 physicians. This was followed by Children's Hospital of Philadelphia, 11; and Children's Hospital Medical Center, Cincinnati, 10. These were the only hospitals that have experts that numbered in the double digits. Collectively, these three hospitals have almost half of all the experts identified. Interestingly, these three hospitals were all located fairly much in the same area, the middle or close to the middle portion of the country.
- Chicago can be considered as the leading city with the highest number of ADD and ADHD experts. First, there were two children's hospitals in Chicago that are in this top list of institution. As indicated earlier, Children's Hospital of Chicago has 27 experts. Raked 26th on the report, University of Chicago Hospitals has 5 experts. Together, the city of Chicago has 32 experts or almost a third of all the experts in the nation.
- Using the first technique, only seven, that is, 30 percent of the 23 hospitals with search capabilities can be accessed by specialty (illness names). Only one hospital, Texas Children's Hospital of Houston, can be searched using the term "ADD" only. However, this institution did not have any experts at the time the search was done. The majority of these hospitals, 4, can be search using the term "ADHD" only. Hospital of New York Presbyterian is the only institution which can be searched using ADD or ADHD. Interestingly, one hospital, Massachusetts General Hospital, Boston, required the use of the whole term "Attention Deficit Disorder". For this hospital, the search can also be done using the term

"ADHD".

- Fifteen of the 23 hospitals required the use of the second data gathering method, i.e., searching the three departments and examining the profiles of the experts. Again, only one department uses the term "ADD" only. The majority of them, 7 uses the term "ADHD" only. Four of them have experts that use the terms "ADD" or "ADHD".
- One hospital, Children's Hospital of Philadelphia, required the use of the third data extraction method, i.e., searching the whole directory and examining each and every physician's profile. Surprising, even though there were eleven experts in this hospital that were spread out over four departments, every expert has the term "ADHD" in their profiles.

At the micro level, the classifications are actually very confusing. The 99 physicians fall into 16 different department names. The most common department name was Psychiatry. Eight hospitals have experts classified under this department. There were 23 experts in this category. The second most common department name was Psychology. Seven hospitals and a total of 19 experts have this department name. The only other more popular department names were Neurology, Pediatrics, and General pediatrics. These department names are used by three hospitals each. Actually, the largest number of experts is classified under General Pediatrics. There were 24 experts even though only three hospitals use this department name because Children's Memorial Hospital, Chicago, contributed 22 experts into this category.

Beyond these five popular department names that are more commonly used, the rest of them are used by only one hospital each. These names can range from the rather useless classification called Unlisted to the extremely specialized name called Pediatrics Neurology and the highly unique name called Developmental & Behavioral Pediatrics. All in all, there were 11 minor department names. Two hospitals had the largest number of departments that specializes in the treatment of ADD and ADHD patients. The Children's Hospital of Philadelphia and the Hospital of New York Presbyterian, each has four departments.

Conclusion and Implications

Among the 29 hospitals and their associated 99 experts that were found using the Web, this study found that online disclosures on ADD and ADHD can belong to one of four categories. First, about a fifth of these leading hospitals have Websites that do not have search capabilities. Administrators of these affected hospitals have a definite need to re-examine the reasons why they have a Website in the first place. A Website that does minimal information postings is not a competitive asset. Physicians as other ADD and ADHD experts in those hospitals have reasons to be upset about because when a hospital fails to publicize their expertise, prospective clients as well as recognition from peers are lost.

Surprisingly, the terminology used among the 23 remaining hospitals is fairly inconsistently. For example, even though ADHD is viewed as a subset of ADD, most of the search parameters and terms used in the profiles of the physicians is ADHD. Only a handful can be accessed or are listed using both terminologies. In one case, it even required the complete words to be spelled out. This need for the end-users to know all the terms and how they are designed can be a usage hindrance in itself. Some type of a standard should be agreed upon by Web developers and hospital information systems analysts as to how this problem can be minimize.

Actually, searching for ADD or ADHD information using the Websites of most hospitals is easier said than done. There are only 6 hospitals where ADD and ADHD information can be accessed using the parameters "ADD" or "ADHD". The rest of the hospitals require the end-

users to go into the respective departments to find them. This means, the end-users must have a fairly good understanding of how the experts are classified. All in all, there are 16 department names identified in this research that is done on just the 23 leading hospitals alone. At its minimum, it means that the average user must know that ADD and ADHD are associated with neurology, psychology, psychiatry, and pediatrics. Depending on their geographical location, they may have a need to know the minor names. Put another way, the search process can definitely be enhanced.

Most than that, there may be hospitals that actually require the examination of each and every physician's profile using the directory. This is the worst nightmare for the prospective client or end-user. First, it is the most time consuming method. Second, it requires the Web visitor to know all the possible terms associated with the disease. Third, it is also critical that the online visitor knows the names of all the possible departments where these physicians may be housed.

An ideal situation would be to have one and only one department where all primary experts will be listed and secondary experts can be cross-listed. The closest to this scenario is in the case of Children's Memorial Hospital of Chicago where 22 or their 27 experts are listed under General Pediatrics. From a Wed development viewpoint, the best solution and the ideal one is to have put all the experts and secondary experts under a Center or Institute that has the word ADD and ADHD as part of its title. Such a structure will definitely made the search for information much easier.

Limitations

One major limitation of this study was in the number of research hospitals studied. Only 29 of the top-ranked research hospitals in the nation were included in this research. First, since the data set was obtained from only 29 research hospitals, the outcomes are representative of these hospitals only. It should be pointed out here that despite this minor limitation indicated, that great care was taken in collecting, organizing, testing, and interpreting of the research outcomes. These are the leading children's hospitals in the United States. There are supposed to be the model institutions after which other institutions are supposed to imitate or follow. Even if an unintentional bias exists, it is not likely that the results will contain any significant predisposition that is detrimental.

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