The Elderly and the Internet: A Case Study

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Abstract

Objective: To investigate the impact of training the elderly to use the Internet in order to become more active in their health care.
Methods: This study utilized semi-structured interviews and surveys.
Results: Five themes emerged from the interviews that described participants' motivations and barriers they experienced when using the Internet. Survey data revealed that levels of computer anxiety decreased and levels of efficacy increasing after training.
Conclusion: Training the elderly to use the Internet lowered levels of computer anxiety. In addition, participants used the information retrieved from the Internet to become more active in their own health care.

INTRODUCTION

The Internet has enabled patients to take a more active role in the health care process.[1] While the Internet has contributed to societal change, and provided opportunities to revolutionize health care,[2,3] it may be said that for the elderly population, it is more of an 'evolution' than 'revolution'. In a recent survey by the University of Pittsburgh,[4] it was discovered that 62% of the residents of Pittsburgh and surrounding Allegheny County had access to the Internet. However, the average older adult in Allegheny County, the second largest population of older adults in the nation,[5] had the lowest levels of computer ownership and more limited access to the Internet than other county residents. Furthermore, these elderly adults, who make up 17.8% (228,416) of the county's 1,281,666 residents lacked the essential knowledge of how to use the Internet to locate health information. Nationally, research[6] shows that older Americans are in danger of being cut off from one of the most provocative communication mediums of the 21st century. In the United States, elderly adults make up 13% of the population with only 4% using the Internet. Overall, 56% of America is online and out of that percentage, only 15% age 65 and over have direct access to the Internet.[7]

Medical care in America has generally been regarded by many as the best and of the highest quality throughout the world. However, research[8] has shown that the deaths of over 98,000 people annually may be due to medical errors. The physician, once thought to be an oracle of medical knowledge, has been found to practice medicine based on a combination of their instinct, experience, and sometimes outdated education. This has created a system prone to mistakes due to the wide range of variability in practice, knowledge, and education. To perpetuate this illusion of the infallibility of the physician, tradition has taught the individual that their role in the health care process is one of passive recipient, i.e., "The Doctor knows best." Hospitals, physicians, and health care professionals purport to know what is best for their patients, thus the patient should allow the providers unrestrained ability to make the major decisions regarding the care that is given. Research, however, shows that the adoption of a passive role is a matter of blind faith[8,9,10] and can be counter-productive in diagnosis and treatment.

The majority of patients prefer to leave their medical decisions to their physicians.[11,12] Not only is this the case for older and less educated patients[13,14,15,16,17,18], but physicians perpetuate this trend as their experience and education increases.[19,20] Over the years, studies have shown that patients over 60 years of age have a lower desire for control over their health care when compared to younger adults.[21,22,23,24,25] Moreover, older patients and men are more likely to let the physician make decisions regarding their treatment.[26] This suggests that the elderly tend to have an external locus of control when it comes to health beliefs[27], as opposed to an internal locus of control, over their health care. This phenomenon appears to exist across disease

classifications[10],[12],[14],[16],[25].

Although the majority of patients prefer to let their physician make the decisions, the more a patient learns about their illness, the more likely they are to ask questions of their physician.[28],[29],[30],[31],[32] Studies have shown that patients who ask questions, elicit treatment options, express opinions, and state their preferences regarding treatment during office visits with their physicians have measurably better health outcomes than those who do not communicate.[8],[33],[34],[35],[36],[37] Therefore, this study explored the impact the Internet had on the elderly with regard to their participation in their own health care. Did they use the Internet to become more informed health consumers, and as a more informed consumer, did they assume a more active role in their own health care.

METHODS

To facilitate the training of the elderly, a large suburban Pittsburgh Public Library agreed to sponsor a series of Internet training seminars and make their resources available to the research team. These resources included a meeting room and use of Internet accessible computers. The decision to use a library as the setting for the training was made based on the fact that this is where most of the elderly would access the Internet.[4] The training sessions were advertised in two local newspapers, and a local suburban magazine. Flyers were also placed in the library where the training was to take place. A sign-up sheet was made available for three time slots during the week (Mondays, Wednesdays, and Fridays). The sessions were five weeks in length, meeting once a week for two hours for a total of 10 hours of instruction. Each session began with an overview of the day's topic, followed by hands-on instruction and practice.

The sessions used constructivist teaching techniques (citation) and self-directed learning. Each lesson was presented using a different method for engaging the participant to find medical information that was relevant to their individual needs. For example, many seniors are interested in finding out more about the medications they are taking. A short presentation was made using a laptop and LCD projector. Seniors where shown how to search several web sites containing pharmaceutical information, and then given a chance to practice searching those sites using a computer connected to the Internet. Small groups made individual attention possible for the hands-on portion of each session. Toward the end of the five weeks, as the participants skill level increased, they began to work cooperatively,

helping other participants navigate to web sites of interest, or finding information pertaining to their own health problem. To facilitate learning a course workbook was provided to the participants to serve as a reference for future use.

SUBJECTS

All subjects (n=28) were aged 65 and older. Eight of the participants were male, and twenty were female. The majority of participants had used a computer before attending the seminar, either at home, the public library, or an elderly community center. Thirty nine percent reported having a college degree, while 28% had some form of post-graduate training. Eighty two percent were retired.

SURVEYS
PRE-POST

Surveys were distributed at the beginning and end of the five-week training session. The surveys were designed to capture baseline information about the participants, their experience using computers, and experience searching the Internet. To measure anxiety, the Computer Anxiety Subscale of the Computer Attitude Scale[38],[39], along with Busch's[40] computer efficacy scale were administered. The rationale for using these measures was to determine if levels of anxiety toward computers and feelings of self efficacy influenced participants use of the Internet to locate health related information. It was hoped that training older adults to use the Internet to find medical information would lower levels of anxiety, while increasing levels of efficacy and the desire to participate in one's health care.

INTERNET USAGE

In the fourth week of the seminar, a short questionnaire was administered which measured the frequency rate at which participants used the Internet outside of class to search for medical information.

EVALUATION

A final questionnaire was sent to participants forty five days from the conclusion of the seminar. Each participant was asked to record how often they had used the Internet to locate health information and whether the seminar changed the role they played in their own health care.

INTERVIEWS

A stratified sample was used to interview eight people at the conclusion of the training. These subjects were chosen due to the variation in their behavior during the training, i.e., some people had more trouble than others in learning the

computer in general, others were comfortable with the computer, and others were inquisitive about how they could use the Internet to help them manage their own care. Questions were tailored to elicit as much information as possible regarding the outcome and satisfaction of the Internet training the subjects received. These included questions such as, "Before the seminar, what were your feelings toward the Internet", "What are the barriers you have experienced in using the computer", and "How do you think you can use the Internet to manage your health care?" Each interview was tape recorded and lasted approximately one hour.

RESULTS
SURVEYS

Four surveys were completed by participants during this case study. A pre and post survey asking participants about their attitudes toward computers and Internet use was used at the beginning and end of the five week seminar. An Internet usage survey was completed at the beginning of the fourth week, and a final survey was sent out to participants forty-five days after they completed the seminar. Results from each questionnaire are discussed below.

PRE AND POST SURVEYS

These surveys were used to measure participants levels of anxiety toward computers and their levels of efficacy in terms of using a computer to locate medical information found on the Internet (N=28). The Computer Anxiety Subscale of the Computer Attitude Scale[38],[39] was used to measure participants level of anxiety. Busch's[40] computer efficacy scale was used to measure a person's efficacy when using a computer to perform certain tasks, such as using the Internet to locate health information.

Comparison of group pre and post scores indicated that instructing elderly adults how to use computers to find medical information lead to a reduction in anxiety levels and increased feelings of efficacy. See Table 1

Figure 1

Table 1: Computer Anxiety Scale

Feelings toward the Computer	Pre	Post
Fear of the computer	39%	20%
Computer makes me nervous	22%	.08%
Computer makes me uncomfortable	37%	11%
Computer does not make me feel uneasy and confused	38%	57%

Participants feelings in their ability to find information on the Internet, rose from 59% to 80%. When it came to their confidence in finding information about their own health, the feeling of being confident rose from 51% to 69%. Finally, when asked about their confidence in using the Internet to manage their personal health care, the feeling of being confident rose from 29%-46%.

Figure 2

Table 2: Levels of Efficacy in Finding Internet Information

Levels of Confidence	Pre	Post
Confident I can find information on the Internet.	59%	80%
Confident I can find information on the Internet regarding my own health.	51%	69%
Confident I can use the Internet to manage my own health care.	29%	46%

In addition to anxiety and efficacy levels, the pre and post questionnaires elicited information regarding participants' feelings toward using the Internet as a tool for locating health care information. At the conclusion of the seminar, 100% of the participants indicated they felt the Internet could be used to manage their health care, an increase of 25% from the pre-questionnaire. On the post questionnaire, 81% percent responded that they would be more comfortable taking a collaborative role in their health care. However, 48% indicated that they would use the Internet to manage their health care, while 44% stated that they did not know.

INTERNET USAGE SURVEY

This survey was used to gather information regarding participants (N=28) use of the Internet to search for medical information outside of the seminar. Overall, 66% used the Internet to locate medical information an average of 2-3 times since the start of the seminar. Of that 66%, 56% had computers in their homes. The other 43% made use of computers located in a public library. It is important to note that individuals with computers at home used the Internet 3-4 more times than the other 43% to locate health related information. Of the 34% who did not use the computer outside of class, only two individuals had computers in their homes. Thus, whether an individual had a computer at home determined how often they used the Internet to find health related information.

Figure 3

Table 3: Internet Usage

Used Internet		Didn't Use Internet
66%		44%
Computer At Home	Library	
56%	43%	

FINAL SURVEY

This survey was completed by the participants (N=26) forty five days after completing the Internet seminar. Results showed that during that time, 58% (N=15) had used the Internet to look up health related information. Many of the participants used the Internet to look up information on topics as broad ranging as: colitis, thyroid, mental illness, drug information, prevention, hearing aids, cancer treatment, clinical trials, vitamins and heart conditions. Sixty-five percent of the participants reported having been to a health care professional since taking part in the Internet seminar. From that 65%, 59% engaged in activities that can be interpreted as having a more participatory or active role in their own health care. Participatory, defined as the elderly adult using the Internet to seek more information regarding their health problem, to discover alternative treatments, or to locate information to generate questions that were directed to their primary care physician. For example, one participant described how her use of the Internet made her more confident in asking questions of her health care provider. These questions ultimately lead to a change in her prescription drug medication. Another participant reported that he now takes more questions to his doctor based on the information found on the Internet.

Figure 4

Table 4: Final Survey

Used Internet to locate health related information.	Visited Health Professional.	Percent that visited health professional and engaged in participatory activities
58%	65%	59%

The primary reason for not engaging in participatory actitivies was access to a computer. For instance, one participant developed a balance problem along with a gastrointestinal disorder. Because he did not own a computer, his illness inhibited him from driving to the public library to research his problem. Two other participants, (a husband and wife team) developed health problems concurrently. The husband was already suffering from the effects of a stroke and was dependent on his wife to go to the library. When the wife broke her leg, both became house bound and where unable to reach the library to use the Internet to research their problems.

Interestingly, just because an elderly adult is confined to their home without Internet access, does not mean that they cannot get to medical information found on the Internet. One enterprising participant who was suffering from a severe bout of colitis sent an emissary to the library to locate

information for her. This example speaks to the growing determination of many elderly to use the Internet to locate health information.

INTERVIEWS

Each interview was transcribed by the author. To evaluate the interviews, transcripts of each interview was read and evaluated by three separate readers. From the evaluation process a codebook was developed which classified participant responses into twelve areas. These were then broken down into five specific themes. Those themes included: digital disparity, barriers, health beliefs, enticers and future potential.

DIGITAL DISPARITY

This theme was characterized by the incongruity among participant emotions and feelings toward the computer and the Internet. Participant responses were overwhelmingly positive, but qualified by negative comments, "Yes, I enjoy using the computer about three times a day. However, if you are on the computer you cannot call anybody to ask for help. Because our phone is the only one—we only have one line coming in." Only one participant stated that they did not enjoy using the computer, because it was "a great time waster." This sentiment was echoed by another participant who although they liked using the computer, felt that one of the things that they "resented" was the amount of time it takes from doing other activities. The participant described how she could sit down at the computer at 1:00 o' clock and before long it was 3:00 o' clock, and she would feel that she got nothing accomplished.

BARRIERS

This theme was characterized by responses that referred to any physical or cognitive obstacle which prevented or hindered the participant's ability or desire to learn the computer and the Internet to locate health information. Overall, a majority of the respondents felt they lacked the "technical skills" to use a computer, while a quarter of them felt that various technical problems, "you have to watch what key you hit . . .I hit the control key and it kind of frooze everything," prevented them from using the computer optimally, and another others felt that they lacked adequate software skills, "I am always making little errors—like www. and then maybe I will have one letter too much or have the wrong colon." Participants also cited lack of time, lack of resources, and certain cognitive skills (memory and organization) as significant barriers. "Fear. . . .Primarily, as I mentioned before—eh—fear that I couldn't absorb the

information and it was beyond my comprehension . . ."

Half of the participants stated that prior to taking the seminar, they did not know what kind of information was available on the Internet, while the remaining participants cited fear, desocialization, anomie, and questions regarding authenticity of information as their primary emotions regarding Internet use

HEALTH BELIEFS

This theme refers to the participant's belief about the control they have over their health care. Participant health care beliefs could lie somewhere between an internal and external locus of control. For example, a participant with a paternalistic Primary Care Provider (PCP), in most cases, had an external locus of control, where they were willing to give complete control of their health care to some external source. Interview data suggest that patient/physician relationships varied widely, including patients who question their doctors, but ultimately follow their doctors' directions; and patients who react to their doctors' decisions by going online and investigating diagnoses, conditions and treatments. Two other types of relationships encountered identified patients who would only deal with physicians who agreed with their beliefs, "I try to choose doctors that I know agree with me", and patients who had physicians receptive to a more open, participatory relationship.

When asked how their relationship with their primary care provider might change after being exposed to the Internet, most of the respondents believed that their behavior would change because they would be more willing to look up information before making a decision about their health care, "now when I am going to the doctor . . . I am going to research why I am seeing him in the first place." Furthermore, participants believed that use of the Internet to find health related information allowed them to ask their physician more intelligent questions, therefore, putting them on a higher level of understanding in terms of their illness and the ramifications associated with different treatment options. This, participants believed, would allow them to have a "more detailed important discussion with their physician."

ENTICERS

This theme is typified by the Internet sites that participants experienced as interesting and useful. Participants expressed interest in further exploring the Internet as an information tool, "it's amazing how much information is available if you have the know how."

Overall, the participants enjoyed using the computer and the Internet to stay in touch with other people, perform research, and use as a tool to look up news items or medical information. For non-health related topics, participants used various Internet sources to locate information on theater tickets, legal information, investment research, genealogy and recipes.

FUTURE POTENTIAL

Participants discussed how they planned on using the Internet to manage their health care in the near future. Overall, participants felt the Internet was a good resource because it provided them with alternatives for their health care, enabled them to critique the qualifications of their provider, obtain important and factual information, and use as a source for quick up-dates to information on a health related topic. One participant went as far as to describe the sources available on the Internet as today's 800 numbers:

I think of web sites as the new 800 numbers. Before the Internet was big you would call an 800 number to get information about a disease or organization. Now everybody, every organization and disease has a web site that you can get the homepage and you see the linkage—you know you can go through the links and see what is available that way.

All of the participants responded that they would use the Internet to find information on physicians, health conditions, complications, treatments and medications. As a corollary, participants felt that the Internet provided them with the means to become a better, more informed patient who could ask their provider better questions. And asking better questions, they believed, would lead to better health outcomes.

DISCUSSION

Results gathered from the questionnaires and interviews allowed for the generation of three conclusions.

First, the adoption of constructivist, self-directed techniques to teach older adults how to locate medical information using the Internet helped them to overcome some of the barriers (technical, navigational, and recall) they encountered when learning to use a computer. For example, participants would get easily confused regarding where to type a URL to navigate to a new web site. The instruction helped to clear up this kind of confusion by requiring

participants to repeat the same skills over and over again. Furthermore, providing older adults with a safe learning environment, where they can freely make mistakes, and then learn from those mistakes empowered them to overcome their feelings of anxiety toward the computer; to master navigational issues of the Internet software, and to feel confident in their abilities to effectively use the computer.[41,42,43,44,45,46,47]

Feelings of anxiety and efficacy can be related to the themes of digital disparity and barriers, which were identified during the analysis of the interviews conducted with individual participants. By providing instruction to older adults on how to use a computer to locate health information on the Internet, negative feelings toward the use of the computer along with barriers such as the lack of technical and software skills may be reduced, which can lead to lower feelings of anxiety and higher feelings of efficacy.

Knox[48] stated that adults expect that they will be proficient in using the necessary skills to be a productive citizen. When there is a discrepancy between an adult's current level and desired levels of proficiency, they may be motivated to acquire the skills needed to become proficient in a deficient area. As computer use proliferates and the Internet becomes a standard method of acquiring medical information, many older adults will be less than proficient using these new technologies, and may be motivated to learn the required skills. Use of constructivist[49] and self-directed teaching methods help develop these skills by placing the older adult in learning environments that require them to solve problems that are directly related to finding relevant medical information using the Internet. These methods help the older adult become proficient at using the computer and the Internet, but more importantly, they help the participant become a self directed learner when finding medical information related to their own health.

Second, teaching older adults how to look up high quality health information lead to a feeling or desire to become more participatory in the process of their health care. Recent research[7] shows that as older adults go online, a majority (53%) of them will use the Internet to locate health related information. As older adults continue to use the Internet, it is highly probable that they will use this information to take a more active role in their health care. The Pew Internet & Life[1] project reported that seven million people search the Internet each day to locate health related information. This information helps individuals understand their illnesses,

verify diagnoses, investigate treatment options, check physicians' credentials and learn more about current medications. As health consumers become more informed, research[28,29,30,31,32] shows that many of them will ask more questions and demand more information from their PCP. These facts correspond directly with the themes of Health Beliefs, Enticers and Future Potential. With their responses on the questionnaires and through the subsequent interviews, participants acknowledged that the Internet can be used to locate health related information that allows them to take a more active role in their own health care, and work collaboratively with their PCP. These facts also underscore the hypothesis that by lessening participants level of anxiety toward the computer, and heightening their levels of efficacy, elderly adults develop a greater desire to participate in their own health care.

This case study showed that when instructed how to use the Internet to access health related information, older adults report a greater desire to participate in their own health care. However, these data and the current literature on how older adults use the Internet is based on self report and not verifiable evidence.

Third, access continues to be a barrier for those who don't have a home computer with Internet access. Research[50,7] has shown that one of the major reasons older adults lag behind other populations in computer and Internet use is that the computer is not interwoven into their everyday lives. Younger populations make use of computers in school or at work, while older adults contact with computers is limited to the public library or via children, grandchildren or close relatives. Because of this trend, of the 56% of the American population currently online, only 15%, which is 65 or older, have direct access to the Internet. This validates the findings detailed above that describe how older adults who become ill or house bound where unable to use the Internet to locate health information because they lacked access in their home, thus, they were unable to get to a facility that had Internet accessible computers. This also highlights the need to include caregivers and family members who are charged with monitoring, maintaining, and providing health related services in the training programs designed to teach older adults how to use the Internet to locate health related information. This will insure that individuals who lack direct access can benefit from the health information found on the Internet.

FUTURE RESEARCH

To substantiate the findings of this study and show that older adults are actually taking a more active role in their own health care due to Internet training, carefully designed studies must be created that document how Internet savvy older adults interact with health professionals and what activities they engage in that allow them to participate in their health care. Finally, as part of this research agenda, measurements need to be adopted that document changes in older adults' locus of control. One important question that will emerge from this line of research is whether training the elderly to use the Internet changes their locus of control from an external to an internal orientation, and whether an internal orientation manifests itself by older adults becoming more participatory in their own health care.

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