



Research Brief: Technology and Health Education: An Exploratory Study of Older Chinese Immigrants

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Abstract

Technology advances, especially in the Internet, provide new tools to deliver health education to limited English proficient immigrants. This paper presents the findings of a qualitative descriptive study of older limited English proficient Chinese immigrants' perspectives regarding computer-based health education. The sample consisted of 33 foreign-born Chinese recruited in Seattle, Washington. Data were generated through six focus groups and an 18-item demographic questionnaire. The analyses revealed that the majority was not skillful in computer use and Internet browsing, and the Internet was not a common health information source. Nevertheless, participants were supportive of having computer-based health information designed for Chinese immigrants. Interface designs, interface features, and content for the computer-based health education were discussed. The results support developing more computer-based programs requiring minimal computer, English language, and health literacy for immigrants, as well as investigations of cultural influence on the suitability and cost-effectiveness of computer-based health education for Chinese immigrants.

Keywords

Chinese Americans; Chinese immigrants; Computer technology; Focus groups; Health education; Information behavior; Internet research; Language and medicine

Cover Page Footnote

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ABSTRACT

Technology advances, especially in the Internet, provide new tools to deliver health education to limited English proficient immigrants. This paper presents the findings of a qualitative descriptive study of older limited English proficient Chinese immigrants' perspectives regarding computer-based health education. The sample consisted of 33 foreign-born Chinese recruited in Seattle, Washington. Data were generated through six focus groups and an 18-item demographic questionnaire. The analyses revealed that the majority was not skillful in computer use and Internet browsing, and the Internet was not a common health information source. Nevertheless, participants were supportive of having computer-based health information designed for Chinese immigrants. Interface designs, interface features, and content for the computer-based health education were discussed. The results support developing more computer-based programs requiring minimal computer, English language, and health literacy for immigrants, as well as investigations of cultural influence on the suitability and cost-effectiveness of computer-based health education for Chinese immigrants.

Key words: computer technology, the Internet, health education, Chinese immigrants, focus groups

INTRODUCTION

Health education is an important strategy for health promotion and disease prevention. With technology advances, there is growing interest in using emerging information and communication technology (Beranova & Sykes, 2007; Lewis, 1999), especially the Internet, to deliver health information and provide health education. For example, in 2001, the National Cancer Institute funded four demonstration research programs to determine whether Internet-based information delivery could improve underserved populations' access to accurate cancer care information (Kreps, 2005).

English is the primary language of computer interfaces in the United States (US) and of the Internet (Lazarus & Mora, 2000); to successfully access information through the Internet requires familiarity with English, as well as skills in computer use and Internet browsing. English proficiency is already a contributor to the US health disparities in limited English proficient (LEP) immigrants (Diaz, Roberts, Goldman, Weitzen, & Eaton, 2008; Ponce, Hays, & Cunningham, 2006). It is unclear how suitable computer-based health education approaches would be for LEP immigrants who grew up with limited exposure to computers.

Chinese are the largest Asian subgroup in the US with more than three million Americans of Chinese descent. Seventy percent of Chinese Americans are foreign-born, more than 80% speak a language other than English at home, and less than 50% speak English "very well" or "fluently" (American Community Survey, 2007). This paper presents results from a qualitative descriptive study of LEP Chinese immigrants' perspectives regarding computer-based health education, and provides insights for the integration of computer technology into health education to promote the health of LEP Chinese immigrants.

METHODS

The study was conducted in Seattle, Washington. All data were collected after we obtained written informed consent from the participants.

Setting and Sampling

Participants were recruited through a computer class offered by a local social service agency serving low-income LEP Chinese immigrants. Individuals meeting the following criteria were approached by the instructor at class registration: (a) age 18 and over, (b) able to understand and speak the Chinese or Cantonese dialect, and (c) able to read elementary written Chinese. All prospective participants were assured that their participation was voluntary and their refusal would not affect the services they received. Twenty dollars were offered as a token of appreciation for the participant's time.

Data Collection

Six focus groups (FGs) were conducted between May 2003 and October 2003. An experienced Chinese-speaking qualitative researcher facilitated the interviews; a Chinese- and Cantonese-speaking moderator was present to take field notes and interpret Cantonese as needed. Each group had four to seven participants and lasted two hours. They were asked about their experiences with computers and the Internet, health information seeking behaviors, and suggestions for the features and content of computer-based health education for Chinese immigrants.

Each participant also completed an 18-item survey at the beginning of the FGs. The purpose was to gather demographic information and assess their experiences with computers and the Internet. Questions included gender, age, birthplace, education, fluency of languages, and computer use experiences.

Analysis

Survey responses were analyzed, using statistical software SPSS 12.0. The FG moderator transcribed and translated all taped FGs into English on paper, and then the facilitator reviewed each transcript and assigned descriptive codes to texts relevant to the study aims. Descriptive codes were refined and grouped into categories or themes through an iterative process of reading each transcript. The facilitator, moderator, and principal investigator met regularly to discuss data collection issues and analyses to ensure data quality and explore possible alternative interpretations of the data.

RESULTS

Sample Characteristics

The sample consisted of 33 ethnic Chinese from China (n = 25), Taiwan (n = 5) and Vietnam (n = 3). Eighteen participants (55%) were female. The majority (n = 26, 79%) arrived in the US before 2000. Their age ranged from 19 to 87 with an average of 65 years (SD = 15.9). The average years of education was 13 years (SD = 3). The majority (91%) reported speaking limited English. Twenty-one participants (63%) had a computer at home and 49% (n = 16) had Internet access at home. The majority (n = 27, 82%) needed assistance with computer use. More information is provided in Table 1 below.

Table 1. Description of the Sample (n = 33)

Variables	Frequency	Percent %
Have Access to Internet at Home		
Yes	16	48.5
No	14	42.4
Missing	3	9.1
Use Email		
Yes	13	39.4
No	18	54.5
Missing	2	6.1
Use Chinese Internet for Health Information		
Yes	12	36.4
No	18	54.5
Missing	3	9.1
Use English Internet for Health Information		
Yes	7	21.2
No	23	69.7
Missing	3	9.1
Note. Some participants were fluent in multiple languages.		

Sources of Health Information

Regardless of the language used by the Internet interface, Internet was not a common source of health information for our participants. Chinese newspapers, health care providers, workshops at a local Chinese agency, books, prescription bottles, and family members were their usual sources of health information. For those who used the Internet for health information, Chinese language websites were preferred over English language websites. “[I] use both Chinese and English [websites]. I prefer the ones from China (laugh) because I am Chinese. My first choice is Chinese [language] sites,” said a participant. A few participants used computers prior to immigration. They were more accustomed to searching for health information on the Internet than their counterparts.

Recommendations for Computer-Based Health Information

Despite the fact that most participants were not skillful in computer use and Internet browsing, they were supportive of having computer-based health information designed for Chinese immigrants. Interface designs, features and content were of discussion interest.

Interface designs. The participants discussed the pros and cons of DVD, the Internet, and video (Table 2). The DVD idea was proposed by those who were computer illiterate but able to use a DVD player. “It would be more convenient if the disk can be played in a DVD (in English) player,” explained a participant. The primary concerns about DVD were lack of flexibility to read information from the middle of the program and inability to be updated regularly. One participant, however, suggested that although “you can’t update [the information], [DVD] could be used for building foundations.”

Table 2. Participants’ Perspectives of the Pros and Cons of Three Interface Designs

Interface Design	Pros	Cons
DVD	<ul style="list-style-type: none"> • Could be a means to provide basic information • Able to play it with a DVD player (other than a computer), making DVD more accessible to those who are not skillful in computer use or do not have a computer with a DVD player • Able to play it at any time • Able to watch it in a private space • Easy to share the information by passing the disk onto another person • Requires less screening time as it is required for the Internet search 	<ul style="list-style-type: none"> • Unable to update the information all the time • Unable to know the publishing date • Could only be shared with one person each time • Have to watch it from the beginning each time (unless it has the sections option in the design)
Internet	<ul style="list-style-type: none"> • Able to update the information all the time • Able to share with many people at the same time • Able to directly email the URLs to others • Able to focus the search on the topics of interest 	<ul style="list-style-type: none"> • Some websites have time limit • May block others’ access to the telephone if using dial-up to access the Internet in the household • Higher cost involved for the Internet connection
Videos	<ul style="list-style-type: none"> • Cheap 	<ul style="list-style-type: none"> • Easy to break

Features. Presenting information in Chinese language was considered essential. “It’s easier to learn if it’s in Chinese.... If we don’t understand it, it’s useless,” said a participant. Many participants also supported the idea of including English language in the web page text, at least for important terminology and phrases, because “if we remember [it] in Chinese and English, we learn two things at once.” They could in turn better communicate with their providers. “[My dentist] asked me what medications I was taking.... If I had known the English [names of my medications], I would have been able to tell her,” said a participant. Another participant explained the benefit of including English texts, “if it’s written in Chinese but not well translated, you don’t know what it is. If it’s in English, when your children are with you, they could read it and tell you about it.” Other suggested features included pictures, large fonts, simple and easy-to-understand content, using chat room or suggestion boxes for questions and answers for the Internet, and subtitles for DVD.

Content. Participants wanted to take better care of their own health and be able to better communicate with their providers. To that end, topical areas they recommended included common health problems, treatment-related information, and state government insurance programs.

Examples of health problems ranged from common chronic diseases such as diabetes, hypertension, gout, or cataract to minor problems, including common cold, fungal infection of the nails, increase of urination at night, ringing in the ears, or increased tearing that “do not cause pain but are annoying.” Treatment-related information included medication names in English, medication side effects, laboratory tests, proper dosages for Chinese people (because “Chinese and Westerners have different bodily constitution”), and non-Western treatment modalities. Low cost and ease of use were two treatment characteristics participants emphasized. Here are illustrative quotes:

Many old people have diabetes, hypertension, or hyperlipemia. Some are not knowledgeable about what they can do when talking about diabetes. Only sugar is not okay to eat (laugh)?! ... Young people have children. So like when they have a cold, what do you do? ... Things like these, common sense for people to understand. (Participant 30)

After I came to America, I went to many health workshops. But rarely do they talk about massage and accupressure points.... One of our friends had a toothache.... This person used Chinese medicine patches. Put it wherever the pain was. After two days and one night, it was cured. Something like this that does not cost a lot.... Massage, everyone can do it.... [Things like these], simple and do not cost a lot of money. (Participant 28)

DISCUSSION

Computer technology and the Internet provide interesting and interactive interfaces to deliver health education and the potential to distribute health information widely to reach a broad audience. The Pew Internet and American Life Project’s survey (Fox, 2006) shows that approximately 113 million US adults use the Internet to access health-related information. Moreover, computer technology and the Internet can function as an empowering tool for knowledge acquisition, communication, and support (D’Alessandro, 2001; Korp, 2006). Electronic health records (EHR) systems, which are considered “the central nervous system of the New Model of Primary Care” (Klabunde et al., 2007, p. 1197), is an example of this function. It is believed that technology-aided patient education and patient-provider communication, which are capacities of EHR systems, empower patients and can transform current health care to patient-centered care (D’Alessandro, 2001; Klabunde et al., 2007; Kukafka et al., 2007).

Despite potential benefits for health education and patient empowerment, our study findings suggest that LEP immigrants who have had limited exposure to computers are unlikely to fully benefit from these technological innovations. Computer, English language, and health literacy are barriers to their use of computers and the Internet. As more information is available over the Internet and as more hospitals and providers adopt EHR systems, equitably distributed health communication resources and skills become imperative to resolve disparities in health communication in LEP immigrants (Office of Disease Prevention & Health Promotion, 2000). Our study findings reinforce the call for developing more programs that require minimal computer, English language, and health literacy for LEP immigrants to access health information (Lazarus & Mora, 2000; Office of Disease Prevention & Health Promotion, 2000). More government investment in community resources for LEP immigrants’ language and computer skills enhancement is urgently needed. To produce effective computer-based health education, further investigation must also identify approaches to tailor variables for subgroups of LEP immigrants. Participation of immigrant communities in the design and evaluation of the programs is vital. These advances will ensure the adoption or development of effective multilingual interface designs when hospitals and clinics invest in their EHR systems to serve the demographics of their LEP clientele.

Findings on health information seeking behaviors represent another area that warrants further examination. Given our participants' ages and the era in which they grew up, understandably the Internet was not their usual health information source. Using a nationally representative sample of six Asian subgroups, Shive and colleagues (2007) found that Chinese (mean age = 40.7 years) used books or other printed material and friends or family more often than the Internet for health information. Results of Woodall and colleagues' survey (in press) of 899 Chinese immigrants (age range = 20-64 years, 60% = 45-64 years) in Seattle and Vancouver BC also showed low use of the Internet for health information. Chinese language television, Chinese language newspapers, friends, and doctors and nurses were the health information sources reported by more than 50% of their participants. Future research is needed to identify the ways in which computer technology and the Internet could be integrated with other sources of health information and produce optimal health education results in Chinese immigrants.

For decades, medical anthropologists and medical sociologists have called attention to the sociocultural influence on health seeking behaviors (Chrisman, 1977). With the increasing accessibility of computer and the Internet worldwide, will future Chinese immigrants turn to the Internet for health information more often than the current Chinese immigrants? In addition to above-mentioned computer, English language, and health literacy barriers, researchers need to examine the suitability and cost-effectiveness of computer-based health education within the cultural contexts of the current, and future, Chinese immigrants.

Limitations

Focus groups provided rich information to understand LEP Chinese immigrants' perspectives about computer-based health education. Nevertheless, it is important to note that given the sample size and the intent of qualitative studies, our findings have limited generalizability. Also, given the mean age of our sample, our results may only represent the experiences of older LEP Chinese immigrants.

CONCLUSION

Computer technology and the Internet have tremendous potential to deliver health information and provide health education to a wide audience. However, computer, English language, and health literacy keep Chinese and potentially other LEP immigrants from fully benefiting from computer-based health information. Equity in communication resources and skills is critical to address LEP immigrants' health disparities through access to electronic information resources. More research is needed to identify effectively tailored computer-based health education for Chinese and other LEP immigrants.

REFERENCES

- American Community Survey. (2007). Selected Population Profile in the United States. U.S. Census Bureau American Factfinder. Retrieved October 25, 2008, from <http://factfinder.census.gov>
- Beranova, E., & Sykes, C. (2007). A systematic review of computer-based software for educating patients with coronary heart disease. *Patient Education and Counseling*, 66, 21-28.
- Chrisman, N. J. (1977). The health seeking process: An approach to the natural history of illness. *Culture, Medicine and Psychiatry*, 1, 351-377.
- D'Alessandro, D. M. (2001). Empowering children and families with information technology. *Archives of Pediatric Adolescent Medicine*, 155, 1131-1136.

- Diaz, J. A., Roberts, M. B., Goldman, R. E., Weitzen, S., & Eaton, C. B. (2008). Effect of language on colorectal cancer screening among Latinos and non-Latinos. *Cancer Epidemiology Biomarkers Prevention*, 17(8), 2169-2173.
- Fox, S. (2006). Online health search 2006. Washington, DC: Pew Internet and American Life Project. Retrieved September 3, 2008, from http://www.pewinternet.org/PPF/r/190/report_display.asp
- Klabunde, C. N., Lanier, D., Breslau, E. S., Zapka, J. G., Fletcher, R. H., Ransohoff, D. F., et al. (2007). Improving colorectal cancer screening in primary care practice: Innovative strategies and future directions. *Journal of General Internal Medicine*, 22, 1195-1205.
- Korp, P. (2006). Health on the Internet: Implications for health promotion. *Health Education Research*, 21, 78-86.
- Kreps, G. L. (2005). Disseminating relevant health information to underserved audiences: Implications of the Digital Divide Pilot Projects. *Journal of Medical Library Association*, 93(4), S68-S73.
- Kukafka, R., Ancker, J. S., Chan, C., Chelico, J., Khan, S., Mortoti, S., et al. (2007). Redesigning electronic health record systems to support public health. *Journal of Biomedical Informatics*, 40, 398-409.
- Lazarus, W., & Mora, F. (2000). Online content for low-income and underserved Americans: The digital divide's new frontier. Santa Monica, CA: The Children's Partnership. Retrieved October 4, 2008, from www.childrenspartnership.org
- Lewis, D. (1999). Computer-based approaches to patient education: A review of the literature. *Journal of the American Medical Informatics Association*, 6, 272-282.
- Office of Disease Prevention & Health Promotion. (2000). *Healthy people 2010: Understanding and improving health*. Washington, DC: US Department of Health and Human Services.
- Ponce, N. A., Hays, R. D., & Cunningham, W. E. (2006). Linguistic disparities in health care access and health status among older adults. *Journal of General Internal Medicine*, 21, 786-791.
- Shive, S. E., Ma, G. X., Tan, Y., Toubbeh, J. I., Parameswaran, L., & Halowich, J. (2007). Asian American subgroup differences in sources of health information and predictors of screening behavior. *California Journal of Health Promotion*, 5(2), 112-127.
- Woodall, E. D., Taylor, V. M., Teh, C., Li, L., Acorda, E., Tu, S.-P., et al. (in press). Sources of health information among Chinese immigrants to the Pacific Northwest. *Journal of Cancer Education*.

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