Health Information Seeking of Foreign–Born Population in U.S.

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〈Abstract〉

This study aimed to understand features of foreign–born population’s health information seeking behaviors, so that the results can provide evidences which can be utilized in designing health information dissemination. It was found that foreign–born population has less experience on health information seeking than U.S. born and more negative perceptions on health information seeking experiences. Among foreign–born population, it seems that underserved people have less experience of health information seeking, but when they need to find health information they go to doctors or health providers. The Internet is the most dominant source of health information among foreign–born population.

Key Words: Health information seeking, Foreign–born, immigrants, HINTS, health information

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I. Introduction

The immigrant population in the United States has been steadily growing since the 1970s. As of 2010, there were approximately 40 million foreign-born individuals living in the U.S., accounting for 13% of the general population (U.S. Census Bureau, 2012). Although foreign-born population is an important component of American public health, they have unique features across health domains which are different from U.S.-born population. For example, there are reported health disparities among different racial/ethnic immigrant groups as well as between U.S.-born and immigrants, such as relatively higher rates of cervix, stomach, liver, and gallbladder cancers for Hispanics than non-Hispanics (American Cancer Society, 2007), higher rates of heart disease and malignant neoplasms of Vietnamese than other Asian population in U.S. (Woodall et al., 2009), higher rates of some cancers, tuberculosis and hepatitis B virus of Chinese immigrants than other immigrant groups (Chen, Kendall, & Shyu, 2010). In addition to health disparities, lower access to and use of health care systems for regular, emergency and preventive care (Goel et al., 2003; Cunningham & Artiga, 2009; Uitters, Deville, Foets, Spreeuwenberg, & Groenewegen, 2009), lower insurance rates (Cunningham & Artiga, 2009; Derose, Bahney, Lurie, & Escarce, 2009), and lower health care expenditure (Mohanty et al., 2005) have been reported. Well-known barriers which prevent foreign-born populations from accessing health care systems are language barriers, cultural
differences in health belief and health care systems, socio-economic barriers and so on (Zhao, 2010).

For this foreign-born population who experiences health disparity, consumer health information has been considered as an important way for promoting healthy practices (Clayman, Manganello, Viswanath, Hesse & Arora, 2010; Kreps & Sparks, 2008). Credible health information which can meet unique health information needs would help them maintain healthy life, change unhealthy behaviors, cope with health problems, and find appropriate health care systems. However, it has been reported that foreign-born population experience more difficulties to access health information, and consequently, lack of access to health information even increases knowledge gap and widens inequalities in health (Clayman, Manganello, Viswanath, Hesse & Arora, 2010; Vanderpool, Kornfeld, Rutten, & Squiers, 2009; Shim, 2008; Beacom & Newman, 2010).

This study aims to understand features of foreign-born population’s health information seeking behaviors, so that the understanding can provide evidences which can be utilized in designing health information dissemination. In particular, this study focuses on characterizing features of health information users in terms of their choice of health information sources. It has been known that selecting patterns of sources of health information vary depending on ethnicity, education level, age, and so on (Chen, Kendall, & Shyu, 2010; Courtright, 2005; Ngueyn & Bellamy, 2006; Woodall, et al., 2006; Woodall, et al., 2009). However, there is a lack of study which compared features of foreign-born people in terms
of their choices of health information sources. By understanding foreign-born population’s health information seeking behaviors, health information can be distributed to target users more effectively, and consequently, it will reduce knowledge gaps in health information and ameliorate health disparities of foreign-born populations. The following research questions will guide this study:

RQ1: What are differences between U.S.-born and foreign-born populations in health information seeking experiences, sources of health information, and perceptions on health information seeking?

RQ2: What are the characteristics of foreign-born populations who had no experience in searching health information?

RQ3: What are the characteristics of foreign-born populations who use different sources of health information?

RQ4: How do the foreign-born population’s perceptions on health information seeking differ depending on sources of health information?

II. RELATED STUDIES

Research on foreign-born populations (or immigrants)’ health information seeking behaviors mostly reported disparities in their health information seeking. Vanderpool, Kornfeld, Rutten, and Squiers (2009) and Zhao (2010) examined cancer information seeking behaviors of Spanish-speaking Hispanics and Foreign-born
Hispanics, respectively, using HINTS 2005 data set. They reported that Hispanics have less experience on seeking cancer information, more obstacles during the health information seeking process (i.e., more effort and frustration), less confidence in obtaining health information, less trust on sources of health information. Chen, Kendal, and Shyu (2010) and Yi, Stvilia, and Mon (2012) studies, which examined Chinese and Korean immigrants, explained that major barriers to seeking health information are language and cultural barriers.

There is consensus that the understandings on preferred/dominant sources of health information might improve health information accessibility. Since it has been assumed that each ethnic group has different preference on selecting sources of health information, researchers have investigated where each ethnic group looks for health information. Woodall, Taylor, Yasui, Ngo-Metzger, Burke, Thai, and Jackson (2006) reported that the most common health information sources for Vietnamese men are Vietnamese newspapers/magazines, Vietnamese and English language television, Vietnamese radio, and friends and family. Chen, Kendall, and Shyu (2010)’s and Woodall, Taylor, The, Li, Acorda, Tu, Yasui, Hislop (2009)’s studies demonstrated that Chinese newspapers, Chinese language television, friends and family and experts (health care providers or insurance companies) are primary sources of health information and the Internet was addressed by only few. Whereas these studies demonstrated similar trends among Asian immigrants, Nguyen and Bellamy (2006)’s study, which analyzed 2003 HINTS data, showed a little bit different pattern. When Asians were asked
where they actually looked for cancer information, Internet was the popular source. Courtright (2005) found that Latino newcomers are often assisted by both social networks (family and friends) and key institutions (City Hall, schools, workplaces etc.) when they seek health-related information.

Although these studies attempted to find common sources of health information for each ethnic group, it has been shown that there are factors which influence on selecting health information sources. Woodall et al. (2006) reported that sources of health information vary among subgroups of Vietnamese men depending on their marital status, English fluency, education, annual income, and self-reported health status. Woodall et al. (2009) found that although Chinese language media is an important source of health information for Chinese immigrants, availability of media in a specific area (i.e., the number of newspapers, radio and television stations) affects the use of Chinese language media.

III. METHOD

With the purpose of monitoring U.S. public’s cancer-related information seeking behaviors, the Health Information National Trends Survey (HINTS) has collected nationally representative data. HINTS collected data biennially (HINTS 1 (2003), HINTS 2 (2005) and HINTS 3 (2007)), but for HINTS 4, five data collection cycles are planed over the course of three years from 2011 to 2014. The current study used the most recent version, HINTS 4 Cycle 3
data which were collected from September 2013 through December 2013 and released in May 2014. HINTS 4 Cycle 3 data was collected via mail survey using a national listing of addresses available from the United States Postal Service (USPS). For the HINTS 4 Cycle 3, 12,010 packets were mailed and 3,185 answered and completed the survey (Westat, 2014).

Although the HINTS data was collected for understanding cancer-related information seeking behavior, this study selected only questions on general (not limited to cancer-related) health-related information seeking behaviors and analyzed the data in two parts. First, differences between U.S.-born and foreign-born populations in health information seeking experiences, selected sources of health information and perceptions on health information seeking behavior were analyzed. Second, features of foreign-born populations were characterized in terms of selected health information sources. The dependent variables were three major sources of health information, Print materials, Doctor/health provider, and Internet, and no experience on health information seeking. Since the participants were asked to answer “The most recent time you looked for information about health or medical topics, where did you go first?” this data demonstrate only the first choice of health information sources. The features of foreign-born populations were identified through the following independent variables: 1) socio-demographic variables: Employment, Marital status, Race, Education, Annual house income, Age, Gender, English fluency, Internet access, Ownership of a tablet computer, and Ownership of a smartphone, 2) health status and health
insurance: Health status and Health insurance covered, and 3) perceptions on health information seeking: Intended recipients of health information, Efforts on seeking health information, Frustration during seeking health information process, Concerns about quality of health information, Difficulty of understanding health information, and Confidence on finding health information. Chi-square test was conducted using the statistical program IBM SPSS.

**IV. RESULTS**

**Socio-Demographic Characteristics**

Table 1 presents socio-demographic characteristics of foreign-born population in U.S. who participated in HINTS 4 Cycle 3 study. It is obvious that foreign-born population has significantly different demographic features than U.S.-born population. Compared to U.S.-born, foreign-born populations were characterized as more unemployed, lower education level (esp. less than high school), lower income, and lower health insurance coverage.

| <Table 1> Socio-demographic characteristics |
|--------------------------------------------|
| Employment | Foreign-born (%) | U.S.-born (%) | $\chi^2$ | df |
|------------|------------------|---------------|---------|----|
| Employment | 52.9             | 50.0          | 1836.645** | 16 |
|                                    |       |       |
|------------------------------------|-------|-------|
| Unemployed                         | 10.7  | 4.8   |
| Homemaker                          | 9.9   | 5.4   |
| Retired                            | 17.3  | 27.3  |
| Student                            | 1.3   | 1.5   |
| Disabled                           | 3.8   | 6.9   |
| **Marital status**                 |       |       |
| Married                            | 54.6  | 46.0  |
| Living as married                  | 4.1   | 3.2   |
| Divorce/widowed/separated          | 25.3  | 31.6  |
| Single, never been married         | 14.1  | 17.7  |
| **Race**                           |       |       |
| Hispanic                           | 49.3  | 9.5   |
| Non-Hispanic White                 | 13.1  | 58.2  |
| Non-Hispanic Black or African      | 8.8   | 14.4  |
| American Indian or Alaska Native   | 0.0   | 0.3   |
| Non-Hispanic Asian                 | 16.9  | 0.9   |
| Non-Hispanic Hawaiian or other     | 0.2   | 0.0   |
| Pacific Islander                    |       |       |
| Non-Hispanic multiple races        | 0.9   | 3.2   |
| mentioned                          |       |       |
| **Education**                      |       |       |
| Less than high school              | 20.6  | 7.2   |
| High school graduate               | 17.1  | 23.4  |
| Some college                       | 22.5  | 31.2  |
| Bachelor’s degree                  | 24.6  | 22.6  |
| Post-Baccalaureate degree          | 13.9  | 14.4  |
| **Annual household income**        |       |       |
| Less than $20,000                   | 26.8  | 20.5  |
| $20,000 to <$35,000                | 16.1  | 12.7  |
|                    | Study 1 | Study 2 |
|--------------------|---------|---------|
| $35,000 to < $50,000 | 12.9    | 12.5    |
| $50,000 to < $75,000 | 11.4    | 14.7    |
| $75,000 or more     | 21.4    | 26.4    |
| Speaking English    |         |         |
| Very well           | 44.7    | 90.6    |
| Well                | 24.4    | 5.7     |
| Not well            | 24.0    | 0.4     |
| Not at all          | 6.6     | 0.2     |
| Age                 |         |         |
| 18–34               | 14.6    | 13.4    |
| 35–49               | 33.2    | 20.5    |
| 50–64               | 30.2    | 34.9    |
| 65–74               | 12.2    | 17.3    |
| 75+                 | 7.9     | 12.2    |
| Gender              |         |         |
| Male                | 38.6    | 35.6    |
| Female              | 53.8    | 56.2    |
| Health insurance covered |       |         |
| Yes                 | 78.2    | 89.2    |
| No                  | 20.8    | 9.3     |
| Health status       |         |         |
| Excellent           | 13.7    | 10.4    |
| Very good           | 25.5    | 36.0    |
| Good                | 36.8    | 35.1    |
| Fair                | 18.6    | 12.5    |
| Poor                | 3.6     | 2.9     |

* P < .05; ** p < .01
Health information seeking between U.S.-born and foreign-born populations

It was found that 80.5% of U.S.-born population and 71.5% of foreign-born population had experiences of seeking health information. Chi-square test revealed that birth places had a significant effect on whether people had health information seeking experiences or not (Table 2).

<Table 2> Health information seeking experience of U.S.-born and foreign-born populations

| Health information seeking experience | Foreign-born-population | U.S.-born-population |
|---------------------------------------|-------------------------|-----------------------|
|                                       | Frequency | %     | Frequency | %     |
| Yes                                   | 381       | 71.5  | 2091      | 80.5  |
| No                                    | 152       | 28.5  | 507       | 19.5  |
| Total                                 | 533       | 100.0 | 2598      | 100.0 |

Sources of health information that participants selected first for seeking health information were analyzed. Overall, first selected health information sources showed similar patterns between foreign-born and U.S.-born populations: 1) Internet (33.4% (foreign), 44.0% (U.S.)), 2) Doctor or health care provider (13.9% (foreign), 12.4% (U.S.)), and 3) Brochures, pamphlets, etc. (3.4% (foreign), 3.3% (U.S.)). However, it has been showed that some sources including, Internet, Books, Family, Magazines, Newspapers, Telephone information, and Library were more preferred by U.S.-born; whereas Doctors/health care provider and Friend/
co-workers were more preferred by Foreign-born population (Fig. 1). Chi-square test revealed that birth places had a significant effect on selecting health information sources ($\chi^2 (31) = 79.117, p < .01$)

HINTS 4 Cycle 3 has some questions which further explore usage of online sources for health information. It was shown that more percentages of U.S.-born population have online experiences and own tablet computers and smartphones (Table 3). U.S.-born population were more used SNS and online forums or support groups for sharing health information; whereas, foreign-born population more used YouTube for obtaining health information (Table 4).
### Table 3: Online and technology experience

|                           | Foreign-born (%) | U.S.-born (%) | $\chi^2$ | df |
|---------------------------|------------------|---------------|----------|----|
| Do you ever go online?    |                  |               |          |    |
| Yes                       | 64.4             | 73.7          | 32.242** | 4  |
| No                        | 34.7             | 25.8          |          |    |
| In the last 12 months, have you visited a SNS? | | | | |
| Yes                       | 49.2             | 52.2          |          |    |
| No                        | 15.0             | 21.0          |          |    |
| In the last 12 months, have you written in an online diary or blog? | | | | |
| Yes                       | 5.1              | 4.3           |          |    |
| No                        | 58.3             | 68.8          |          |    |
| Do you have a tablet computer? | | | | |
| Yes                       | 32.5             | 34.6          | 96.672** | 6  |
| No                        | 61.5             | 64.0          |          |    |
| Do you have a smartphone? | | | | |
| Yes                       | 44.1             | 49.0          | 103.662**| 6  |
| No                        | 49.9             | 49.7          |          |    |

* P < 0.05; ** p < 0.01

### Table 4: Use of online sources for health information

|                           | Foreign-born (%) | U.S.-born (%) | $\chi^2$ | df |
|---------------------------|------------------|---------------|----------|----|
| In the last 12 months, have you shared health information on SNS? | | | | |
| Yes                       | 14.0             | 14.3          | 51.911** | 10 |
| No                        | 49.5             | 59.0          |          |    |
| In the last 12 months, have you participated in an online forum or support | | | | |
|                           |                  |               |          |    |
|                           | 47.390**         | 10            |          |    |
Table 5 shows perceptions on health information seeking experiences. It appears that foreign-born population reported more efforts for finding health information and more difficulties in understanding health information. Also, foreign-born population were less confident than U.S.-born population in obtaining health-related information.

<Table 5> Perceptions on health information seeking between Foreign-born population and U.S.-born population

|                                          | Foreign-born (%) | U.S.-born (%) | $\chi^2$ | df  |
|------------------------------------------|------------------|---------------|----------|-----|
| Health information seeking for…         |                  |               |          |     |
| Yourself                                 | 38.6             | 48.2          | 50.537** | 10  |
| Someone else                             | 9.4              | 13.8          |          |     |
| Both                                     | 22.7             | 17.9          |          |     |
| It took a lot of efforts                 |                  |               | 79.242** | 12  |
| Strongly agree                           | 12.4             | 7.5           |          |     |
| Somewhat agree                           | 20.8             | 19.9          |          |     |
| Somewhat disagree                        | 17.8             | 24.8          |          |     |
| Response                                    | Group 1  | Group 2  | Test Statistic | df | Notes  |
|--------------------------------------------|---------|---------|----------------|----|--------|
| Strongly disagree                          | 16.1    | 26.1    |                |    |        |
| Felt frustrated during the search process  | 85.638**| 14      |                |    |        |
| Strongly agree                             | 8.3     | 7.7     |                |    |        |
| Somewhat agree                             | 13.9    | 17.9    |                |    |        |
| Somewhat disagree                          | 19.1    | 21.7    |                |    |        |
| Strongly disagree                          | 22.3    | 30.6    |                |    |        |
| Concerned about quality of information     | 70.848**| 12      |                |    |        |
| Strongly agree                             | 15.8    | 12.9    |                |    |        |
| Somewhat agree                             | 22.0    | 26.4    |                |    |        |
| Somewhat disagree                          | 14.8    | 19.0    |                |    |        |
| Strongly disagree                          | 12.8    | 19.4    |                |    |        |
| Hard to understand                         | 145.554**| 14      |                |    |        |
| Strongly agree                             | 6.8     | 5.8     |                |    |        |
| Somewhat agree                             | 17.6    | 14.2    |                |    |        |
| Somewhat disagree                          | 19.7    | 25.6    |                |    |        |
| Strongly disagree                          | 20.1    | 32.0    |                |    |        |
| How confident are you that you could get health-related information? | 67.444**| 12      |                |    |        |
| Completely confident                       | 17.1    | 24.3    |                |    |        |
| Very confident                             | 26.5    | 34.6    |                |    |        |
| Somewhat confident                         | 38.8    | 29.9    |                |    |        |
| A little confident                         | 11.6    | 5.9     |                |    |        |
| Not confident at all                       | 4.1     | 3.1     |                |    |        |
| Did you look or go anywhere else?          | 37.975**| 8       |                |    |        |
| Yes                                        | 23.6    | 27.6    |                |    |        |
| No                                         | 46.2    | 51.0    |                |    |        |

* P < 0.05; ** p < 0.01
Characteristics of foreign-born populations in terms of health information source selection

Characteristics of foreign-born population who selected three major health information sources (Print materials including books and magazines, Doctor/health care provider, and Internet) and those who had not searched health information before were examined in terms of 13 independent variables. Chi-square test revealed that 12 out of 13 independent variables significantly affect on health information source selection or health information seeking experiences. The paragraph below discusses features of foreign-born populations in selecting health information sources and health information search experiences. As noted in Table 6, 28.5% of foreign-born population has never searched health information, 33.4% of them selected Internet as their first choice of health information source, 13.9% selected doctors or health providers, and 2.4% selected books or magazines.

In the socio-demographic category, seven independent variables showed significant differences: employment, marital status, race, education, annual household income, age, and English fluency. For employment, the unemployed, retired, and disabled were more dependent on doctors than other groups of people. The employed dominantly used the Internet as a source of health information, and the homemakers and students revealed high percentages of no experiences on health information seeking. The disabled showed more preference on print materials than other groups. In the case of race, 46% of Hispanics reported that they never searched health
information, non-Hispanic White, non-Hispanic Black or African American, and non-Hispanic Asian dominantly used the Internet. Non-Hispanic African American’s selection of doctor as the first health information source was remarkable compared to other groups of population. Education level demonstrated significant differences in health information seeking experiences. High percentages of high school graduate (56.1%) or less than high school (59.8%) people reported that they never searched health information before, and the Internet was relatively rarely used than other populations. People in less than high school category showed higher dependence on doctor as an information source. People having college degree or more showed high usage of the Internet. Annual house income also demonstrated positive relations with the Internet use for health information seeking, but negative relations with experiences of seeking health information. It was found that low-income people selected doctors and health providers relatively often. Age, as can be expected, had negative relations with the Internet and positive relations with doctor/health provider as sources of health information. Older people tend to use print materials and doctors/health providers to obtain health information. People who are not fluent in speaking English tend not to seek health information or use doctors/health providers; they less used Internet or print materials.

As can be expected, the use of the Internet and possession of digital devices are related to their first choice of health information source as the Internet, and it also related to the health information seeking experiences; people who do not use the Internet or who do
not possess digital devices demonstrated high percentages of no experience of health information seeking.

51.7% of the people who do not have health insurance reported that they had not searched health information. Regarding the health status, it was found that the people who reported their health status as excellent, very good or good, search health information through the Internet; however, interestingly, people who reported their health status as fair or poor demonstrated that 57.7% and 46.2% of them had not searched health information.

<Table 6> Characteristics of foreign-born populations selecting different sources of health information

|                          | Print n=13 | Doctor n=74 | Intern n=178 | None n=152 | \(\chi^2\) | df |
|--------------------------|------------|-------------|--------------|------------|-----------|----|
| Average % of foreign-born population | 2.4%       | 13.9%       | 33.4%        | 28.5%      |           |    |
| Socio-demographic        |            |             |              |            |           |    |
| Employment               |            |             |              |            | 52.834** | 24 |
| Employed                 | 3.1%       | 10.3%       | 53.8%        | 32.7%      |           |    |
| Unemployed               | 4.3%       | 25.5%       | 42.6%        | 27.7%      |           |    |
| Homemaker                | 0%         | 18.6%       | 30.2%        | 51.2%      |           |    |
| Retired                  | 4.2%       | 31.9%       | 19.4%        | 44.4%      |           |    |
| Student                  | 0%         | 0%          | 40.0%        | 60.0%      |           |    |
| Disabled                 | 8.3%       | 33.3%       | 16.7%        | 41.7%      |           |    |
| Married                  | 3.1%       | 19.2%       | 45.4%        | 32.3%      |           |    |
| Living as married        | 0%         | 2.7%        | 3.9%         | 7.2%       |           |    |
| Divorce/widowed/separated| 5.7%       | 17.1%       | 34.3%        | 42.9%      |           |    |
| Single, never been married| 0%         | 11.3%       | 58.5%        | 30.2%      |           |    |
| Race                                      |  |  |  |  |
|------------------------------------------|---|---|---|---|
| Hispanic                                 | 2.4 | 17.0 | 35.0 | 45.6 |
| Non-Hispanic White                       | 3.4 | 13.8 | 56.9 | 25.9 |
| Non-Hispanic Black or African American   | 3.1 | 25.0 | 56.3 | 15.6 |
| Non-Hispanic Asian                       | 5.3 | 13.3 | 54.7 | 26.7 |
| Non-Hispanic Multiple Races Mentioned    | 0   | 0   | 60  | 40  |
| Education                                |  |  |  |  |
| Less than high school                    | 1.1 | 25.3 | 13.8 | 59.8 |
| High school graduate                     | 4.5 | 16.7 | 22.7 | 56.1 |
| Some college                             | 2.0 | 19.4 | 51.0 | 27.6 |
| Bachelor’s degree                        | 4.0 | 14.9 | 54.5 | 26.7 |
| Post-Baccalaureate degree                | 3.3 | 11.7 | 75.0 | 10.0 |
| Annual household income                  |  |  |  |  |
| Less than $20,000                        | 6.9 | 21.8 | 23.8 | 47.5 |
| $20,000 to <$35,000                      | 0   | 20.3 | 40.6 | 39.1 |
| $35,000 to <$50,000                      | 1.8 | 10.5 | 45.6 | 42.1 |
| $50,000 to <$75,000                      | 2.1 | 8.5  | 61.7 | 27.7 |
| $75,000 or more                          | 2.2 | 18.3 | 62.4 | 17.2 |
| Age                                      |  |  |  |  |
| 18–34                                    | 1.6 | 6.5  | 59.7 | 32.3 |
| 35–49                                    | 2.9 | 5.9  | 50.7 | 40.4 |
| 50–64                                    | 3.1 | 24.4 | 44.1 | 28.3 |
| 65–74                                    | 5.9 | 35.3 | 23.5 | 35.3 |
| 75+                                      | 3.0 | 30.3 | 9.1  | 57.6 |
| Gender                                   |  |  |  |  |
| Male                                     | 3.0 | 16.9 | 38.0 | 42.2 |
| Female                                   | 3.2 | 31.7 | 17.2 | 48.0 |
| Speaking English                         |  |  |  |  |
| Very well                                | 2.2 | 15.3 | 59.0 | 23.5 |
| Well                                     | 5.7 | 15.2 | 36.2 | 42.9 |
| Not well                                 | 1.0 | 21.6 | 28.9 | 48.5 |
Perceptions on health information seeking were compared in terms of sources of health information (Table 7). Overall, people who selected print materials as their first source showed negative perceptions in terms of efforts that took for seeking health information, frustrations during the search, concerns about quality of information, and difficulties of understanding health information.
People who selected the Internet as their first choice demonstrated more positive perceptions than other groups in efforts of finding health information and difficulties in understanding health information. People who selected Doctor/health provider as their first choices demonstrated more positive perceptions in frustration during the search process and confidence in getting health information.

| Table 7 | Perceptions on health information seeking in terms of sources of health information |
|---------|----------------------------------------------------------------------------------|
|         | Print (%) | Doctor (%) | Internet (%) | Avg. | \( \chi^2 \) | df |
| Health information seeking for... |           |           |              |      |            |    |
| Yourself | 53.8      | 70.3      | 51.1         | 56.6 | 11.816*    | 4  |
| Someone else | 0        | 6.8       | 16.9         | 13.2 |            |    |
| Both     | 46.2      | 23.0      | 32.0         | 30.2 |            |    |
| It took a lot of efforts |           |           |              |      | 16.827*    | 8  |
| Strongly agree | 30.8    | 17.6      | 11.8         | 14.3 |            |    |
| Somewhat agree | 46.2    | 31.1      | 24.7         | 27.5 |            |    |
| Somewhat disagree | 7.7     | 23.0      | 29.2         | 26.4 |            |    |
| Strongly disagree | 0       | 24.3      | 30.3         | 27.2 |            |    |
| Felt frustrated during the search process |           |           |              |      | 15.771*    | 8  |
| Strongly agree | 7.7      | 6.8       | 8.4          | 7.9  |            |    |
| Somewhat agree | 38.5     | 10.8      | 18.5         | 17.4 |            |    |
| Somewhat disagree | 23.1    | 33.8      | 28.7         | 29.8 |            |    |
| Strongly disagree | 15.4    | 31.1      | 38.2         | 35.1 |            |    |
| Concerned about quality of information |           |           |              |      | 23.387**   | 8  |
| Strongly agree | 23.1     | 9.5       | 20.8         | 17.7 |            |    |
| Somewhat agree | 38.5     | 31.1      | 29.8         | 30.6 |            |    |
### V. Discussion

This study examined features of health information seeking behaviors of foreign–born population in U.S.. 72% of foreign–born population reported that they have sought health information, but the percentage is lower than that of U.S.–born population, which is consistent result from previous studies (Clayman, Manganello, Viswanath, Hesse & Arora, 2010; Vanderpool, Kornfeld, Rutten, & Squiers, 2009; Shim, 2008; Beacom & Newman, 2010). Also, it was
found that foreign-born population has more negative perceptions on health information seeking than U.S.-born population. HINTS data revealed that major health information sources for foreign-born population are Internet and Doctor/health care provider. There are several previous studies which found that mass-media in their native language is their major health information sources (Woodall et al., 2006; Woodall et al., 2009), but it is not found in this study.

Table 8 characterizes foreign-born population in terms of their health information seeking experience and the sources that they first select. Since only 13 participants reported print materials as their first choice of health information sources, this group of people is excluded from this analysis. First, the characteristics of the people who have not searched health information were identified through various variables, including lower education level, lower income, Hispanic, the unemployed or homemakers, not having health insurance, and the people who are not fluent in English. An interesting finding is that more than half of people who are in fair or poor health status reported no health information seeking experiences. The people in this group should receive more attention for enhancing their health information access.

Second, the features of people who select Doctor as their first health information source are older people, lower income, lower education level, unemployed/retired/disabled, and lower English fluency. It seems that underserved people have less experience of health information seeking, but when they need to find health information they go to doctors or health providers rather than
finding information from secondary sources.

Third, the Internet is the most dominant source of health information; approximately 70% of people who have experience of health information seeking selected the Internet as their first source. The people who selected the Internet is characterized as the people having relatively higher education level, higher income, younger generation, the employed and the people who can speak English well. A noticeable finding is that Non-Hispanic White and Non-Hispanic Asian select the Internet more often than average.

<Table 8> Demographic features of choice of health information sources

|                  | Doctor (13.9%) | Internet (33.4%) | No experience (28.5%) |
|------------------|----------------|------------------|----------------------|
| **Occupation**   | Unemployed     | Employed         | Homemaker Retired    |
|                  | Retired        |                  | Student              |
|                  | Disabled       |                  |                       |

| **Race**         | Non-Hispanic   | Non-Hispanic     | Hispanic             |
|                  | African American| White            |                      |
|                  | Non-Hispanic   | African American |                      |
|                  | African Asian  |                  |                      |

| **Education**    | Less than high school | Some college or higher education degree | High school graduate or Less than high school |
|                  | Less than $35,000 | $50,000 or more | Less than $50,000 |
| **Annual house income** | 65 or more | 49 or less |
| **Age**          | 65 or more      | 49 or less      |                       |
| **English fluency** | Not well/Not at all | Well/Very well | Not well/Not at all |
| **Health insurance covered** |                    |                  | No                     |
| **Health status** | Fair            | Excellent/Very good | Fair/Poor |


VI. Conclusion

This study attempted to understand features of foreign-born population’s health information seeking behaviors, so that the understanding can provide evidences which can be utilized in designing health information dissemination. It was found that foreign-born population has less experience on health information seeking than U.S. born and more negative perceptions on health information seeking experiences. Among foreign-born population, it seems that underserved people have less experience of health information seeking, but when they need to find health information they go to doctors or health providers. The Internet is the most dominant source of health information; approximately 70% of people who have experience of health information seeking selected the Internet as their first source. The people who selected the Internet reported more positive perceptions on health information seeking (less efforts, less frustration, easy to understanding) than the people who selected print materials. This study results suggests that more attention should be given to underserved people who relatively do not search health information. Also, since the Internet is a main venue of health information seeking, it would be worthwhile efforts to disseminate health information, which is customized for foreign-born population, through the Internet.
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