Korean Americans' Online Health Information Seeking and the Role of
Online Communities: In the Context of Diabetes-Related Information Search

A THESIS
SUBMITTED TO THE FACULTY OF THE GRADUATE SCHOOL
OF THE UNIVERSITY OF MINNESOTA
BY

Junga Kim

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE DEGREE OF
MASTER OF ARTS

Jisu Huh

AUGUST, 2010

Acknowledgements

I would like to thank to my advisor, Dr. Jisu Huh, for supporting me during one of the most stressful times in my life. She provided insightful academic discussion as well as personal advice and emotional support for me. She was and remains my best role model as a professor and mentor. I must also thank all the committee members, Dr. Daniel Wackman and Dr. Laura Gurak, for valuable ideas, suggestions and encouragement.

My most special thanks go to my parents. Especially, my mom has sacrificed her life for me during these past two years in Minnesota and provided warm care. My husband, Chunsik, has been my best friend and soul-mate. I truly thank him for sticking by my side, even when I was depressed. Finally, I would like to thank to my little Amber who hugged me when I was tired.

Abstract

This study investigated the role of ethnic online communities as a health information source for Korean Americans, applying the uses and dependency model as a theoretical framework. A survey was conducted to examine use and evaluation of online communities as diabetes-related information source among Korean Americans and to compare the findings with those from general Americans. The results revealed that ethnic online communities played an important role as accessible and useful sources to obtain diabetes-related information for Korean Americans, while physicians were less utilized by Korean Americans than general Americans. The level of acculturation, health insurance coverage, and health-related cultural beliefs appeared to be significant factors explaining Korean Americans' use and perception of online communities and physicians as diabetes-related information sources.

Table of Contents

List of Exhibit and Tables

INTRODUCTION

There is a Korean woman who lives with her husband and a 5-month-old son in a small town in the United States. One night, her son had a high fever, and she did not know what to do. Although she had a phone, she hesitated to call a hospital because of her limited English ability. Instead, she went to an online community website that was popular among Korean Americans, and posted her problem in the parenting section of the website. A few minutes later, she got some useful replies, including names of fever-reducing drugs, the instructions for using the drugs, and even information on where she could purchase them. Health care professionals may advise patients against seeking for medical information from such a source and relying on consumer-generated health care information. But this is a true story of my Korean neighbor. This is an anecdote that shows how consumers, especially those who are relatively recent immigrants to the U.S., rely on the Internet to find important health information and interact with other patients or caregivers.

The Internet appeals to consumers as a convenient source of health information and the prevalent use of the Internet as a source of health information has greatly changed consumers' health information seeking behaviors. The advantages of the Internet such as its anonymity, speed, and convenience, and the increased availability of health care information on the Internet have led consumers to be more engaged in active health information seeking (Buchanan et al., 2007; Stout, Ball, and Villegas, 2007). According to a 2009 Pew Internet and American Life Project report (Fox and Jones, 2009), 83% of American Internet users, or 61% of U.S. adults, have accessed the Internet for health-

related information. The Internet enables patients to access a wide range of information that has been available only to health care professionals. Thus, consumers can become more knowledgeable and empowered when they use health care services. Some empirical studies have revealed that online health information seekers are less likely to rely on health professionals (e.g., Gray et al., 2005), while they are more likely to engage in discussion with physicians as a result of their Internet search (Iverson, Howard, and Penney, 2008).

The Internet seems to have particularly strong influence on immigrants' communication and information seeking behaviors in the United States. Using this new communication technology, immigrants can form virtual ethnic communities in the cyberspace without any geographical and temporal barriers. Those ethnic online communities enable immigrants to access wealth of information in their own languages and to share a variety of information for daily life including health information among the members. In addition, ethnic online communities can help ethnic minorities retain their culture and feel less isolated (Elkin, 1997; Ye, 2006).

Despite the prevalence of health information seeking online by ethnic minorities, very limited academic research exists about ethnic minority groups' health information seeking behaviors both online and offline. A small number of researchers are beginning to investigate different ethnic groups' health information seeking behaviors, and findings from those existing studies have suggested that race/ethnicity is one of the strong factors that influence individuals' health information seeking behaviors (e.g., Cheong, 2007; Cheong and Wilkin, 2005; Courtright, 2005; Hsia, 1987; Lorence, Park, and Fox, 2006).

There is a need to expand research on ethnic minorities' health information seeking behaviors, and the Asian American population is a particularly important segment that deserves more research attention due to its increasing size and unique health care issues.

The current study explores the role of ethnic online communities as a health information source for relatively recent immigrants, applying the uses and dependency model as a theoretical framework. This study particularly focuses on investigating the use and perceptions of online communities among Korean Americans and comparing their online community use for health information seeking to that of the general American consumers. In addition, this study explores the influence of Korean cultural values and acculturation on evaluation and use of online communities as a health information source among Korean Americans.

Korean Americans were selected as this study's focus for several reasons. First, Korean Americans are one of the fastest growing ethnic segments in the U.S. They are the fifth largest Asian group and make up 10.5% of the Asian population in the U.S. after Chinese, Filipino, Asian Indian, and Vietnamese (U.S. Census Bureau, 2002). Korean Americans tend to be highly educated, white-collar workers, and urban middle-class members (Hurh, 1998). According to the 2000 U.S. Census, about 44% of Korean Americans had more than bachelor's degree, indicating a higher educational level than that of the total population of the U.S (24%). Consistent with the high level of education, about 39% of Korean Americans hold management and professional occupations, and 30% have sales and office work (Reeves and Bennett, 2004). Despite the Korean Americans' socioeconomic characteristics, several previous studies have indicated that

Korean Americans are at great health risk (e.g., poor self-rated health condition) and medically underserved (Barnes, Adams, and Powell-Griner, 2008; Collins et al., 2002; Hughes, 2002; Kuo and Porter, 1998; Sohn and Harada, 2004).

Second, Korean Americans are a relatively recent U.S. immigration group compared to other Asian subgroups (e.g., Japanese and Chinese Americans), and majority of the Korean American population is the first-generation immigrants (Reeves and Bennett, 2004). Moreover, regardless of the duration of residence in the U.S., Koreans tend to retain their cultural traditions (Hurh, 1998; Wu, Kviz, and Miller, 2009), which are considered quite different and distinctive from Western cultures or other Eastern cultures. Therefore, Korean Americans would be an appropriate subject for examining a possible association between cultural values and immigrants' health information seeking behaviors.

Although the body of research on Korean Americans' health has increased since the early 1990s (Sohng, Sohng, and Yeom, 2002), Korean Americans are the most understudied ethnic population in health service research, relative to its growing population size (Jo et al., 2009; Wu, Kviz, and Miller 2009). Thus, studying this ethnic subgroup is important to gain better understanding of relatively new immigrants' online health information seeking and to examine the relationship between an ethnic minority group's cultural values and their use of ethnically-oriented health information sources. The following section presents literature review of previous studies on different health information seeking behaviors by different racial/ethnic groups of consumers, discusses the media uses and dependency model as a theoretical framework explaining the

4

differences, and describes key characteristics of Korean cultural values and Korean

Americans' health information seeking behaviors.

LITERATURE REVIEW & THEORETICAL FRAMEWORK

Health Information Seeking and Racial/Ethnic Group Differences

Race/Ethnicity has been identified as one of the key factors that explain an individual's health condition, health behaviors, and health communication patterns as well as information seeking behaviors (Institute of Medicine, 2003). Previous studies have found that different ethnic groups in the U.S. exhibit different information seeking behaviors, though some within-group variation exists (Lee, La Ferle, and Tharp, 2004). As for health information sources, for example, Caucasians tend to prefer printed professional materials (e.g., books, medical journals), while African Americans and Hispanics more heavily rely on television for their health information seeking (Ball-Rokeach and Wilkin, 2009; Guidry et al., 1998; Kar, Alcalay, and Alex, 2001). In addition to mass media sources, family and friends are also considered main health information sources for Hispanics and Asians (Cheong, 2007; Hsia, 1987; Hudson and Watts, 1996; Kakai et al., 2003). Regarding the Internet, it has been reported that African-Americans and Hispanics are less likely to use the Internet for health information (Fogel et al., 2002; Fox and Fallows, 2003; Monnier, Laken, and Carter, 2002). In terms of the amount of information sought, African Americans tend to seek less information than do European Americans (Gourash, 1978; Matthews et al., 2002).

Some studies have investigated factors that play a major role in determining ethnic minorities' health information seeking, and cultural values have attracted a great deal of attention as an important factor affecting individuals' health information seeking behaviors (Dutta, 2007; Kreutre and McClure, 2004; Spector, 2000; Young, 2002).

6

Young (2002) suggested that Hispanics' cultural values regarding personal relationships, trust, and familial/group emphasis influenced their tendency to use personal networks (e.g., grandmothers and mothers) as primary sources of health information.

Kakai et al. (2003) made a similar point in their study of cancer patients in Hawaii, claiming that the difference in health information seeking behaviors between Caucasians and ethnic minorities can be explained by differences between Western and Eastern cultural values. In their study, Caucasians tended to seek health information actively by using "scientific, objective, and updated knowledge through telephone information service, medical journals, and newsletters from research institutions" (p. 857). Asians, in contrast, were more likely to adopt a "passive information seeking strategy" by using mass media sources and informal sources (e.g., friends) (p. 852).

The Uses and Dependency Model

The uses and dependency model (Rubin and Windahl, 1986) seems to offer a good theoretical explanation for the empirically found differences among different ethnic groups in their health information source uses. This model provides a theoretical basis for explaining mass media process and effect at both macro and micro level by integrating uses and gratifications theory (Katz, Blumler, and Gurevitch, 1974) and media system dependency theory (Ball-Rokeach and DeFleur, 1976).

From a macro-level analysis of the society-media-audience relationship, the uses and dependency model posits that media use and effects are determined by the interrelations between the society, mass media system, and the audience. For example, government regulations and economic status in a society determine media availability

7

and contents (Rubin and Windahl, 1986). In other words, individuals' media dependency is confined at the structural or macro level. Ball-Rokeach's (1985) premise is that, as a society becomes more complex, individuals have less direct access to the social system, and thus they are more likely to rely on the media for interaction with the society. Individuals' communication activities have effects not only on their cognitions, attitudes, and behaviors, but also on the social and mass media system via feedback loop.

In an audience-centered micro context, the uses and dependency model can be applied to addressing the question why people choose a specific medium over others in order to achieve a goal. This model suggests that dependency or non-dependency on a specific medium is influenced by individual motives/needs for media use and perceived utility and availability of functional alternatives. The heavier an individual relies on a single medium, the stronger is the medium's influence on the individual's cognitions, feelings, and behaviors (Rosengren and Windahl, 1972).The underlying assumption of the concept of functional alternatives is that the media compete with other forms of communication. Individuals select and rely on specific media among various forms of communication alternatives (e.g., interpersonal interaction) that can accomplish similar goals (Rubin, 2002). For instance, the Internet and telephone were seen as functional alternatives to face-to-face communication in sustaining distant relationships (Baym, Zhang, and Lin, 2004). In regards to the health information source selection, a recent study suggested that the Internet was perceived as a functional alternative to a physician for patients who were dissatisfied with their health care provider (Tustin, 2010).

The degree of individuals' dependency on a certain medium varies in accordance with the amount of resources they can use. That is, resourceful people are less likely to rely on any single medium, while less resourceful people tend to rely heavily on a particular medium (Rosengren, 1986). The number and kind of functional alternatives are influenced by individuals' social and psychological characteristics, such as educational level, socioeconomic status, lifestyle, and personality. Different types of motives also result in varying degrees of functional alternative use (Rubin and Windahl, 1986).

Immigrants in a society tend to have relatively more limited communication resources in terms of both number and variety, due to their different cultural background, beliefs, social position, and language ability. Applying the uses and dependency model, immigrants' reduced social network and limited resources are likely to result in different patterns of media consumption and information source use, compared to those of non-immigrants. In the context of health information, health care professionals have been regarded as a primary source of information, especially for disease-related information (Hesse et al., 2005). However, to immigrants with limited resources and language/ cultural barriers, health care professionals and other traditional primary information sources might be inaccessible or unhelpful. When access to other sources (e.g., interpersonal, mass media sources) is limited, the Internet, particularly online ethnic communities, may be recognized as a useful functional alternative to traditional health information sources, as they can fulfill both interpersonal and informational needs for immigrants such as Korean Americans.

Online Communities and Their Role in Consumer Health Information Seeking

Online health resources include several different types and some are purely informational while others are used primarily for emotional support. An online community is one of the online resources that provide both informational and social-emotional support for users (Bonniface and Green, 2007; Burnett, 2000; Coulson, Buchanan, and Aubeeluck, 2007).

Although there is no generally accepted definition of an online community (Preece, 2000), some key components defining an online community drawn from the existing literature include the concepts of (1) shared interests/needs/ concerns, (2) engagement in supportive and sociable relations, (3) development of strong interpersonal feelings of belonging and being wanted, (4) engagement in repeated and active participation, (5) occurrence in the shared context of social convention/ language/protocols, and (6) formation through computer-mediated media (Burnett and Buerkle, 2004; Du-Pre, 2004; Josefsson, 2005; Preece and Maloney-Krichmar, 2003; Rheingold, 1993; Wellman, 1997). In the health care domain, Demiris (2006) defines a health online community as "a group of people (and the social structure that they collectively create) that is founded on telecommunication with the purposes of collectively conducting activities related to health care and education" (p. 179).

Korean Americans have created various online communities including regional online communities and portals to share a sense of togetherness and to exchange information. User-generated contents in those websites provide a wide variety of in-group information ranging from local grocery store information to cancer treatment-related

10

information. Online Korean American communities may serve as a valuable source for health information and emotional supports for Korean Americans.

Online communities as a health information source can function as an alternative to health care professional sources, providing experiential information and medical facts in a convenient and cost-effective manner (Camerini, Diviani, and Tardini, 2010). They can also fulfill the functions of a community (Cline and Haynes, 2001). The benefits that an online community offers to its members are especially valuable for "people who would not ordinarily reach out for help" (Wellman and Gulia, 1999, p. 173). Findings of the existing research have suggested that people with less social support are more likely to actively participate in online communities (e.g., Cummings, Kiesler, and Sproull, 2002). In a similar vein, an ethnic online community has the potential to serve as a particularly valuable alternative information source for immigrants who suffer from social isolation and a lack of dependable information sources in an unfamiliar social and cultural environment. However, much is unknown about perceptions and use of ethnic online communities, and factors that lead immigrants in the U.S. to rely on in-group online communities for their health information needs.

The following section discusses potentially important factors that are likely to influence Korean Americans' use of online communities for health information seeking, including Korean Americans' cultural characteristics, acculturation level, and health-related cultural beliefs.

Characteristics of Korean Cultural Values and Korean Americans' Health Information Seeking

According to Gudykunst (2001), "the ways individuals communicate are largely influenced by the culture in which they are raised and live, and in turn culture is created and transmitted through communication" (p. 4). The concept of culture refers to a complex set of norms, values, beliefs, symbols, and behaviors shared by a population of people through communication and social learning (Ember and Ember, 1985; Helman, 1994; Matsumoto, 2000; Sriramesh and White, 1992). Cultures are established over a long time period and are quite stable (Hofstede, 2001). Although there are arguments that the conceptualization of culture in many cross-cultural studies runs the risk of oversimplication or overgeneralization, the importance of between-group cultural variances has been acknowledged and empirically tested as a factor that draws a distinction between different cultural group members' social behaviors (Carlo et al., 2001).

A few existing studies have particularly suggested that the cultural heritage of a group tends to affect the group members' health-related decisions, behaviors, and information seeking patterns directly or indirectly (Gudykunst, 1995; Kreuter and McClure, 2004). Of Asian subgroups, Korean Americans are known as one of the most homogeneous groups in terms of race, language, and cultural traits (Lee et al., 2008). Thus, it might be helpful to examine Korean Americans' cultural values and health beliefs to have a better understanding of their health information seeking behaviors and online source use.

A number of scholars have proposed a theoretical and empirical basis for comparing Asian and Western cultures (e.g., Gudykunst and Ting-Toomey, 1988; Hall, 1976; Hofstede and Bond, 1988; Schwartz, 1994; Triandis, 1995; Triandis and Gelfand, 1998). In particular, Hofstede's (1980, 2001) cultural dimension framework has been extensively applied to explain cross-cultural differences between the East and the West (Baldwin and Hunt, 2002). Among the five cultural dimensions proposed by Hofstede, the present study focuses on two cultural dimensions – individualism-collectivism and power distance – and Koreans' health-related cultural beliefs.

Individualism vs. Collectivism

Individualism-collectivism is the most widely used cultural dimension in cross-cultural studies comparing Asian and Western cultures (Ahmed, Mouratidis, and Preston, 2008; Gudykunst, 2001). According to Hofstede (1980, p. 87), individualism-collectivism is defined as "people taking care of themselves and their immediate family only in a loosely knit social structure, versus people belonging to in-groups to look after them in a tightly knit social organization." In-groups are groups of individuals perceived as connected, similar, or important to their members (Triandis, 1995), whereas out-groups refer to groups that are disconnected or threatening (Ting-Toomey, 1994). Individuals in collectivistic cultures tend to draw stronger distinctions between in-groups and out-groups compared to the members of individualistic cultures (Triandis, 1995). Individuals in collectivistic cultures perceive a small number of groups as their in-groups, while individualistic cultures have relatively larger in-groups (Gudykunst, 2001).

The concept of in-groups in the Korean culture is represented by the word "woori (we/our)" (Cha, 1994). "Woori" denotes the group membership, which tends to be homogeneous, closed, and exclusionary (Gudykunst, 2001). Korean immigrants are more likely to keep their own ethnic identity than other Asian subgroups and associate primarily within their own ethnic social networks than all other Asian immigrant groups (Min, 1995). In Kim's study (1999) on elderly Korean Americans in the Midwest, respondents tended to have a lower portion of non-kin network members in the total network and none of them identified a non-Korean as a source for social and emotional support.

Koreans' tendency to differentiate between "we" (in-groups) and "others" (out-groups) may influence their information seeking behaviors by leading to limited interaction with the mainstream society. For example, collectivistic Korean immigrants may be more likely to rely on in-group members such as family, friends or other Korean Americans when searching for information about health-related issues.

Racial/ethnic concordance may affect the physician-patient relationships as well. One study on Japanese Americans suggests that Japanese Americans (another highly collectivistic culture group) are more likely to see Japanese or other Asian physicians regardless of their language ability. This study also found that patients trusted Japanese physicians more than other physicians with different ethnicity (Tarn et al., 2005).

Power Distance

Power distance refers to "the extent to which the less powerful members of institutions and organizations accept that power is distributed unequally" (Hofstede and

Bond, 1984, p. 419). The power distance dimension predicts how much respect members

with less power (e.g., children, students, subordinates) have for the authority or the

powerful (e.g., parents, teachers, boss). In high power distance cultures (e.g., Korea),

lower-level members of the society are likely to accept and obey the authority and the

power that upper-level members hold (Hofstede, 1991). Thus, there are clear hierarchical

relationships between the authority and regular members. In contrast, in low power

distance cultures (e.g., U.S.), the societal structure is decentralized with a flatter hierarchy

(Furnham, 1997).

Applying this notion to physician-patient communication, it is plausible to infer

that individuals with high power distance cultural values are more likely to accept and

follow the physician's instructions without any question, while patients with low power

distance cultural values are more likely to share their opinions and information they have

gathered with their physicians, and actively engage in health care decision making. The

tendency of looking up to the authority (i.e., health care provider) among individuals with

high power distance cultural values may affect their health information seeking

behaviors. Patients from a high power distance culture may feel little need for

involvement in their health care decision making because they expect great expertise

from the authority (Deschepper et al., 2008). Consequently, patients with high power

distance cultural values may be discouraged to engage in active health information

seeking.

Kakai et al.'s (2003) finding is directly in line with this role the power distance

dimension plays in health information seeking. They found that Japanese American

15

patients who are considered people from a high power distance culture were less likely to utilize physicians than mass media as a health information source compared to Caucasian patients. The researchers speculated that the difference might be caused by the Japanese cultural background. Japanese cultural characteristic which emphasizes obedience to the authority might hinder the Japanese American patients from asking for more information or expressing their opinions regarding health-related decision making (Saldov, Kakai, McLaughlin, and Thomas, 1998). Another survey result indicates that Korean Americans are less likely to ask questions to their doctor, compared to other Asian groups such as Vietnamese, Filipinos, Indians, and Japanese (Collins et al., 2002). Based on these findings, it would be reasonable to expect that Korean Americans might be more likely to use other alternative sources rather than health care providers as a primary source when they need health-related information.

Health-related Cultural Beliefs

Health-related cultural beliefs refer to "the ways in which people perceive illness, how they explain pain, how they define quality care, and how they select their caregiver" (Lim, Gonzales, Wang-Letzkus, and Ashing-Giwa, 2008, p. 1138). Health-related cultural beliefs have been identified as an important variable in understanding different ethnic groups' health behaviors. For instance, Korean Americans tend to seek health care only when they have severe symptoms (Han et al., 2007; Kim and Keefe, 2009; Kim and Menon, 2009). No symptoms are regarded as "having good health" or "having no disease" (Jo et al., 2009). These health beliefs may contribute to the low utilization of preventive services among Korean Americans. Many empirical studies have documented

16

that Korean Americans are less likely to receive preventive health care including

vaccination, screening for colorectal cancer, breast cancer, and cervical cancer than

Whites or other Asian subgroups (e.g., Lee, Kim, and Han, 2009; Ma et al., 2009;

Tanjasiri and Nguyen, 2009).

Traditionally in the Korean culture, balance and harmony are core concepts of

health. Illness is seen as a symptom of imbalance within one's body, social sphere, and

environment or the interruption of the flow of life energy ("Ki"). Health treatments are

designed to heal this imbalance through attitude change, diet, and interpersonal

interactions (Kagawa-Singer, 2001; Kim et al., 2002). There is no correspondence with

Western concepts of health that is defined as "a state of complete physical, mental, and

social well-being and not merely the absence of disease and infirmity" (World Health

Organization, 1958). In addition to the different health beliefs and approaches to health

care, Asian patients tend to believe that the nature of their body and illness is different

from that of the Westerners, and some of them hold distrust of the Western medical care

(Sung, 1999).

Another traditional health belief is related to the conception of food as a medicine.

As the Korean notion of "food is medicine" indicates, Koreans stress the importance of

eating healthful food to prevent and treat an illness (Koh, 2003). An empirical study

reveals that more than 90% of the Koreans surveyed believed that food consumption

habits were the most important factor determining a person's health condition and that

diseases could be cured by changing dietary habits (Lee, Ro, and Lee, 1996). With

regards to cancers, many Korean American women tend to believe that breast and

cervical cancer can be prevented as long as they stay healthy, stick to healthy diet, and do

not worry about getting cancers (Juon et al., 2004; Lee et al., 2007). Such beliefs are

considered a barrier to preventive health care. Based on these previous findings, it can be

inferred that Korean Americans' perceptions of the Western medicine, health care

providers, and mainstream health information sources may be different from those of

general American consumers.

Other Relevant Factors: Acculturation and Health Insurance Coverage

Though the aforementioned cultural characteristics are likely to play an important

role in differentiating Korean Americans' health information seeking behaviors and use

of online communities from those of general American consumers, there are some

additional factors that might explain within-ethnic-group differences among the Korean

Americans. In this section, two specific factors are discussed as they are likely to be

related to varying degrees of reliance on ethnic online communities among Korean

Americans.

Level of Acculturation

In addition to inherited cultural values, acculturation has often been examined to

study immigrants' health-related outcomes (Lee, Sobal, and Frongillo, 2000). The first-

generation of Korean immigrants were raised in a collectivistic and high power distance

culture, but they moved to a new culture where individualistic and low power distance

cultural values are more dominant. Immigrants' beliefs, norms, values, lifestyles, and

behaviors are adapted, modified, and changed when they come into contact with another

culture (Abraído-Lanza et al., 2006). This process is called acculturation. Each immigrant

has a varying level of acculturation depending upon two primary factors: language proficiency and ethnic identity.

In the process of acculturation, individuals need to receive information from various communication channels to adjust to the host society. Depending on the acculturation status, individuals tend to choose different media and information sources. For instance, newcomers lacking a social network may rely on family or friends more than do highly acculturated immigrants and native residents. Jeong's (2004) qualitative study on Korean international students found that Korean international students tended to more heavily rely on fellow Koreans than U.S. mass media for acquiring everyday life information because of their language barrier and strong ethnic bonds. Other studies also indicate that highly acculturated individuals are more likely to use media resources in English to communicate with others and to search information while lowly acculturated individuals have tendency to rely more on interpersonal channels (Cheong, 2007; Hurh, 1998; Olmedo and Padilla, 1978).

English Language Proficiency. Among the variables used for measuring the acculturation level, English fluency is associated with the amount of information sought as well as the sources of information used. Immigrants' poor English skill is likely to negatively affect their ability to obtain information they need (Yum, 1982). Empirical studies have indicated that immigrants' limited English proficiency increases the consumption of ethnic-targeted media and native-language websites (Ye, 2005). Melkote and Liu (2000) studied Chinese students and scholars in the U.S. who were members of a Chinese online community for Chinese sojourners. The researchers found that Chinese

students and scholars were more likely to use this Chinese ethnic community website to obtain information including useful tips on living in the U.S.

Furthermore, language ability may influence doctor-patient interaction and health literacy among immigrants. Combined with traditional Asian cultural values (e.g., the tendency to avoid conflict with higher authority), Korean American patients' linguistic barrier may cause the inability to express their opinions on health-related issues to health care professionals, and accordingly Korean Americans may seek for needed information through other sources (e.g., websites in Korean) rather than from health care providers.

More than half of Korean Americans are found to be not proficient in English, which is the highest rate among Asian American subgroups (Ponce et al., 2009; U.S. Census Bureau, 2007). Studies have indicated that Korean Americans face greater difficulty in communicating with their health care providers than do Japanese, Chinese, Vietnamese, Filipino, and Indian Americans (Blendon et al., 2008; Hughes, 2002). Other studies found that Korean Americans' limited English proficiency hampered their participation in community health programs and active health information seeking (Sohng, Sohng, and Yeom, 2002).

Ethnic Identity. Ethnic identity may be another factor among acculturation variables influencing Korean Americans' information seeking behavior. Ethnic identity refers to "a subjective sense of belonging to a particular ethnic group or culture" (Phinney et al., 2001, p. 495). According to Sodowsky and Carey's study on U.S. Asian Indians in 1988, self-identified ethnic identity was linked to whether they endorsed traditional cultural values or not. Korean Americans with a strong sense of ethnic identity as a

20

Korean may support and value Korean cultural heritage, such as non-confrontation and in-group membership, more than Korean Americans with a weak sense of ethnic identity. Thus, the influence of Korean cultural values and health beliefs on Korean American consumers' health information seeking behaviors and use of ethnic online communities may be greater among those with stronger ethnic identity than those with weaker ethnic identity.

Health Insurance Coverage

Several studies have reported that Korean Americans are one of the ethnic groups with a large proportion of uninsured population (Carrasquillo, Carrasquillo, and Shea, 2000; Han et al., 2007; Tanjasiri and Nguyen, 2009). According to the 2001 health care quality survey, the Korean American group's uninsurance rate was 52%, which was much higher than Chinese, Vietnamese, Filipino, Indian, and Japanese Americans (Hughes, 2002).

Lack of health insurance is closely associated with underutilization of health care services including preventive care and regular check-ups (Ryu, Young, and Park, 2001). In addition to underutilization of medical care services, no insurance coverage may restrict patients' access to health care providers to gather health-related information. Consequently, patients' assessment of health care providers as a health information source may be lower among patients without insurance coverage than those with insurance coverage.

HYPOTHESES

Based on the media uses and dependency model and the literature on cultural differences, this study poses five sets of hypotheses to examine health information seeking behaviors and use of online communities among Korean Americans and to compare the findings to those of general Americans, in the context of diabetes-related information seeking. Each hypothesis is tested for both between Korean Americans and general Americans and between different acculturation groups within Korean Americans.

According to the uses and dependency model, individuals' information seeking behaviors should be understood in relation to the social and economic environment as well as individual motivations. Given that immigrants' cultural characteristics and acculturation levels may be linked to their health information seeking behavior, Hofstede's cultural dimensions (1980) and Koreans' health-related cultural beliefs provide a useful framework for investigating differences in health information seeking behaviors between Korean Americans and general Americans.

The uses and dependency model suggests that Korean immigrants with limited information resources will be more likely to rely on alternative sources (e.g., ethnic online communities) rather than traditional mainstream sources such as physicians to seek health information, while general Americans with more information resources will be likely to utilize more diverse mainstream sources including physicians. Thus, the first hypothesis is posed as follows. The same hypothesis will be tested within the Korean American group to examine the influence of acculturation on health information seeking behavior.

H1a: Korean Americans will be more likely to use online communities and less likely to use physicians as diabetes-related information sources, compared to general Americans.

H1b: Korean Americans with a lower level of acculturation will be more likely to use online communities and less likely to use physicians as diabetes-related information sources, compared to Korean Americans with a higher level of acculturation.

The media uses and dependency model (Rosengren and Windahl, 1972; Rubin and Windahl, 1986) suggests that use of a specific medium is determined by perceived utility (i.e., usefulness and trustworthiness of information sources) as well as social-environmental factors such as availability of information resources. The second set of hypotheses is posed to compare evaluation of online information sources between Korean Americans and general Americans in terms of perceived usefulness and trustworthiness. The same hypotheses are also tested within Korean Americans.

H2: Evaluation of online communities and physicians as diabetes-related information sources will be different between Korean Americans and general Americans, and between Korean American high and low acculturation level groups.

H2a. Korean Americans will be more likely to evaluate online communities useful and trustworthy than do general Americans while evaluating physicians less useful and trustworthy.

H2b. Korean Americans with a low level of acculturation will be more likely to evaluate online communities useful and trustworthy than do Korean Americans with a high level of acculturation while evaluating physician less useful and trustworthy.

Although ethnic/cultural differences in health communication behaviors cannot be denied, there have been criticisms regarding cross-cultural studies in that between-group variances are overestimated while within-group variances are largely neglected. Korean Americans share common cultural beliefs and norms, but individual differences within

this group should be also examined to have a better understanding of individuals' health information seeking behaviors. Thus, in addition to the level of acculturation, this study investigates two specific factors explaining Korean Americans' within-group variances in their use of health information sources: health-related cultural beliefs and health insurance coverage.

H3 and H4 examine the influence of health-related cultural beliefs and health insurance coverage on Korean Americans' use and evaluation of online communities as a diabetes-related information source. First, H3a and H3b test the relationship between Korean Americans' health-related cultural beliefs and their use and evaluation of online communities.

> H3a: Stronger health-related cultural beliefs among Korean Americans will be related to greater use of online communities for Korean Americans.

> H3b: Stronger health-related cultural beliefs among Korean Americans will be related to more positive evaluation of online communities for Korean Americans in terms of perceived usefulness and trustworthiness.

H4 is posed to examine the influence of health insurance coverage on Korean Americans' use and evaluation of physicians and online communities as health information sources. As discussed previously, Korean Americans have been found to have a high uninsured rate compared to general Americans or other Asian American groups (Collins et al., 2002). Prior literature suggests that lack of insurance coverage might limit Korean Americans' access to health care services (Ryu, Young, and Park, 2001). Based on findings from the previous research, it is predicted that uninsured Korean Americans will be less likely to contact physicians and more likely to use online

communities for diabetes-related information. It is also expected that Korean Americans without insurance coverage will evaluate physicians less useful than do insured Korean Americans.

H4: Use and evaluation of diabetes-related information sources will be different between insured Korean Americans and uninsured Korean Americans.

H4a: Uninsured Korean Americans will be more likely to use online communities and less likely to use physicians as diabetes-related information sources than do insured Korean Americans.

H4b: Uninsured Korean Americans will be more likely to evaluate online communities more useful and physicians less useful for diabetes-related information than do insured Korean Americans.

One of the actions resulting from health information search is talking to a health care professional about the information obtained. H5 examines differences in patient-physician interaction and communication after information seeking between Korean Americans and general Americans. This hypothesis is posed based on the cross-cultural psychology literature (Gudykunst, 2001) suggesting that Anglo Americans have lower power distance cultural values than do Korean Americans. Applying this notion to physician-patient communication, Korean Americans are less likely than general Americans to talk about the information they obtained from other sources to their physicians.

H5: Compared to general Americans, Korean Americans will be less likely to engage in discussion with or ask questions to their physicians after information search.

RESEARCH METHOD

To test the five hypotheses, an online survey was conducted in the context of diabetes-related health information seeking, with a sample of diabetic patients or caregivers.

Diabetes is considered an appropriate health context for testing health information seeking behaviors for the following reasons. First, as one of the most common chronic diseases, diabetes requires continuing medical care (both professional and self-care) to prevent complications. The treatment of diabetes is closely tied to individuals' lifestyle, diet, and health beliefs, which are influenced by cultural values (Conrado et al., 2004; Whittemore et al., 2003). In relation to online health information seeking, a recent survey indicates that living with a chronic disease increases the likelihood that an Internet user will seek user-generated health information and participate in online discussion (Fox and Purcell, 2010).

Second, while diabetes is common in both general Americans and Korean Americans, it differentially affects different ethnic/racial populations. In 2007, the estimated prevalence of diabetes among adults in the United States was 10.7%, which was higher than the rates in 2003 (8.7%) and 2005 (9.6%). Among ethnic/racial groups, Asian groups appear to be at higher risk of diabetes compared to non-Hispanic Whites (Centers for Disease Control and Prevention, 2003, 2005). Studies conducted in California reported that Asians were 1.5 times as likely to have diabetes as Whites in the same region (Centers for Disease Control and Prevention, 2005). Although there is no national data on diabetes among Korean Americans, several studies of chronic diseases in

the Korean American elderly population have found a higher prevalence of diabetes in this group compared to other ethnic groups, including non-Hispanic Whites, Blacks, and Hispanics (e.g., Kim et al., 2001; Lee, Yeo, and Gallagher-Thompson, 1993).

Sampling and Data Collection Procedure

The online survey was administered from late April, 2010 for about seven weeks. This study used a purposive sampling method to collect data. This sampling method was used, though it is a nonprobability sampling method, for two reasons. First, a purposive sampling method is acceptable when the incidence rate of research subjects among the population is unknown (Babbie, 1997). The percentage of diabetic patients among Korean American Internet users is unknown. Second, it has been commonly used in research comparing two different groups by choosing specific number of members from each group (Babbie, 1997).

The survey respondent qualification was that adults aged 18 years or older who (1) had been diagnosed with diabetes or had a family member who was diagnosed with diabetes and (2) had sought information on diabetes for themselves or their family member from an online community within the past 12 months. For the Korean American sample, additional screening questions – being of Korean origin and either a U.S. citizen or a permanent resident – were added. Thus, Koreans who are temporary visitors or students were excluded.

To recruit general American respondents for the online survey, online communities for diabetes patients or caregivers were searched using key words of "online community," "online supporting group," "online forum," "diabetes," and "diabetic

27

patients" using three major search engines: google.com, yahoo.com, and msn.com. Ten online communities which came up on the first few pages of the search results were selected and contacted after determining their eligibility as an online community based on their contents and format. For example, personal home pages or blogs and websites without forums for sharing and discussing information among online users were excluded from the contact list. Of the ten online community websites, five websites allowed the researcher to post an invitation to the survey in the bulletin board. In addition, a one-time email invitation was sent to diabetes patients or caregivers listed on the emailing list of a clinic in the Twin Cities area.

Korean American respondents were recruited using an invitation posted on three Korean American online communities' bulletin boards out of the four online communities initially found and contacted. A paid banner ad was also placed on one online community to recruit Korean American participants for a week. All respondents were directed by a hyperlink to the online survey site hosted on an independent site. A $5 retail gift card was offered as monetary incentive to each respondent who completed the survey.

A total of 226 responses to the online survey were received: 147 Korean Americans and 79 general Americans. Six general American respondents who were not born in the U.S. were excluded from the analysis. After the exclusion of some duplicates identified by the same IP address and mailing address, and respondents who completed the survey in an extremely short time period (n=13) (Koo, 2005), the final useable sample size was 207: 138 Korean Americans and 69 general Americans.

Questionnaire and Measures

The survey instrument, which consisted of 42 total questions for Korean Americans and 30 total questions for other general Americans, included questions on: (1) use of diabetes-related information sources, (2) perceived usefulness of diabetes-related information sources, (3) perceived trustworthiness of the information sources, (4) perceived difficulty of finding and understanding online health information, (5) actions taken after searching for online health information, (6) physician-patient relationship, (7) health-related cultural beliefs, (8) health-related characteristics including perceived health status of self or the diabetes patient, type of diabetes, history of diabetes, health insurance coverage, and whether to have a regular doctor, (9) Korean Americans' acculturation level, and (10) demographics. Detailed information about each measurement is presented in Exhibit 1.

The survey questionnaire was developed in both English and Korean through a translated and back-translated method. An initial version of the questionnaire was pretested with a small convenience sample who speaks both English and Korean fluently in order to ascertain that the wording was clear and to assess how much time was needed to complete the survey. Based upon the feedback from the pretest group, minor wording and editing changes were made.

Exhibit 1. Measurements

Use of diabetes-related information sources
"Please select all the sources where you usually find information on diabetes and treatment options." (12 specific diabetes-related information sources for general Americans and 20 specific diabetes-related information sources for Korean Americans)
Perceived usefulness of diabetes-related information sources
"Please rate each information source on its usefulness to you." (12 specific diabetes-related information sources for general Americans and 20 specific diabetes-related information sources for Korean Americans) A 7-point Likert scales (1="not at all useful," 7="very useful")
Perceived trustworthiness of diabetes-related information sources
"Please rate each information source on its trustworthiness to you." (12 specific diabetes-related information sources for general Americans and 20 specific diabetes-related information sources for Korean Americans) A 7-point Likert scales (1="not at all trustworthy," 7="very trustworthy")
Perceived difficulty of finding and understanding online health information
"How much do you agree or disagree with the following statements: (a) I wanted more information, but did not know where to find it, (b) I was satisfied with the information I found, (c) The information I found was hard to understand, (d) I felt frustrated during my search for the information." A 7-point Likert scales (1="Strongly disagree," 7="Strongly agree")
Actions taken after searching for online health information
"After your information search in an online community, did you talk with the doctor about the information you found?" (1="yes," 2="no") "How likely would you talk to a doctor about health information you found from online communities?" A 7-point Likert scales (1="very unlikely," 7="very likely").
Physician-patient relationship
"Please indicate how much you agree or disagree with each of the statements: (a) The doctor provides me/my family member with diabetes high-quality medical care, (b) The doctor makes medical decisions in my/my family member's best interest, (c) The doctor listens to my/my family member's health concerns attentively and takes them seriously, (d) The doctor gives me/my family member with diabetes the chances to ask all the health-related questions, (e) The doctor explains things in a way I/my family member with diabetes could easily understand, (f) The doctor might perform unnecessary tests or procedures, (g) Overall, how would you rate your/your family member's satisfaction with the quality of health care you/your family member with diabetes received in a most recent visit to a physician?" A 7-point Likert scales (1="strongly disagree," 7="strongly agree").

Exhibit 1. Measurements (cont.)

Health-related cultural beliefs	
"Please indicate how much you agree or disagree with each of the statements: (a) No medical symptom means 'healthy,' (b) A disease is a symptom of imbalance within my body, (c) Medication can provide only temporary relief, (d) Medication can completely cure underlying problems, (e) Eating healthy food is the best way to stay healthy, (f) Unhealthy eating habits or heavy consumption of unhealthy food is the primary cause of illness, (g) Western medications are too strong/powerful for Koreans/some racial ethnic groups." A 7-point Likert scales (1="strongly disagree," 7="strongly agree").	
Health-related characteristics	
Perceived health status of self or the diabetes patient	"How would you describe overall health status of you/your family member with diabetes?" A 7-point Likert scales (1="extremely unhealthy," 7="extremely healthy")
Type of diabetes	Pre-diabetes, Type 1 diabetes, Type 2 diabetes
History of diabetes	"How long ago were you/your family member with diabetes diagnosed with diabetes?"
Health insurance coverage	"Are you/your family member with diabetes covered by any form of health insurance at this time?"
Whether to have a regular doctor	"Do you/your family member with diabetes have a regular primary care physician you/your family member with diabetes usually go(es) to when you/your family member with diabetes need health care?"
Korean Americans' acculturation level	
Five questions asking respondents' language ability ("How well do you speak English?", "How well do you speak Korean?" "How often your family speaks Korean at home?" "Which would you prefer to converse with people if you had chance to communicate with them just as well in Korean and English?" "When seeking health information, do you specifically seek out Korean language sources or rely on general English language sources?"), A measure of ethnic identity ("Would you identify more with Americans or more with Koreans?"), A measure of food preference ("What is your food preference at home among Korean and American food?"), and length of residence in the U.S. ("How long have you lived in the U.S.?").	
Demographics	
Age, Gender, Educational attainment, Income.	

RESULTS

Variable Construction and Reliability Tests

As stated above, Korean Americans' acculturation level was measured with eight items: (a) language ability, (b) perceived ethnic identification, (c) food preference, and (d) length of residence in the U.S. An acculturation score was calculated by summating the scores for the eight questions following Valencia's (1985) method. Ratio of length of residence in the U.S. was calculated by (length of residence in the U.S. / age) $\times$ 4. Then, this score was summated with the other seven items to obtain an individual's acculturation score (Valencia, 1985). The resulting summated scores ranged from 8.05 to 26.29 with higher scores indicating higher levels of acculturation; the mean score for Korean Americans' acculturation level was 14.27 (SD = 3.98). Based on the summated acculturation score, a median-split method was used to divide the Korean American respondents into two subgroups: high (69 respondents) and low acculturation level group (69 respondents).

Health-related cultural beliefs were measured by seven items, developed by the investigator, to address the following areas: perceptions about diseases and preference for a natural method of treatment to the Western medicine. Higher scores on each item indicate that respondents are more inclined to have Korean traditional health beliefs, such as perception of no medical symptom as being healthy and preference for a more natural method of treatment based on control of food consumption. The seven items were averaged to produce a summated score. To create an individual's health-related cultural belief score, internal consistency reliability was assessed using a Cronbach's alpha test

and item-to-total correlations. The results indicated that one item ("Medication can completely cure underlying problems") contributed to a lower-than-optimal reliability score. After deleting this item, the alpha level of the remaining six items was .77. The measurement was, therefore, deemed to have acceptable reliability (Nunnally, 1978).

To test the measurement validity, an ANOVA was conducted to examine mean differences in the averaged health belief score between the general American and Korean American respondents. As expected, the results revealed that Korean Americans exhibited significantly stronger Korean health-related cultural beliefs (mean = 5.66) than the general Americans (mean = 4.11) ($F(1, 136) = 97.01$, $p = .00$). The same test compared the high (mean = 5.65) and low acculturation level groups (mean = 5.48) within the Korean American sample and found no significant difference in health-related cultural beliefs between the two Korean American groups ($F(1, 136) = 1.75$, $p = .19$).

Demographic Characteristics of the Survey Respondents

Table 1 summarizes the demographic characteristics for the total sample and for the two subgroups. There was imbalance in the sample size between the two groups, and thus 69 respondents were randomly selected from 138 Korean American respondents to keep the comparison sample sizes equivalent. All results regarding comparisons between the general Americans and Korean Americans reflect data from the 69 general Americans and 69 Korean American respondents, while comparisons between high and low acculturated Korean American groups are based on data from the total Korean American sample (n=138).

Table 1. Demographic Characteristics of Survey Participants

	Total (N=207)		Korean Americans (N=138)		General Americans (N=69)		Korean American subsample (N=69)	
Age (mean value)	39.7 (SD=9.3)		39.5 (SD=7.5)		40.0 (SD=11.9)		39.9 (SD=7.3)	
	n	%	n	%	n	%	n	%
Gender								
Male	24	11.6	8	5.8	16	23.2	4	5.8
Female	182	87.9	129	93.5	53	76.8	64	92.8
No response	1	.5	1	.7	-	-	1	1.4
Education								
High school graduate	15	7.2	14	10.1	1	1.4	6	8.7
Associate degree	9	4.3	8	5.8	1	1.4	2	2.9
Some college	29	14.0	12	8.7	17	24.6	4	5.8
Bachelor's degree	100	48.3	76	55.1	24	34.8	43	62.3
Graduate level	53	25.6	27	19.6	26	37.7	13	18.8
No response	1	.5	1	0.7	-	-	1	1.4
Income								
Less than $10,000	5	2.4	2	1.4	3	4.3	1	1.4
$10,000 - $19,999	12	5.8	5	3.6	7	10.1	2	2.9
$20,000 - $29,999	6	2.9	3	2.2	3	4.3	1	1.4
$30,000 - $39,999	13	6.3	8	5.8	5	7.2	6	8.7
$40,000 - $49,999	11	5.3	10	7.2	1	1.4	2	2.9
$50,000 - $59,999	35	16.9	22	15.9	13	18.8	11	15.9
$60,000 - $69,999	18	8.7	12	8.7	6	8.7	9	13.0
$70,000 - $99,999	46	22.2	33	23.9	13	18.8	17	24.6
$100,000 - $199,999	49	23.7	34	24.6	15	21.7	14	20.3
$200,000 or more	10	4.8	7	5.1	3	4.3	5	7.2
No response	2	1.0	2	1.4	-	-	1	1.4
Race/Ethnicity								
White	-	-	-	-	63	91.3	-	-
African American	-	-	-	-	1	1.4	-	-
Asian non-Korean	-	-	-	-	2	2.9	-	-
Hispanic/Latino	-	-	-	-	2	2.9	-	-
Native American/ Alaska Native	-	-	-	-	1	1.4	-	-

The average age of the total sample was 40 years old and 87.9% of the sample was female. The respondents were highly educated, with 74% having at least bachelor's degree. The Korean American sample was mainly composed of first generation Korean Americans, with only 2.2% second generation. The average length of residence in the U.S. among the Korean American respondents was 13 years, with a range of 2 to 42 years. The majority of the general American respondents were non-Hispanic Whites (91.3%); Few respondents identified themselves as Hispanic (2.9%), non-Korean Asians (2.9%), non-Hispanic African American (1.4%), and Native American or Alaska Native (1.4%).

Chi-square tests and ANOVA were performed to examine differences in demographic characteristics between the general and Korean American respondents. Results revealed no significant difference in age ($F(1, 131) = .00$, $p = .95$), educational level ($F (1, 135) = 2.17$, $p = .14$), and income ($F(1, 135) = 2.22$, $p = .14$), but the two groups were different by gender ($\chi^2(1) = 8.23$, $p = .00$). The Korean American group includes more female respondents than people in the general American group.

The predominance of women respondents in the Korean American group might be due to the characteristics of Korean American online communities. Korean American online communities are mainly aimed at women as indicated by their names ("missyusa.com," "missycoupons.com," and "Mizville.org."). Among the three Korean American online communities used for this study, Mizville.org strictly restricts memberships to married Korean American women. Consequently, the Korean American sample overrepresents women.

Health-related Characteristics of the Survey Respondents

Table 2 shows differences in five health-related characteristics (i.e., perceived health status, history of diabetes, type of diabetes, health insurance coverage, and having a regular doctor) between the two samples. In the samples that were used for racial/ethnic comparisons, the total sample was comprised of 61 patients and 77 caregivers. About 50% was diagnosed within the last 5 years. While 66.7% of general Americans answered they searched for diabetes-related information for themselves using online communities, 81.2% of Korean Americans reported their online community searches were for their parent(s) or parent(s)-in-law.

Statistically significant differences across ethnic groups exist in perceived health status and health care among diabetic patients for whom diabetes information search was performed. General American respondents (mean = 5.13 on a 7-point scale) were more likely than Korean Americans (mean = 3.91) to report their own or the diabetic patients' health to be "good" or "excellent" ($F(1, 136) = 27.45$, $p = .00$).

Consistent with previous studies indicating a lower rate of health insurance coverage and less access to a regular source of medical care among Korean Americans (e.g., Hughes, 2002), a chi-square test revealed that general Americans were significantly more likely than Korean Americans to report having health insurance coverage (89.7% vs. 74.2%: $\chi^2(1) = 5.45$, $p = .02$) and to have a regular doctor to treat diabetes (97.1% vs. 84.1%: $\chi^2(1) = 6.88$, $p = .00$).

Table 2. Health-related Characteristics of Survey Participants

	Total (N=138)		General Americans (N=69)		Korean American subsample (N=69)	
	n	%	n	%	n	%
For whom you searched for information (multiple choice)						
For myself	61	44.2	46	66.7	15	21.7
For my family member	77	55.8	23	33.3	54	78.3
Parent(s)/Parent(s)-in-law	68	49.3	12	17.4	56	81.2
Spouse	12	8.7	4	5.8	8	11.6
Child(ren)	21	15.2	21	30.4	-	-
Other family member(s)	15	10.9	5	7.2	10	14.5
Overall health status of the person for whom diabetes information search was performed (mean value)	4.52 (SD = 1.49)		5.13 (SD = 1.26)		3.91 (SD = 1.46)	
History of diabetes						
< 1 year since diagnosed	19	13.8	11	15.9	8	11.6
1 year - less than 5 years	51	37.0	24	34.8	27	39.1
5 years - less than 10 years	26	18.8	12	17.4	14	20.3
10 or more years	41	29.7	22	31.9	19	27.5
Don't remember/don't know	1	0.7	-	-	1	1.4
Type of diabetes						
Pre-diabetes	11	8.0	1	1.4	10	14.5
Type 1 diabetes	47	34.1	47	68.1	-	-
Type 2 diabetes	59	42.8	20	29.0	39	56.5
Don't know/not sure	21	15.2	1	1.4	20	29.0
Have a regular doctor	125	90.6	67	97.1	58	84.1
Have a health insurance	110	82.1	61	89.7	49	74.2

Health Information Source Use by Sample

As shown in Table 3, Korean Americans significantly differed from general Americans in their choices of diabetes-related information sources.

Table 3. Use of Different Sources of Diabetes-related Information – General and Korean American Comparison

Diabetes-related information sources (multiple answers)	Total (N=138)		General Americans (N=69)		Korean American subsample (N=69)	
	n	%	n	%	n	%
Expert interpersonal sources	100	72.5	56	81.2	44	63.8
Physicians	98	71.0	55	79.7	43	62.3
Pharmacists	26	18.8	15	21.7	11	15.9
Mass media sources	79	57.2	33	47.8	46	66.7
TV	33	23.9	8	11.6	25	36.2
Radio	14	10.1	5	7.2	9	13.0
Newspapers	49	35.5	15	21.7	34	49.3
Magazines	43	31.2	25	36.2	18	26.1
Non-expert interpersonal sources	77	55.8	42	60.9	35	50.7
Family	49	35.5	19	27.5	30	43.5
Friends	55	39.9	35	50.7	20	29.0
Printed sources	74	53.6	41	59.4	33	47.8
Professional medical Publications	44	31.9	30	43.5	14	20.3
Printed materials from doctor's office, pharmacies, or drug companies	53	38.4	24	34.8	29	42.0
Internet sources	125	90.6	66	95.7	59	85.5
Health-related websites	103	74.6	53	76.8	50	72.5
Online communities	101	73.2	59	85.5	42	60.9

The five information sources used most commonly in the general American group were online communities (85.5%), physicians (79.7%), health-related websites

(76.8%), friends/colleagues (50.7%), and professional medical publications (43.5%). On the other hand, Korean Americans reported that they usually used health-related websites (72.5%), physicians (62.3%), online communities (60.9%), newspapers (49.3%), and other family members (43.5%) to gather diabetes-related information. The average number of sources used for diabetes-related information search was 4.93 sources for general Americans and 4.75 sources for Korean Americans. No statistically significant difference was found between the two groups ($F(1, 134) = .17$, $p = .68$).

Before comparing use of diabetes-related information sources between the high and low acculturated Korean American groups, a total of 20 diabetes-related information sources were combined to form seven source groups: US mass media sources (TV, radio, newspapers, magazines), mass media sources in Korean language (TV, radio, newspapers, magazines in Korean language), US Internet sources (health-related US websites, online communities for general Americans), Internet sources in Korean language (health-related websites in Korean, online communities for Korean Americans, online communities for Koreans), expert interpersonal sources (physicians and pharmacists), non-expert interpersonal sources (family, Korean American friends/colleagues, American friends/colleagues), and printed sources (professional medical publications and printed materials from doctor's office, pharmacies, or drug companies). When respondents reported they used at least one source in each source group, it was coded as "used," while it was coded as "not used" if they used none of the sources. Table 4 presents percentages of Korean American respondents who used at least one source in each source group.

**Table 4. Use of Different Sources of Diabetes-related Information
– High and Low Acculturation Korean American Comparison**

High vs. low acculturation Korean Americans	High (N=69)		Low (N=69)		Total (N=138)		
	N	%	n	%	n	%	χ^2
US Mass media sources	26	37.7	10	14.5	36	26.1	9.62**
Mass media sources in Korean language	31	44.9	41	59.4	72	52.2	2.90[#]
US Internet sources	27	39.1	5	7.2	32	23.2	19.69**
Internet sources in Korean language	52	75.4	57	82.6	109	79.0	1.09
Expert interpersonal sources	56	81.2	42	60.9	98	71.0	6.90**
Non-expert interpersonal sources	33	47.8	35	50.7	68	49.3	.12
Printed sources	35	50.7	26	37.7	61	44.2	2.38

[#] $p < .10$, ** $p < .01$,

As Table 4 indicates, for the high acculturated Korean American group, the expert interpersonal source type was reported as the most widely used source of health information (81.2%), followed by Internet sources in Korean language (75.4%) and printed sources (50.7%), while Korean Americans with a low acculturation level reported that they usually used Internet sources in Korean language (82.6%), expert interpersonal sources (60.9%), and mass media sources in Korean language (59.4%). Compared to high acculturated Korean Americans, low acculturated Korean Americans were significantly more likely to use mass media in Korean language ($\chi^2(1) = 2.90$, $p = .08$), whereas higher percentage of Koreans with a high acculturation level reported using US mass media sources ($\chi^2(1) = 9.62$, $p = .00$), US Internet sources ($\chi^2(1) = 19.69$, $p = .00$), and expert interpersonal sources ($\chi^2(1) = 6.90$, $p = .00$).

In terms of the extent of source use for diabetes-related information search, the average number of sources mentioned was 3.77 for Korean Americans with a high acculturation level and 3.13 sources for Korean Americans with a low acculturation. The mean score difference was statistically significant ($F(1, 136) = 6.91, p = .01$). The results indicate that Korean Americans with a high acculturation level tended to use a greater number of sources than did Korean Americans with a low acculturation level.

Results by Hypotheses

H1: Use of Online Communities and Physicians as Information Sources

H1a predicted Korean Americans would be more likely than general Americans to use online communities and less likely to use physicians as diabetes-related information sources. To test this hypothesis, a chi-square test and ANOVA were conducted. As shown in Table 5, the results indicate that general Americans were significantly more likely to use physicians (79.7% vs. 62.3%, $\chi^2(1) = 5.07, p = .02$) and online communities (85.5% vs. 50.0%, $\chi^2(1) = 19.81, p = .00$) as diabetes-related information sources than were Korean Americans. Thus, partial support was observed for H1a.

The same test was performed to compare use of online communities and physicians between the low and high acculturation Korean American groups. No significant difference was found in the use of online communities between the two Korean American groups (49.3% for low acculturation Korean Americans vs. 53.6% for high acculturation Korean Americans, $\chi^2(1) = .26, p = .61$). Use of physicians as a health information source, however, was found to be significantly different between the two Korean American groups (59.4% for low acculturation Korean Americans vs. 81.2% for

41

high acculturation Korean Americans, $\chi^2(1) = 7.81$, $p = .00$). Higher acculturation was related to more utilization of physicians to obtain diabetes-related information. Therefore, H1b was partially supported.

Table 5. Use of Online Communities and Physicians as Diabetes-related Information Sources

General Americans vs. Korean Americans	General Americans (N=69)		Korean American subsample (N=69)		Total (N=138)		χ^2
	n	%	n	%	n	%	
Use of online communities							
Online communities for general Americans vs. online communities for Korean Americans	59	85.5	34	49.3	93	67.4	20.61**
Use of physicians	55	79.7	43	62.3	98	71	5.10*

High vs. low acculturation Korean American groups	High (N=69)		Low (N=69)		Total (N=138)		χ^2
	n	%	n	%	n	%	
Use of online communities							
Online communities for Korean Americans	37	53.6	34	49.3	71	51.4	.26
Use of physicians	56	81.2	41	59.4	97	70.3	7.81**

* p < .05, ** p < .01

H2: Evaluation of Online Communities and Physicians as Information Sources

H2a and H2b predicted that Korean Americans, especially those with a lower level of acculturation, would be more likely than general Americans to find online communities more useful and trustworthy while evaluating physicians less useful and trustworthy. To test these hypotheses, a series of ANOVA was performed with the two paired groups: general Americans and Korean Americans; high and low acculturation

Korean American groups. As presented in Table 6, unexpectedly, general Americans

evaluated usefulness of online communities significantly higher than did Korean

Americans (mean = 6.20 for general Americans, 5.35 for Korean Americans (F(1, 132) =

15.00, p = .00). However, in terms of trustworthiness of online communities as diabetes

information sources, there was no difference between Korean Americans and general

Americans. Evaluation of physicians was not significantly different between the two

groups. Therefore, H2a was not supported.

Table 6. Evaluation of Health Information Sources

General Americans vs. Korean Americans	mean (GA)	mean (KA)	F	p
Perceived usefulness of information sources				
Physicians	5.83	6.26	2.86	.09
Online communities*	6.20	5.35	15.00	.00
Perceived trustworthiness of information sources				
Physicians	5.94	6.24	1.62	.21
Online communities*	5.43	5.13	1.61	.21
High vs. low acculturation Korean Americans	mean (High)	mean (Low)	F	P
Perceived usefulness of information sources				
Physicians	6.43	6.33	.24	.62
Online communities for Korean Americans	4.99	5.40	3.39	.04
Perceived trustworthiness of information sources				
Physicians	6.40	6.18	1.64	.20
Online communities for Korean Americans	5.00	5.07	.13	.72

* Compared evaluation of online communities for Korean Americans vs. online
   communities for general Americans

Test results for evaluation of diabetes-related information sources by the

acculturation level are also presented in Table 6. Evaluations of online communities and

physicians were not different depending upon the level of acculturation among Korean

Americans, except for perceived usefulness of online communities. Notably, low

acculturation Korean Americans perceived online communities more useful than did the

high acculturation Korean Americans (mean score of perceived usefulness = 5.40 for low

acculturation Korean Americans, 4.99 for high acculturation Korean Americans) (F(1,

135) = 3.39, p = .04). Therefore, H2b was partially supported only for perceived

usefulness of online communities.

H3: Influence of Health-related Cultural Beliefs on Use and Evaluation of Online Communities by Korean Americans

H3a and H3b predicted that Korean Americans' health-related cultural beliefs

would be positively related to use and evaluation of online communities for Korean

Americans. To test the hypotheses, a logistic regression analysis and two regression

analyses were performed. Table 7 presents the logistic regression analysis results. Health-

related cultural beliefs among Korean Americans were not found to be significant related

to use of online communities for Korean Americans as diabetes-related information

sources (B = .45, Wald = 3.46, p = .06). Thus, H3a was not supported.

Table 7. Logistic Regression Analysis for Predicting Use of Online Communities as Diabetes-related Information Sources

	Use of online communities for Korean Americans		
Predictor variable	B	S.E.	Wald
Health-related cultural beliefs	0.45	0.24	3.46

Health-related cultural beliefs, however, turned out to affect respondents'

perceptions that online communities for Korean Americans were useful (β = .18, p = .03)

and trustworthy (β = .26, p = .00) (See Table 8). Therefore, H3b was supported.

Table 8. Regression Analyses for Predicting Evaluation of Online Communities as Diabetes-related Information Sources

	Evaluation of online communities for Korean Americans	
	Perceived usefulness	Perceived trustworthiness
Predictor variable	Beta	Beta
Health-related cultural beliefs	.18*	.26**

* p < .05, ** p < .01

H4: Influence of Health Insurance Coverage on Use and Evaluation of Online Communities and Physicians by Korean Americans

H4 predicted that uninsured Korean Americans would be less likely to use

physicians and more likely to use online communities to gather diabetes-related health

information than would Korean Americans with health insurance coverage. Table 9

presents that use of physicians as an information source did not significantly differ

between uninsured and insured Korean American groups (χ^2 = .56, p = .29). However, it

was found that uninsured Korean Americans were more likely than insured Korean

Americans to use online communities as diabetes-related information sources. Thus, H4a

was partially supported.

Table 9. Use of Physicians and Online Communities as Diabetes-related Information Sources - Comparison Between Insured and Uninsured Korean Americans

Insured vs. uninsured Korean Americans	Insured (n=98)		Uninsured (n=35)		Total (n=133)		χ^2
	n	%	n	%	n	%	
Use of physicians	71	72.4	23	65.7	94	70.7	0.56
Use of online communities for Korean Americans	54	37.1	13	55.1	67	50.4	3.33*

* $p < .05$

In terms of perceived usefulness of physicians and online communities as diabetes-related information sources, uninsured Korean Americans assessed physicians significantly less useful and online communities more useful than did insured Korean Americans (See Table 10). Therefore, H4b was supported.

Table 10. Perceived Usefulness of Physicians and Online Communities as Diabetes-related Information Sources - Comparison Between Insured and Uninsured Korean Americans

Insured vs. uninsured Korean Americans	mean (Insured)	mean (Uninsured)	F	p
Physicians	6.61	5.97	10.54	.00
Online communities for Korean Americans	5.05	5.51	3.18	.03

H5: Physician-patient Communication after Internet Information Search

Respondents were asked whether they had discussed with their health care providers about diabetes-related information they obtained from online communities. As predicted, more general Americans (56.6%) had engaged in discussion with their health care providers about health information found from online communities than did Korean Americans (33.3%) ($\chi^2(1) = 7.50$, $p = .00$). Also, general Americans were significantly more likely than Korean Americans to intend to talk with a physician about online

46

information in the future (mean score = 5.83 for general Americans, 4.81 for Koreans)

($F(1, 136) = 17.47$, $p = .00$). Thus, hypothesis 5 was supported.

SUMMARY AND DISCUSSION

While the Internet has become an increasingly popular source of health information, there is little information on how Asian immigrants use this new communication technology for health information seeking. This study particularly focused on the role of ethnic online communities as an important health information source for immigrants in the context of Korean Americans' information seeking related to diabetes. The study tested five hypotheses to examine health information seeking behaviors of Korean Americans using online communities and to compare the findings to those of general Americans. Also examined are potential factors influencing Korean Americans' use of different health information sources including online communities and physicians. The findings are summarized in Table 11.

Table 11. Summary of Hypotheses Test Results

Hypotheses	Between-group: Korean Americans vs. General Americans	Within Korean Americans: high vs. low acculturated
H1a: More use of online communities and less use of physicians as diabetes-related information sources by Korean Americans	Partially supported for less use of physicians	-
H1b: More use of online communities and less use of physicians as diabetes-related information sources by low acculturation Korean American group	-	Partially supported for less use of physicians
H2a: More positive evaluation of online communities and less positive evaluation of physicians in terms of usefulness and trustworthiness by Korean Americans	Not supported	-

Table 11. Summary of Hypotheses Test Results (cont.)

Hypotheses	Between-group: Korean Americans vs. General Americans	Within Korean Americans: high vs. low acculturated
H2b: More positive evaluation of online communities and less positive evaluation of physicians in terms of usefulness and trustworthiness by low acculturation Korean American group	-	Partially supported for perceived usefulness of online communities
H3a: Positive influence of health-related cultural beliefs on use of online communities among Korean Americans	-	Not supported
H3b: Positive influence of health-related cultural beliefs on evaluation of online communities among Korean Americans	-	Supported
H4a: Positive influence of health insurance coverage on use of online communities and physicians among Korean Americans	-	Partially supported for use of online communities
H4b: Positive influence of health insurance coverage on evaluation of online communities and physicians among Korean Americans	-	Supported
H5: Less engagement in patient-physician discussion among Korean Americans than general Americans	Supported	-

Regarding the use (H1a) and evaluation (H2a) of online communities, contrary to the prediction, the results revealed that online community users among general Americans were more likely than Korean Americans to use online communities and to evaluate them more useful as a diabetes-related information source. There are several possible explanations for these unexpected results. It may be due to the sampling procedure used to recruit the two groups of respondents: general American participants

49

were recruited from online communities specifically for diabetes patients or caregivers, while Korean Americans were recruited from general online communities for Korean immigrants dealing with a variety of topics including health, food, childcare, and home-country news. Perhaps, respondents who are current users of diabetes-focused online communities tend to more heavily rely on online communities as diabetes information sources on a regular basis.

Another possible explanation is that Korean Americans' relatively low utilization and low evaluation of online communities may be related to the relatively lower levels of health literacy among Korean Americans. In this study, Korean Americans were more likely than general Americans to say that: 1) online information they found was hard to understand; 2) they felt frustrated by an inability to find what they were looking for online; and 3) they were not satisfied with the information they found online. Given that about 80% of Korean American respondents reported that they usually seek sources in Korean language, the reported difficulties Korean Americans had experienced during their online health information search might be related to health literacy issues rather than language problems.

Overall, significant differences in reliance on online communities for diabetes-related information search were hardly observed between Korean Americans and general Americans. However, within the Korean American group, the level of acculturation appeared to be a significant factor explaining within-group differences in perceived usefulness of online communities. The test of H2b demonstrated that low acculturated Korean Americans were likely to find online communities more useful than were high

acculturated Korean Americans. This result suggests that Korean Americans with less English proficiency and shorter length of residence in the U.S are more likely to perceive ethnic online communities (i.e., in-group source) as useful as a health information source.

Regarding use of physicians, as suggested by the uses and dependency model, the hypothesis was supported for both between-group and within-group comparisons. Based on the uses and dependency model, it was assumed that physicians might be considered a more accessible source for diabetes-related information seeking among general Americans than Korean Americans. As predicted, Korean Americans were found to less utilize physicians as diabetes-related information sources than did general Americans. The same pattern was also observed in the within-group acculturation level comparison.

As for evaluation of physicians as information sources, however, there was no significant difference in either between-group or within-group comparison. Korean Americans evaluated physicians as highly as general Americans in terms of usefulness and trustworthiness. This may be that some cultural factors came into play in terms of evaluation of physicians. Korean Americans might respect the authority of physicians regarding diabetes-related information even though they did not use this type of sources as often as general Americans did. This is in line with the H5 test result regarding the physician-patient communication after information search.

Results from this study regarding physician-patient communication after searching health information online are consistent with a growing body of evidence indicating that Korean Americans who are from a high power distance culture are less

likely than general Americans to ask questions to physicians or to engage in health care decision making (e.g., Blendon et al., 2008; Collins et al., 2002).

Besides ethnicity and acculturation level, this study's findings suggest health-related cultural beliefs (H3) and health insurance coverage (H4) as potentially important factors explaining within-group variances in use and evaluation of health information sources. This study found that Korean Americans' perceptions of online communities as useful and trustworthy were positively associated with the level of health-related cultural beliefs. Although the relationship between health-related cultural beliefs and actual use of ethnic online communities was not significant, the result was still line with the predicted pattern that Korean American respondents were more likely to use online communities as diabetes-related information sources if they held strong health-related cultural beliefs.

In addition to the hypotheses testing, other results also provide supporting evidence for the significant role of acculturation in explaining within-group variances. For example, Korean Americans with a higher acculturation level tended to use significantly greater number of sources for diabetes-related information search than did those with a lower acculturation level. Additionally, higher acculturation levels were significantly related to more use of US information sources, such as US mass media sources, US Internet sources, and expert interpersonal sources. In contrast, low acculturated Korean Americans tended to rely more on mass media sources in Korean language.

In sum, the results of this study suggest that Korean Americans, particularly the low acculturated and uninsured group, are likely to face increased difficulties in their health information search using traditional mainstream sources. Despite their high evaluation of physicians as a useful and trustworthy source, Korean Americans did not actively utilize physicians to gather diabetes-related health information, at least not to the same degree as general Americans. In addition, Korean Americans' acculturation level (mostly in relation to English proficiency) and lack of health insurance coverage appear to limit their access and intention to use various US information sources including English language online resources.

As the uses and dependency model suggests, ethnic online communities and Korean websites seem to play a critical role for Korean American Internet users in need of health information, particularly for the low acculturated and uninsured Korean Americans who have limited accessible information resources. The Internet allows them to search for health information online in Korean language. This study observed a wide use of the Internet to gather diabetes-related information among Korean American Internet users.

Limitations and Suggestions for Future Research

This study has many methodological limitations. The sampling method used in the study is not a probability sampling and the findings cannot be generalized. Also, as mentioned in the description of the sampling procedure, the online community sites used for recruiting the survey respondents were different between general Americans and Korean Americans. Thus, special caution needs to be taken when interpreting the findings

regarding comparisons between the two groups. Future research should use a probability sample and employ a more effective sampling strategy to ensure sample comparability in any cross-cultural comparisons.

In addition, this study used a single disease (diabetes) as a specific research context examining patients' and caregivers' online health information seeking. Thus, this study's findings may not be directly applicable to other disease-related information seeking situations. For example, patients with a critical acute disease may show different information seeking behaviors and source use, and therefore, perception and use of online communities as a health information source may be different. I encourage future researcher to examine the topic of online health information seeking and the role of online communities in other health care contexts.

This study's measurements also suffer from weaknesses. For example, although health-related cultural beliefs appeared to be a significant factor explaining the within-group variance in use of ethnic online resources, the measurement of this concept needs more development and further testing for measurement reliability and validity. In the future research, this concept should be further examined and better measurement should be developed.

Implications of the Study Findings

Despite the many methodological limitations, this study offers some valuable insight about the role of online communities in consumers' health information seeking and particularly use of such sources among racial/ethnic minorities with limited information resources. Although not all hypotheses were supported, this study found

some interesting differences in perceptions and use of online communities and physicians between Korean Americans and general Americans and between highly acculturated and low acculturated Korean Americans. Also, regarding the within-group (i.e., among Korean Americans) variances, this study revealed that health-related cultural beliefs and health insurance coverage can be potentially important factors.

The results of this study offer implications for both health communication researchers and practitioners. This study is the first attempt to investigate racial/ethnic minorities' use of ethnic online communities in the context of health communication. While online health care resources have increased dramatically and consumers' use of the Internet for health care information is prevalent, research on health communication and health information seeking on the Internet is still very limited. Especially, research on perception and use of ethnic online communities by racial/ethnic minorities and recent immigrants is lacking. The present study contributes to advancing our knowledge about this important topic.

For health care practitioners and public policy makers, this study provides empirical evidence about the unique use of online health information sources among Korean Americans. As this study's results suggest, in-group online communities can be an effective channel for disseminating important health information targeting Korean Americans.

REFERENCES

Abraído-Lanza, A. F., Armbrister, A. N., Flórez, K. R., & Aguirre, A. N. (2006). Toward a theory-driven model of acculturation in public health research. *American Journal of Public Health, 96(8),* 1342-1346.

Ahmed, T., H. & Preston, M. D. (2008). Website design and localisation: A comparison of Malaysia and Britain. *International Journal of Cyber Society and Education*, *1(1),* 3-16.

Babbie, E. (1997). *The practice of social research.* Belmont, CA: Thomson/Wadsworth.

Ball-Rokeach, S. J. & DeFleur, M. L. (1976). A dependency model of mass-media effects. *Communication Research*, *3(1),* 3-21.

Ball-Rokeach, S. J. (1985). The origins of individual media system dependency: A sociological framework. *Communication Research*, *12(4)*, 485-510

Ball-Rokeach, S. J. & Wilkin, H. A. (2009). Ethnic differences in health information-seeking behavior: Methodological and applied issues. *Communication Research Reports*, *26(1)*, 22-29.

Baldwin, J. & Hunt, S. K. (2002). Information-seeking behavior in intercultural and intergroup communication. *Human Communication Research*, *28(2)*, 272-286.

Barnes, P. M., Adams, P. F., & Powell-Griner, E. (2008). Health characteristics of the Asian adult population: United States, 2004-2006. *Advanced Data, 394,* retrieved from http://www.cdc.gov/nchs/data/ad/ad394.pdf.

Baym, N.K., Zhang, Y. B., & Lin, M. C. (2004). Social interactions across media: Interpersonal communication on the Internet, face-to-face, and the telephone. *New Media & Society*, *6(3),* 299-318.

Blendon, R. J., Buhr, T., Cassidy, E. F., Pérez, D. J., Sussman, T., Benson, J. M., & Herrmann, M. J. (2008). Disparities in physician care: Experiences and perceptions of a multi-ethnic America. *Health Affairs*, *27(2),* 507-517.

Bonniface, L. & Green, L. (2007). Finding a new kind of knowledge on the HeartNET website. *Health Information and Libraries Journal, 24(Suppl.1),* 67-76.

Buchanan, T., Joinson, A. N., Paine, C., & Reips, U. D. (2007). Looking for medical information on the Internet: Self-disclosure, privacy and trust. *He@lth Information on the Internet*, *58(1),* 8-9.

56

Burnett, G. (2000). Information exchange in virtual communities: A typology. *Information Research*, *5(4)*, retrieved from http://informationr.net/ir/5-4/paper82.html.

Burnett, G. & Buerkle, H. (2004). Information exchange in virtual communities: A comparative study. *Journal of Computer-Mediated Communication*, *9(2),* retrieved from http://jcmc.indiana.edu/vol9/issue2/burnett.html.

Camerini, L., Diviani, N., & Tardini, S. (2010). Health virtual communities: Is the self lost in the Net?" *Social Semiotics*, *20(1),* 87-102.

Carlo, G., Roesch, S. C., Knight, G. P., & Koller, S. H. (2001). Between- or within-culture variation? culture group as a moderator of the relations between individual differences and resource allocation preferences. *Journal of Applied Developmental Psychology*, *22(6),* 559-579.

Carrasquillo, O., Carrasquillo, A. I., & Shea, S. (2000). Health insurance coverage of immigrants living in the United States: Differences by citizenship status and country of origin. *American Journal of Public Health, 90(6),* 917-923.

Centers for Disease Control and Prevention (2003). *National diabetes fact sheet: General information and national estimates on diabetes in the United States.* Atlanta, GA: U.S. Department of Health and Human Services.

Centers for Disease Control and Prevention (2005). *National diabetes fact sheet: General information and national estimates on diabetes in the United States.* Atlanta, GA: U.S. Department of Health and Human Services.

Cha, J. (1994). Aspects of individualism and collectivism in Korea. In U. Kim, H.C.Trandis, C. Kagitcibasi, S., C. Choi, & G. Yoon (Eds.), *Individualism and collectivism, Theory, methods, and applications (pp. 157–174).* Thousand Oaks, CA: Sage.

Cheong, P. H. (2007). Health communication resources for uninsured and insured Hispanics. *Health Communication, 21(2)*, 153-163.

Cheong, P. H. & Wilkin, H. A. (2005). The Internet for Hispanic immigrants: Health communication and digital divides, In M. Allen & M. Convalso (Eds.), *Internet research annual: Vol. 2 (pp. 101-114)*, New York: Peter Lang.

Cline, R. J. & Haynes, K. M. (2001). Consumer health information seeking on the Internet: The state of the art. *Health Education Research*, *16,* 671–692.

Collins, K. S., Hughes, D. L., Doty, M. M., Ives, B. L., Edwards, J. N., & Tenney, K. (2002). *Diverse communities, common concerns: Assessing health care quality for minority Americans*. The Commonwealth Fund 2001 Health Care Quality Survey.

Coronado, G. D., Thompson, B., Tejeda, S., & Godina, R. (2004). Attitudes and beliefs among Mexican Americans about Type 2 diabetes. *Journal of Health Care for the Poor and Underserved, 15(4),* 576-588.

Coulson, N.S., Buchanan, H., & Aubeeluck, A. (2007). Social support in cyberspace: A content analysis of communication within a Huntington's Disease online support group. *Patient Education & Counseling, 68(2),* 173-178.

Courtright, C. (2005). Health information seeking among Latino newcomers: An exploratory study. *Information Research, 10(2),* 224, retrieved from http://informationr.net/ir/10-2/paper224.html.

Cummings, J., Kiesler, S. B., & Spoull, L. (2002). Beyond hearing: Where real world and online support meet. *Group Dynamics: Theory, Research, and Practice, 6(1)*, 78-88.

Demiris, G. (2006). The diffusion of virtual communities in health care: Concepts and challenges. *Patient Education and Counseling*, *62*, 178-188.

Deschepper, R., Grigoryan, L., Lundborg, C. S., Hofstede, G., Cohen, J., Kelen, G. V., Deliens, L., & Haaijer-Ruskamp, F. M. (2008). Are cultural dimensions relevant for explaining cross-national differences in antibiotic use in Europe? *BMC Health Services Research*, *8(123)*, retrieved from http://www.biomedcentral.com/content/pdf /1472-6963-8-123.pdf.

Du-Pre, A. (2004). *Communicating about health: Current issues and perspectives.* Mountain View, CA: Mayfield.

Dutta, M. J. (2007). Communicating about culture and health: Theorizing culture-centered and cultural sensitivity approaches. *Communication Theory*, *17*, 304-328.

Ember, C. R. & Ember, M. (1985). *Anthropology* (4th ed.). Englewood Cliffs, NJ: Prentice-Hall.

Elkins, D. J. (1997). Globalization, telecommunication, and virtual ethnic communities. *International Political Science Review, 18(2),* 139-152.

Fogel, J, Albert, S. M., Schnabel, F., Ditkoff, B. A., & Neugut, A. I. (2002). Internet use and social support in women with breast cancer. *Health Psychology*, *21*, 398-404.

Fox, S. & Fallows, D. (2003). *Internet health resources.* Pew Internet & American Life Project, retrieved from http://www.pewinternet.org/pdfs/PIP_ Health_ Report_ July_2003.pdf.

Fox, S. & Jones, S. (2009). *The social life of health information.* Pew Internet & American Life Project, retrieved from http://www.pewinternet.org/Reports/ 2009/8-The-Social-Life-of-Health-Information.aspx.

Fox, S. & Purcell, K. (2010). *Chronic disease and the Internet.* Pew Internet & American Life Project, retrieved from http://pewinternet.org/~/media//Files/Reports/2010/ PIP_Chronic_Disease.pdf.

Frisbie, W.P., Cho, Y., & Hummer, R. (2001). Immigration and the health of Asian and Pacific Islander adults in the United States. *American Journal of Epidemiology, 153*, 372–380.

Furnham, A. (1997). *The Psychology of behaviour at work.* London: Psychologist Press.

Gray, N. J., Klein, J. D., Noyce, P. R., Sesselberg, T. S., & Cantrill, J. A. (2005). Health information-seeking behaviour in adolescence: The place of the Internet. *Social Science & Medicine*, *60*, 1467-1478.

Gudykunst, W. B. & Ting-Toomey, S. (1988). *Culture and interpersonal communication.* Newbury Park, CA: Sage Publications.

Gudykunst, W. B. (1995). Anxiety/Uncertainty management (AUM) theory: Current status. In R. Wiseman (Eds.), *Intercultural communication theory (pp. 8-58).* CA: Thousand Oaks.

Gudykunst, W. B. (2001). *Asian American ethnicity and communication.* Thousand Oaks, CA: Sage.

Guidry, J., Aday, L. A., Zhang, D., & Winn, R. J. (1998). Information sources and barriers to cancer treatment by racial ethnic minority status of patients. *Journal of Cancer Education*, *13(1)*, 43–48.

Hall, E. T. (1976). *Beyond culture*. NY: Doubleday.

Han, H. Kang, J. Kim, K. B., Ryu, J. P., & Kim, M. T. (2007). Barriers to and strategies for recruiting Korean Americans for community-partnered health promotion research. *Journal of Immigrant Health*, *9,* 137-146.

Helman, C. G. (1994). *Culture, health and illness*. Jordan Hill, Oxford: Butterworth-Heinemann.

Hesse, B. W., Nelson, D. E., Kreps, G. L., Croyle, R. T., Arora, N. K., Rimer, B. K., & Viswanath, K. (2005). Trust and sources of health information: The impact of the Internet and its implications for health care providers: Findings from the first health information national trends survey. *Archives of Internal Medicine*, *165,* 2618-2624.

Hofstede, G. (1980). *Culture's consequences.* Beverly Hills, CA: Sage.

Hofstede, G. & Bond, M. H. (1984). Hofstede's culture dimensions: An independent validation using Rokeach's value survey. *Journal of Cross-Cultural Psychology*, *15(4)*, 417-433.

Hofstede, G. & Bond, M. H. (1988). The confucius connection: From cultural roots to economic growth. *Organizational Dynamics*, *16(4)*, 4-21.

Hofstede. G. (1991). *Cultures and organizations: Software of the mind.* London: McGraw-Hill.

Hofstede, G. (2001). *Cultures consequences: Comparing values, behaviours, institutions and organizations across nations* (2nd ed.). Thousand Oaks, CA: Sage.

Hsia, H. J. (1987). The health-information seeking behavior of the Mexican-Americans in West Texas. *Health Marketing Quarterly*, *4*, 107-117.

Hudson, J. C. & Watts, E. (1996). Hispanic preferences for health care providers and health care information. *Health Marketing Quarterly*, *14(1)*, 67-83.

Hughes, D. L. (2002). *Quality of health care for Asian Americans: A fact sheet.* The Commonwealth Fund 2001 Health Care Quality Survey.

Hurh, W. (1998). *The Korean Americans.* Westport, CT: Greenwood Press.

Institute of Medicine. (2002). *Speaking of health: Assessing health communication strategies for diverse populations.* Washington, D.C.: The National academies Press.

Iverson, S. A., Howard, K. B., & Penney, B. K. (2008). Impact of Internet use on health-related behaviors and the patient-physician relationship: A survey-based study and review. *Journal of the American Osteopathic Association*, *108(12)*, 699-711.

Jeong, W. (2004). Unbreakable ethnic bonds: Information-seeking behavior of Korean graduate students in the United States. *Library and Information Science Research*, *26(3)*, 384-400.

Jo, A. M., Maxwell, A. E., Rick, A. J., Cha, J., & Bastani, R. (2009). Why are Korean American physicians reluctant to recommend colorectal cancer screening to Korean American patients? *Journal of Immigrant Minority Health*, *11,* 302-309.

Josefsson, U. (2005). Coping with illness online: The case of patients' online communities. *The Information Society*, *21*, 143-153.

Juon, H. S., Kim, M., Shankar, S., & Han, W. (2004). Predictors of adherence to screening mammography Among Korean American women. *Preventive Medicine*, *39(3)*, 474–481.

Kakai, H. Maskarinec, G., Shumay, D., Tatsumura, Y., & Tasaki, K. (2003). Ethnic differences in choices of health information by cancer patients using complementary and alternative medicine: An exploratory study with correspondence analysis. *Social Science and Medicine*, *56*, 851-862.

Kar, S. B., Alcalay, R., & Alex, S. (2001). *Health communication: A multicultural perspective.* Thousand Oaks, CA: Sage.

Kagawa-Singer, M. (2001). Providing resources for Asian Americans and Pacific Islanders. *Cancer practice, 9(2),* 100-103.

Katz, E., Blumler, J. G., & Gurevitch, M. (1974). Utilization of mass communication by the Individual. In J. G. Blumler, and E. Katz (Eds.), *The Uses of Mass Communications: Current Perspectives on Gratifications Research (pp. 19-32).* Beverly Hills: Sage.

Kim, E. & Wolpin, S. (2008). The Korean American family: Adolescents versus parents acculturation to American culture. *Journal of Cultural Diversity*, *15(3)*, 108-116.

Kim, J. H. & Menon, U. (2009). Pre- and postintervention differences in acculturation, knowledge, beliefs, and stages of readiness for mammograms among Korean American women. *Oncology Nursing Forum*, *36(2)*, 80-92.

Kim, M. T., Juon, H. J., Hill, M. N., Post, W., & Kim, K. B. (2001). Cardiovascular disease risk factors in Korean American elderly. *Western Journal of Nursing Research, 23,* 269-282.

Kim, M. T., Han, H. R., Kim, K. B., Duong, D. (2002). Use of traditional and western medicine among Korean American elderly. *Journal of Community Health*, *27(2)*, 109-120.

Kim, O. (1999). Mediation effect of social support between ethnic attachment and loneliness in older Korean immigrants. *Research in Nursing & Health*, *22(2),* 169-175.

Kim, W. & Keefe, R. H. (2009). Examining health-related factors among an ethnically diverse group of Asian-American mental health clients. *Journal of Evidence-Based Social Work*, *6(1),* 17-28.

Koh, H. C. (2003). Cultural perspectives on Korean American cancer control. *Korean and Korean-American Studies Bulletin*, *13(1/2)*, 16-39.

Koo, M. (2005). Challenges of Internet recruitment: A case study with disappointing results. *Journal of Medical Internet Research*, *7(1)*, retrieved from http://www.jmir.org/2005/1/e6/.

Kreutre, M. W. & McClure, S. M. (2004). The role of culture in health communication. *Annual Review of Public Health*, *25*, 439-455.

Lee, E. E., Tripp-Reimer, T., Miller, A. M., Sadler, G. R., & Lee, S. (2007). Korean American women's beliefs about breast and cervical cancer and associated symbolic meanings. *Oncology Nursing Forum*, *34(3)*, 713-720.

Lee, E., Ro, S., & Lee, C. (1996). A survey of the consumer attitude toward health food in Korea: (I) Consumer perceptions of health and food habits. *Korean Journal of Dietary Culture, 11(4)*, 475-485.

Lee, H. Kim, J., & Han, H. (2009). Do cultural factors predict mammography behaviour among Korean immigrants in the USA? *Journal of Advanced Nursing*, *65(12)*, 2574-2584.

Lee, H. B., Hanner, J. A., Cho, S., Han, H., & Kim, M. T. (2008). Improving access to mental health services for Korean American immigrants: Moving toward a community partnership between religious and mental health services. *Psychiatry Investigation*, *5(1)*, 14–20.

Lee, J. A., Yeo, G., & Gallagher-Thompson, D. (1993). Cardiovascular disease risk factors and attitudes towards prevention among Korean-American elders. *Journal of Cross-Cultural Gerontology*, *8*, 17-33.

Lee, S. K., Sobal, J., & Frongillo E. Jr. (1999). Acculturation and dietary practices among Korean Americans. *Journal of the American Dietetic Association*, 99, 1084–1089.

Lee, W., La Ferle, C., & Tharp, M. (2004). Ethnic influences on communication patterns: Word of mouth and traditional and nontraditional media usage. In J. D. Williams, Wei-Na Lee, & C. P. Haugtvedt (Eds.), *Diversity in advertising: Broadening the scope of research directions (pp. 177-200).* Mahwah, NJ: Lawrence Erlbaum Associates.

Lim, J., Gonzalez, P., Wang-Letzkus, M. F., & Ashing-Giwa, K. T. (2008). Understanding the cultural health belief model influencing health behaviors and health-related quality of life between Latina and Asian-American breast cancer survivors. *Support Care Cancer*, *17(9)*, 1137-1147.

Lorence, D., Park, H., & Fox, S. (2006). Assessing health consumerism on the web: A demographic profile for information-seeking behaviors. *Journal of Medical system*, *30(4)*, 251–258.

Ma, G. X., Shive, S., Tan, Y., Gao, W., Rhee, J., Park, M., Kim, J., & Toubbeh, J. I. (2009). Community-based colorectal cancer intervention in underserved Korean Americans. *Cancer Epidemiology*, *33,* 381-386.

Matsumoto, D. (2000). *Culture and psychology: People around the world* (2nd ed.). Belmont, CA: Wadsworth/Thomson Learning.

Matthews, A.K., Sellergren, S. A., Manfredi, C., & Williams, M. (2002). Factors influencing medical information seeking among African American cancer patients. *Journal of Health Communication*, *7*, 205–219

Melkote, S. & Liu, D. (2000). The role of the Internet in forging a pluralistic integration. *Gazette*, *62*. 494-504.

Min, P. (1995). *Asian Americans: Contemporary trends and issues.* Newbury Park, CA: Sage.

Monnier, J., Laken, M., & Carter, C. L. (2002). Patient and caregiver interest in Internet-based cancer services. *Cancer Practice*, *10(6)*, 305-310.

Nunnally, J. C. (1978). *Psychometric theory.* New York: McGrawHill.

Olmedo, E. & Padilla, A. M. (1978). Empirical and construct validation of a measure of acculturation for Mexican Americans. *The Journal of Social Psychology*, *105(2),* 179-187.

Phinney, J. S., Horenczyk, G., Liebkind, K., & Vedder, P. (2001). Ethnic identity, immigration, and well-being: An interactional perspective. *Journal of Social Issues*, *57*, 493–510.

Ponce, N. A., Tseng, W., Ong, P., Shek, Y., Ortiz, S., & Gatchell, M. S. (2009). *The state of Asian American, Native Hawaiian, and Pacific Islander health in California report.* UC Los Angeles: UCLA Center for Health Policy Research.

Preece, J. (2000). *Online communities: Designing usability, supporting sociability.* Chichester, UK: John Wiley & Sons.

Preece, J. & Maloney-Krichmar, D. (2003). Online Communities. In J. Jacko & A. Sears (Eds.), *Handbook of Human-Computer Interaction (pp. 596-620).* Mahwah, NJ: Lawrence Erlbaum Associates.

Reeves, T. J. & Bennett, C. E. (2004). *We the People: Asians in the United States, Census 2000 special reports.* U.S. Census Bureau, Washington, D.C., retrieved from http://www.census.gov/prod/2004pubs/censr-17.pdf.

Rheingold, H. (1993). *The virtual community: Homesteading on the electronic frontier.* Reading, MA: Addison-Wesley, retrieved from http://www.well.com/~hlr/vcbook/vcbookintro.html

Rosengren, K. E. & Windahl, S. (1972). Mass media consumption as a functional alternative. In D. McQuail (Eds.), *Sociology of Mass Communications (pp. 166-194).* Middlesex, England: Penguin.

Rosengren, K. E. (1986). Media linkages between culture and other societal systems. In M. L. McLaughlin (Eds.), *Communication Yearbook 9 (pp. 19-56).* Beverly Hills: Sage.

Rubin, A. M. & Windahl, S. (1986). The uses and dependency model of mass communication. *Critical Studies in Mass Communication*, *3*, 184–199.

Rubin, A. M. (2002). The uses-and-gratifications perspective of media effects. In J. Bryant and D. Zillman (Eds.), *Media Effects: Advances in Theory and Research (pp. 549-582).* Mahwah, NJ: Erlbaum.

Ryu, H., Young, W. B., & Park, C. (2001). Korean American health insurance and health service utilization. *Research in Nursing and Health, 24(6)*, 494-505.

Saldov, M. Kakai, H., McLaughlin, L., & Thomas, A. (1998). Cultural barriers in oncology: Issues in obtaining medical informed consent from Japanese-American elders in Hawaii. *Journal of Cross-Cultural Gerontology*, *13(3)*, 265-279.

Schwartz, S. H. (1994). Beyond individualism/collectivism: New cultural dimensions of values. In U. Kim, H.C. Triandis, C. Kagitcibasi, S.C. Choi, & G.. Yoon (Eds.), *Individualism and collectivism: Theory, method, and applications (pp. 85-119),* Newbury Park, CA: Sage.

Sodowsky, G. R., & Carey, J. C. (1988). Relationships between acculturation-related demographics and cultural attitudes of an Asian-Indian immigrant group. *Journal of Multicultural Counseling and Development, 16,* 117-136.

Sohn, L. & Harada, N. D. (2004). Time since immigration and health service utilization of Korean-American older adults living in Los Angeles county. *Journal of the American Geriatrics Society*, *52(11)*, 1946-1950.

Sohng, K. Sohng, S., & Yeom, H. (2002). Health-promoting behaviors of elderly Korean immigrants in the United States. *Public Health Nursing*, *19(4)*, 294-300.

Spector, R. E. (2000). *Cultural diversity in health and illness* (5th ed.). Upper Saddle River, NJ: Prentice Hall.

Sriramesh, K. & White, J. (1992). Societal culture and public relations. In J. E. Grunig (Eds.), *Excellence in Public Relations and Communication Management (pp. 597-614).* Hillsdale, NJ: Lawrence Erlbaum Associates.

Stout, P. A., Ball, J. G., & Villegas, J. (2007). Health marketing and the Internet. In D. W. Schumann (Eds.), *Advertising and the World Wide Web* (pp. 363-395). New York: Lawrence Erlbaum Associates.

Sung, C. L. (1999). Asian patients' distrust of western medical care: One perspective. *The Mount Sinai Journal of Medicine*, *66(4)*, 259-261.

Tanjasiri S. P. & Nguyen T. N. (2009). The health of women. In: T. S. Chau, N. S. Islam, & M. J. Rey (Eds), *Asian American Communities and Health: Context, Research, Policy and Action* (*pp. 132-161*). San Francisco, Jossey-Bass.

Tarn, D. M., Meredith, L. S., Kagawa-Singer, M., Matsumura, S., Bito, S., Oye, R. K., Liu, H., Kahn, K. L., Fukuhara, S., & Wenger, N. S. (2005). Trust in one's physician: The role of ethnic match, autonomy, acculturation, and religiosity among Japanese and Japanese Americans. *Annals of Family Medicine*, *3(4)*, 339-347.

Ting-Toomey, S. (1994). Managing intercultural conflicts effectively. In L. Samovar and R. Porter (Eds.), *Intercultural Communication: A Reader (pp. 360-372).* Belmont, CA: Wadsworth.

Triandis, H.C. (1995). *Individualism and collectivism.* Boulder, CO: Westview Press.

Triandis, H. C. & Gelfand, M. J. (1998). Converging measurement of horizontal and vertical individualism and collectivism. *Journal of Personality and Social Psychology*, *74*, 118-128.

Tustin, N. (2010). The role of patient satisfaction in online health information seeking. *Journal of Health Communication, 15(1)*, 3-17.

U.S. Census Bureau (2004). *American community survey.* Washington, D.C.:GPO.

U.S. Census Bureau (2007). *Statistical abstract of the United States.* Washington, D.C.:GPO.

Valencia, H. (1985). Developing an index to measure 'Hispanicness'" In W. O. Bearden & R. G. Netemeyer (Eds.), *Handbook of Marketing Scales (pp. 69-70).* Thousand Oaks, CA: Sage.

Wellman, B. (1997). An electronic group is virtually a social network. In S. Kiesler (Eds.), *Cultures of the Internet (pp. 179-205).* Mahawah, NJ: Lawrence Erlbaum.

Wellman, B. & Gulia, M. (1999). The network basis of social support: A network is more than the sum of its ties. In B. Wellman (Eds.), *Networks in the Global Village (pp. 83-118).* Boulder, CO: Westview Press.

Whittemore, R., Bak, P. S., Melkus, G. D., & Grey, M. (2003). Promoting lifestyle change in the prevention and management of Type 2 Diabetes, *Journal of the American Academy of Nurse Practitioners*, 15(8), 341-349.

World Health Organization (1958). *The First ten years of the World Health Organization.* Geneva: World Health Organization.

Wu, M. C. Kviz, F. J., & Miller, A. M. (2009). Identifying individual and contextual barriers to seeking mental health services among Korean American immigrant women. *Issues in Mental Health Nursing*, *30(2)*, 78-85.

Ye, J. (2006). An examination of acculturative stress among Chinese international students, social support, and use of online ethnic social groups. *Howard Journal of Communication, 17(1)*, 1-20.

Young, M. M. (2002). *Hispanic health information outreach: Recommendations for NLM strategy and tactics.* presented at the Joint Meeting of MLGSCA/NCNMLG, Scottsdale, AZ., retrieved from http://nnlm.gov/evaluation/tools/hispanic outreach.pdf

Yum, J. (1982). Communication diversity and information acquisition among Korean immigrants in Hawaii. *Journal of the American Society for Information Science*, 8(2), 154-169.

APPENDIX A: QUESTIONNAIRE

> ➤ **Questionnaire for Korean Americans**

1. Please select either Korean or English version of questionnaire

   1) Korean
   2) English

[Informed consent form]

* Please select the answer that corresponds to the answer closest to your opinion or situation, or write in the information requested. All individual responses will be kept confidential.

SQ1. Are you at least 18 years old?

   1. Yes
   2. No → I am sorry, but you are not qualified for the survey. Thanks for your time and cooperation.

SQ2. Are you a resident or a temporary visitor to the U.S.?

   1. A resident
   2. A nonimmigrant visitor/temporary resident to the United States (e.g., temporary worker, student) → I am sorry, but you are not qualified for the survey. Thanks for your time and cooperation.

SQ3. Have you or someone in your family currently living with you ever been diagnosed with diabetes? If you or your family member(s) in the U.S. have pre-diabetes, please choose "Yes." (Pre-diabetes means blood glucose levels that are higher than normal but not high enough to be diagnosed as diabetes.)

   1. Yes, I have been diagnosed with diabetes. → SQ4.
   2. Yes, my family member(s) has/have been diagnosed with diabetes. → SQ3-1
   3. Yes, I and my family member(s) have been diagnosed with diabetes. → SQ3-1
   4. No → I am sorry, but you are not qualified for the survey. Thanks for your time and cooperation.

SQ3-1. Who is/are the family member(s) with diabetes? (You can select multiple answers)

1. Parent(s)/Parent(s)-in-law
2. Spouse
3. Child(ren)
4. Other family member(s)

SQ4. Within the past 12 months, have you ever used an online community to look for diabetes-related information for yourself? If you have searched for other users' questions/answers/comments/ experiences/discussions or posted your question on a discussion forum of an online community about diabetes, please choose "Yes."
1. Yes
2. No → I am sorry, but you are not qualified for the survey. Thanks for your time and cooperation.

< Questions for Korean Americans who are diabetes patients>

* The following are questions about your current health condition. For each question, please select the answer that best represents your position or situation.

Q1. How would you describe your overall health using a scale where 1 means "Extremely unhealthy" and 7 means "Extremely healthy"?

Extremely unhealthy   ___ : ___ : ___ : ___ : ___ : ___ : ___   Extremely healthy
                        1   2   3   4   5   6   7

Q2. How long ago were you diagnosed with diabetes?

1. Less than one year
2. More than 1 year – less than 5 years since diagnosed
3. More than 5 years – less than 10 years since diagnosed
4. 10 or more years
5. Do not remember/Don't know

Q3. What type of diabetes do you have?

1. Pre-diabetes
2. Type 1 diabetes
3. Type 2 diabetes
4. Diagnosed, but don't know which type of diabetes I have.

Q4. Currently, how are you currently treating the diabetes? (You can select multiple answers)

1. Insulin (pens, injectors, pumps, etc)
2. Take diabetes pills (oral medication)
3. Diabetes diet
4. Trying to lose weight
5. Physical exercise
6. Changing lifestyle (e.g., quitting smoking)
7. Monitor blood glucose level regularly
8. See a physician regularly to check and discuss the symptoms and treatment options
9. Go to clinic to prevent or treat complications (e.g., eye exam)
10. Alternative therapies (e.g., acupuncture)
11. Alternative medicine (e.g., Chinese herbal medicine)
12. None of the above
13. Other(s) _____

< Questions for Korean Americans who have family member(s) with diabetes>

* The following are questions about the current health condition of your family member with diabetes. If more than two of your family members have diagnosed with diabetes, please answer these questions thinking about the one for whom you have engaged in diabetes-related information search the most.

Q1. How would you describe your family member's overall health using a scale where 1 means "Extremely unhealthy" and 7 means "Extremely healthy"?

Extremely unhealthy   ___ : ___ : ___ : ___ : ___ : ___ : ___   Extremely healthy
                                          1   2   3   4   5   6   7

Q2. How long ago was your family member diagnosed with diabetes?

1. Less than one year
2. More than 1 year – less than 5 years since diagnosed
3. More than 5 years – less than 10 years since diagnosed
4. 10 or more years
5. Do not remember/Don't know

Q3. What type of diabetes does your family member have?

1. Pre-diabetes
2. Type 1 diabetes
3. Type 2 diabetes
4. Diagnosed, but don't know which type of diabetes my family has.

Q4. Currently, how is your family member currently treating the diabetes? (You can select multiple answers)

1. Insulin (pens, injectors, pumps, etc)
2. Take diabetes pills (oral medication)
3. Diabetes diet
4. Trying to lose weight
5. Physical exercise
6. Changing lifestyle (e.g., quitting smoking)
7. Monitor blood glucose level regularly
8. See a physician regularly to check and discuss the symptoms and treatment options
9. Go to clinic to prevent or treat complications (e.g., eye exam)
10. Alternative therapies (e.g., acupuncture)
11. Alternative medicine (e.g., Chinese herbal medicine)
12. None of the above
13. Other(s) _____

<Questions for all Korean Americans>

Q5. From the list provided below, please select all the sources where you usually find information on diabetes and treatment options. (You can select multiple answers)

1. Physicians	2. Pharmacists
3. American TV	4. Korean TV
5. American radio	6. Korean radio
7. American newspapers including online newspapers	8. Korean newspapers including online newspapers
9. American magazines	10. Korean magazines
11. Professional medical publications	12. Printed materials from doctor's office, pharmacies, or drug companies
13. Health-related websites (e.g., WebMD, mayo clinic, American diabetes association home page)	14. Health-related websites in Korean (including portal sites like naver or daum)

15. Online communities for Korean Americans (e.g., missyusa, mizville, missycoupons, regional Korean American online community)	16. Online communities for general Americans (e.g., diabeticconnect, dlife, diabetesdaily)
17. Online communities for Koreans	18. Family members/Relatives
19. Korean American friends/colleagues	20. American friends/colleagues
21. Other(s) (Please write in: _____)	

Q6. (For respondents who chose 13, 14, 15, 16, 17 to Q5) Based on the results of your overall search for information on diabetes on the Internet, tell me how much you agree or disagree with the following statements.

	Strongly Disagree						Strongly Agree	DK
(1) I wanted more information, but did not know where to find it.	1	2	3	4	5	6	7	9
(2) I was satisfied with the information I found.	1	2	3	4	5	6	7	9
(3) The information I found was hard to understand.	1	2	3	4	5	6	7	9
(4) I felt frustrated during my search for the information.	1	2	3	4	5	6	7	9

Q7. (For respondents who chose 15 "online communities for Korean Americans", 16 "online communities for general Americans", 17 "online communities for Koreans" to Q5) What type of diabetes-related information do you usually seek in online communities? Choose all the information you usually seek.

1. Information on causes or risk factors of diabetes
2. Diagnosis / symptoms
3. Information on food choices / diet
4. Information on physical exercise
5. Information on medication
6. Information on alternative medicine(s) and therapies
7. Information on blood glucose monitoring (e.g., self-monitoring techniques, device)
8. Information on health care providers
9. Information on medical costs or insurance
10. Want to talk to people who are just like me rather than seek a specific information
11. Other(s) _____

Q8a. (For respondents who chose example 15 "online communities for Korean Americans" to Q5) How often do you use online communities for Korean Americans particularly to search for diabetes-related information?

1. Once a week or more frequently
2. 2-3 times a month, but less than once a week
3. Once a month
4. Once every 2/3 months
5. Once every six months
6. Less than once every six months

Q8b. (For respondents who chose example 16 "online communities for general Americans" to Q5) How often do you use online communities for general Americans particularly to search for diabetes-related information?

1. Once or more a week
2. 2-3 times a month, but less than once a week
3. Once a month
4. Once every 2/3 months
5. Once every six months
6. Less than once every six months

Q8c. (For respondents who chose example 17 "online communities for Koreans living in Korea" to Q5) How often do you use online communities for Koreans in Korea particularly to search for diabetes-related information?

1. Once or more a week
2. 2-3 times a month, but less than once a week
3. Once a month
4. Once every 2/3 months
5. Once every six months
6. Less than once every six months

Q9. After your information search in an online community, which of the following actions did you take? You can select multiple answers.

1. I/My family member with diabetes talked with the doctor about the information I found.
2. I/My family member applied what I learned to change diet to get healthier.
3. I/My family member applied what I learned to change lifestyle (e.g., exercise) to get healthier.
4. I/My family member took alternative medicine or therapy based on the information I found.

5. I/My family member asked the doctor to change the drug for diabetes treatment based on the information I found.
6. I/My family member with diabetes changed the primary care physician based on the information I found.
7. Other(s) _____
8. Did nothing.

Q10. How likely would you talk to a doctor about health information you found from online communities?

Very unlikely ___ : ___ : ___ : ___ : ___ : ___ : ___ Very likely
              1   2   3   4   5   6   7

Q11. How likely would you apply the information you gathered from online communities to change your or your family's lifestyle?

Very unlikely ___ : ___ : ___ : ___ : ___ : ___ : ___ Very likely
              1   2   3   4   5   6   7

Q12. Below is a list of information sources people may use to seek for diabetes-related information. Please rate each source on its usefulness to you by circling the number in one of 7 spaces, where 7 means "Very useful" and 1 means "Not at all useful." By usefulness, I mean the information educates and helps you make decisions about treatment of diabetes. If you are not sure or don't know, mark DK for "Don't know/Not sure."

	Not at all useful					Very useful		DK
(1) Physicians	1	2	3	4	5	6	7	9
(2) Pharmacists	1	2	3	4	5	6	7	9
(3) American TV	1	2	3	4	5	6	7	9
(4) Korean TV	1	2	3	4	5	6	7	9
(5) American radio	1	2	3	4	5	6	7	9
(6) Korean radio	1	2	3	4	5	6	7	9
(7) Newspapers including online newspapers	1	2	3	4	5	6	7	9
(8) Korean newspapers including online newspapers	1	2	3	4	5	6	7	9
(9) American magazines	1	2	3	4	5	6	7	9

(10) Korean magazines	1	2	3	4	5	6	7	9
(11) Professional medical publications	1	2	3	4	5	6	7	9
(12) Printed materials from doctor's office pharmacies, or drug companies	1	2	3	4	5	6	7	9
(13) Health-related websites (e.g., Web MD, Mayo clinic, American diabetes association home page)	1	2	3	4	5	6	7	9
(14) Health-related websites in Korean (including portal sites like Naver, Daum)	1	2	3	4	5	6	7	9
(15) Online communities for Korean Americans (e.g., missyusa, mizville, missycoupons, regional Korean American online community)	1	2	3	4	5	6	7	9
(16) Online communities for Americans (e.g., diabeticconnect, dlife, diabetesdaily)	1	2	3	4	5	6	7	9
(17) Online communities for Koreans living in Korea (e.g., naver café, daum café)	1	2	3	4	5	6	7	9
(18) Family members/relatives	1	2	3	4	5	6	7	9
(19) Korean American friends/colleagues	1	2	3	4	5	6	7	9
(20) American friends/colleagues	1	2	3	4	5	6	7	9

Q13. Below is a list of information sources about diabetes. Please rate each source on its trustworthiness to you by circling the number in one of 7 spaces, where 7 means "Very trustworthy" and 1 means "Not at all trustworthy." If you are not sure or don't know, mark DK for "Don't know/Not sure."

	Not at all trustworthy				Very trustworthy			DK
(1) Physicians	1	2	3	4	5	6	7	9
(2) Pharmacists	1	2	3	4	5	6	7	9
(3) American TV	1	2	3	4	5	6	7	9
(4) Korean TV	1	2	3	4	5	6	7	9
(5) American radio	1	2	3	4	5	6	7	9
(6) Korean radio	1	2	3	4	5	6	7	9
(7) Newspapers including online newspapers	1	2	3	4	5	6	7	9

(8) Korean newspapers including online newspapers	1	2	3	4	5	6	7	9
(9) American magazines	1	2	3	4	5	6	7	9
(10) Korean magazines	1	2	3	4	5	6	7	9
(11) Professional medical publications	1	2	3	4	5	6	7	9
(12) Printed materials from doctor's office pharmacies, or drug companies	1	2	3	4	5	6	7	9
(13) Health-related websites (e.g., Web MD, Mayo clinic, American diabetes association home page)	1	2	3	4	5	6	7	9
(14) Health-related websites in Korean (including portal sites like Naver, Daum)	1	2	3	4	5	6	7	9
(15) Online communities for Korean Americans (e.g., missyusa, mizville, missycoupons, regional Korean American online community)	1	2	3	4	5	6	7	9
(16) Online communities for Americans (e.g., diabeticconnect, dlife, diabetesdaily)	1	2	3	4	5	6	7	9
(17) Online communities for Koreans living in Korea (e.g., naver café, daum café)	1	2	3	4	5	6	7	9
(18) Family members/relatives	1	2	3	4	5	6	7	9
(19) Korean American friends/colleagues	1	2	3	4	5	6	7	9
(20) American friends/colleagues	1	2	3	4	5	6	7	9

Q14. Imagine that you need to find some information about treatment options for diabetes for yourself or someone in your family right now. Where would you go first? (Please select only one source)

1. Physicians
2. Pharmacists
3. American TV
4. Korean TV
5. American radio
6. Korean radio
7. American newspapers including online newspapers
8. Korean newspapers including online newspapers
9. American magazines

10. Korean magazines
11. Professional medical publications
12. Printed materials from doctor's office, pharmacies, or drug companies
13. Internet sites for general Americans
14. Internet sites for Korean Americans
15. Internet sites for Koreans
16. Family/relatives
17. Korean friends/colleagues
18. American friends/colleagues
19. Other(s) (Please write in: _____)

\<Questions for Korean Americans who are diabetes patients\>

Q15. Are you covered by any form of health insurance at this time? If you have Medicaid or Medicare, please choose "yes."

    1. Yes   2. No   3. Don't Know

Q16. Currently, do you have a regular primary care physician you usually go to when you need health care?

1. Yes, I have a Korean primary care physician.
2. Yes, I have an American primary care physician.
3. No, I don't have any regular primary care physician → Go to Q19.

Q17. How long have you been seeing the current primary care physician? _____month(s)

Q18. Below is a series of statements about your feelings or thoughts on the primary care physician for you. Please indicate how much you agree or disagree with each of the statements. 7 means "Strongly agree" and 1 means "Strongly disagree." If you are not sure or don't know, choose DK for "Don't know/Not sure." If you don't have any regular primary care physician, please consider the doctor you saw most recently.

	Strongly disagree					Strongly agree		DK
(1) The doctor provides me high-quality medical care.	1	2	3	4	5	6	7	9
(2) The doctor makes medical decisions in my best Interest.	1	2	3	4	5	6	7	9
(3) The doctor listens to my health concerns attentively and takes them seriously.	1	2	3	4	5	6	7	9
(4) The doctor gives me the chance to ask all the health-related questions.	1	2	3	4	5	6	7	9

(5) The doctor explains things in a way I could easily understand.	1	2	3	4	5	6	7	9
(6) The doctor might perform unnecessary tests or procedures.	1	2	3	4	5	6	7	9

Q19. During the past 12 months, how many times did you go to a clinic to see a health care professional (e.g., doctor, nurse) to get treatments for your diabetes? _____ times

       99. None → Go to Q22.

Q20. How long do you usually have to wait to see doctor after making an appointment?

1. Less than a week
2. 1-2 weeks
3. 3-4 weeks
4. 1-2 months
5. More than two months
6. Don't know

Q21. Overall, how would you rate your satisfaction with the quality of health care you received in a most recent visit to a physician?

  Very unsatisfied   ___ : ___ : ___ : ___ : ___ : ___ : ___   Very satisfied
                     1   2   3   4   5   6   7

  Don't know/Not sure _____
                9

<Questions for Korean Americans who have family member(s) with diabetes>

Q15. Is your family member with diabetes covered by any form of health insurance at this time? If your family member with diabetes has Medicaid or Medicare, please choose "yes."
      1. Yes   2. No   3. Don't Know

Q16. Currently, does your family member with diabetes have a regular primary care physician he/she usually goes to when he/she needs health care?

1. Yes, my family member with diabetes has a Korean primary care physician.
2. Yes, my family member with diabetes has an American primary care physician.

3. No, my family member with diabetes doesn't have any regular primary care physician → Go to Q19.

Q17. How long have your family member with diabetes been seeing the current primary care physician? _____ month(s)   999. Don't know/Not sure

Q18. Below is a series of statements about your feelings or thoughts on the primary care physician for your family member with diabetes. Please indicate how much you agree or disagree with each of the statements. 7 means "Strongly agree" and 1 means "Strongly disagree." If you are not sure or don't know, choose DK for "Don't know/Not sure." If your family member with diabetes doesn't have any regular primary care physician, please consider the doctor he/she saw most recently.

	Strongly disagree						Strongly agree	DK
(1) The doctor provides my family member with diabetes high-quality medical care.	1	2	3	4	5	6	7	9
(2) The doctor makes medical decisions in my family member's best interest.	1	2	3	4	5	6	7	9
(3) The doctor listens to my family member's health concerns attentively and takes them seriously.	1	2	3	4	5	6	7	9
(4) The doctor gives my family member the chance to ask all the health-related questions.	1	2	3	4	5	6	7	9
(5) The doctor explains things in a way my family member could easily understand.	1	2	3	4	5	6	7	9
(6) The doctor might perform unnecessary tests or procedures.	1	2	3	4	5	6	7	9

Q19. During the past 12 months, how many times did your family member with disbetes go to a clinic to see a health care professional (e.g., doctor, nurse) to get treatments for his/her diabetes? _____ times

       98. Don't know/Not sure → Go to Q22.
       99. None → Go to Q22.

Q20. How long does your family member with diabetes usually have to wait to see doctor after making an appointment?

    1. Less than a week
    2. 1-2 weeks
    3. 3-4 weeks

4. 1-2 months
5. More than two months
6. Don't know

Q21. Overall, how would you rate your satisfaction with the quality of health care your family member received in a most recent visit to a physician?

Very unsatisfied   __ : __ : __ : __ : __ : __ : __   Very satisfied
                       1   2   3   4   5   6   7

Don't know/Not sure _____
                   9

<Questions for all Korean Americans>

Q22. How much choice do you feel you have in choosing a Korean physician in your area?

1. A great deal of choice
2. Fair amount of choice
3. Not too much choice
4. Very limited choice
5. As far as I know, no Korean physician is available

Q23. If you can choose, would you prefer to be treated by a doctor who is a Korean physician or American physician?

1. Korean physician   2. American physician   3. Doesn't matter/ Either is fine

Q24. Below is a series of statements about your general beliefs about health and health care. Please indicate how much you agree or disagree with each of the statements. 7 means "Strongly agree" and 1 means "Strongly disagree." If you are not sure or don't know, choose DK for "Don't know/Not sure."

	Strongly Disagree					Strongly Agree		DK
(1) No medical symptom means "healthy."	1	2	3	4	5	6	7	9
(2) A disease is a symptom of imbalance within my body.	1	2	3	4	5	6	7	9
(3) Medication can provide only temporary relief.	1	2	3	4	5	6	7	9
(4) Medication can completely cure underlying problems.	1	2	3	4	5	6	7	9

80

(5)	Eating healthy food is the best way to stay healthy.	1 2 3 4 5 6 7 9
(6)	Unhealthy eating habits or heavy consumption of unhealthy food is the primary cause of illnesses.	1 2 3 4 5 6 7 9
(7)	Western medications are too strong/powerful for Koreans.	1 2 3 4 5 6 7 9

Q25. Would you identify more with Americans or more with Koreans?

Americans   ___ : ___ : ___ : ___ : ___ : ___ : ___   Koreans
                   1   2   3   4   5   6   7

Q26. Would you say you speak English…

   1. Very well   2. Well   3. Not well   4. Not at all

Q27. Would you say you speak Korean…

   1. Very well   2. Well   3. Not well   4. Not at all

Q28. Would you say your family speaks Korean at home…

   1. All of the time
   2. Most of the time
   3. Sometimes
   4. Not at all

Q29. If you had the chance to communicate with someone just as well in English or Korean, which would you prefer to converse with them?

   1. Korean   2. Either Korean or English   3. English

Q30. Do you have household members with English proficiency?

   1. Yes   2. No

Q31. When seeking health information, do you specifically seek out Korean language sources (Korean media or Korean-speaking doctors) or rely on general English language sources?

1. Always or almost always seek out Korean sources (e.g., Korean-speaking doctors, Korean media, or Korean website).
2. Usually rely on Korean sources though sometimes use general English sources.
3. Use both Korean and English sources equally.
4. Rely on general English language sources though sometimes use Korean sources.
5. Always or almost always seek out general English sources.

Q32. What is your food preference at home?

1. Exclusively Korean food
2. Mostly Korean food with some American food
3. About equally Korean and American food
4. Mostly American food
5. Exclusively American food

Q33. Were you born in the U.S.?

1. Yes → Go to Q35.　　　　2. No

Q34. How long have you lived in the U.S.? (Please write in.) _____ years

Q35. What is your age in years? (Please write in.) _____ years

Q36. What is your gender?
 1. Male
 2. Female

Q37. What is the last grade or class that you completed in school?

1. None
2. Grade 1-8
3. High school incomplete (Grades 9-11)
4. High school graduate
5. Business, Technical, or Vocational school after high school
6. Some college, no 4-year degree
7. College graduate
8. Post-graduate training or professional schooling after college

Q38. Before taxes, which of the following categories did your family income fall into
     last year?

    1. Less than $10,000
    2. $10,000 to under $20,000
    3. $20,000 to under $30,000
    4. $30,000 to under $40,000
    5. $40,000 to under $50,000
    6. $50,000 to under $60,000
    7. $60,000 to under $70,000
    8. $70,000 to under $80,000
    9. $80,000 to under $90,000
    10. $90,000 to under $100,000
    11. $100,000 to under $150,000
    12. $150,000 to under $199,999
    13. $200,000 or more

Thank you very much for your time and cooperation. To receive your gift card, please
leave your name, mailing address, and email address.

> ➢ **Questionnaire for general Americans**

[Informed consent form]

Please select the answer that corresponds to the answer closest to your opinion or situation, or write in the information requested. All individual responses will be kept confidential.

SQ1. Are you at least 18 years old?

1. Yes
2. No → I am sorry, but you are not qualified for the survey. Thanks for your time and cooperation.

SQ2. Have you or someone in your family currently living with you ever been diagnosed with diabetes? If you or your family member(s) in the U.S. have pre-diabetes, please choose "Yes." (Pre-diabetes means blood glucose levels that are higher than normal but not high enough to be diagnosed as diabetes.)

1. Yes, I have been diagnosed with diabetes. → SQ3.
2. Yes, my family member(s) has/have been diagnosed with diabetes. → SQ2-1
3. Yes, I and my family member(s) have been diagnosed with diabetes. → SQ2-1
4. No → I am sorry, but you are not qualified for the survey. Thanks for your time and cooperation.

SQ2-1. Who is/are the family member(s) with diabetes? (You can select multiple answers)

1. Parent(s)/Parent(s)-in-law
2. Spouse
3. Child(ren)
4. Other family member(s)

SQ3. Within the past 12 months, have you ever used an online community to look for diabetes-related information for yourself? If you have searched for other users' questions/answers/comments/ experiences/discussions or posted your question on a discussion forum of an online community about diabetes, please choose "Yes."

1. Yes
2. No → I am sorry, but you are not qualified for the survey. Thanks for your time and cooperation.

< Questions for general Americans who are diabetes patients>

* The following are questions about your current health condition. For each question, please select the answer that best represents your position or situation.

Q1. How would you describe your overall health using a scale where 1 means "Extremely unhealthy" and 7 means "Extremely healthy"?

Extremely unhealthy   ___ : ___ : ___ : ___ : ___ : ___ : ___   Extremely healthy
                               1   2   3   4   5   6   7

Q2. How long ago were you diagnosed with diabetes?

1. Less than one year
2. More than 1 year – less than 5 years since diagnosed
3. More than 5 years – less than 10 years since diagnosed
4. 10 or more years
5. Do not remember/Don't know

Q3. What type of diabetes do you have?

1. Pre-diabetes
2. Type 1 diabetes
3. Type 2 diabetes
4. Diagnosed, but don't know which type of diabetes I have.

Q4. Currently, how are you currently treating the diabetes? (You can select multiple answers)

1. Insulin (pens, injectors, pumps, etc)
2. Take diabetes pills (oral medication)
3. Diabetes diet
4. Trying to lose weight
5. Physical exercise
6. Changing lifestyle (e.g., quitting smoking)
7. Monitor blood glucose level regularly
8. See a physician regularly to check and discuss the symptoms and treatment options
9. Go to clinic to prevent or treat complications (e.g., eye exam)
10. Alternative therapies (e.g., acupuncture)
11. Alternative medicine (e.g., Chinese herbal medicine)
12. None of the above
13. Other(s) _____

85

< Questions for general Americans who have family member(s) with diabetes>

* The following are questions about the current health condition of your family member with diabetes. If more than two of your family members have diagnosed with diabetes, please answer these questions thinking about the one for whom you have engaged in diabetes-related information search the most.

Q1. How would you describe your family member's overall health using a scale where 1 means "Extremely unhealthy" and 7 means "Extremely healthy"?

Extremely unhealthy   ___ : ___ : ___ : ___ : ___ : ___ : ___   Extremely healthy
                        1   2   3   4   5   6   7

Q2. How long ago was your family member diagnosed with diabetes?

1. Less than one year
2. More than 1 year – less than 5 years since diagnosed
3. More than 5 years – less than 10 years since diagnosed
4. 10 or more years
5. Do not remember/Don't know

Q3. What type of diabetes does your family member have?

1. Pre-diabetes
2. Type 1 diabetes
3. Type 2 diabetes
4. Diagnosed, but don't know which type of diabetes my family has.

Q4. Currently, how is your family member currently treating the diabetes? (You can select multiple answers)

1. Insulin (pens, injectors, pumps, etc)
2. Take diabetes pills (oral medication)
3. Diabetes diet
4. Trying to lose weight
5. Physical exercise
6. Changing lifestyle (e.g., quitting smoking)
7. Monitor blood glucose level regularly
8. See a physician regularly to check and discuss the symptoms and treatment options
9. Go to clinic to prevent or treat complications (e.g., eye exam)
10. Alternative therapies (e.g., acupuncture)
11. Alternative medicine (e.g., Chinese herbal medicine)

12. None of the above

13. Other(s) _____

<Questions for all general Americans>

Q5. From the list provided below, please select all the sources where you usually find information on diabetes and treatment options. (You can select multiple answers)

1. Physicians	2. Pharmacists
3. TV	4. Radio
5. Newspapers including online newspapers	6. Magazines
7. Professional medical publications	8. Printed materials from doctor's office, pharmacies, or drug companies
9. Health-related websites (e.g., WebMD, mayo clinic, American diabetes association home page)	10. Online communities (e.g., diabeticconnect, dlife, diabetesdaily)
11. Family members/Relatives	12. Friends/Colleagues
13. Other(s) (Please write in: _____)	

Q6. (For respondents who chose 9, 10 to Q5) Based on the results of your overall search for information on diabetes on the Internet, tell me how much you agree or disagree with the following statements.

	Strongly Disagree						Strongly Agree	DK
(1) I wanted more information, but did not know where to find it.	1	2	3	4	5	6	7	9
(2) I was satisfied with the information I found.	1	2	3	4	5	6	7	9
(3) The information I found was hard to understand.	1	2	3	4	5	6	7	9
(4) I felt frustrated during my search for the information.	1	2	3	4	5	6	7	9

Q7. (For respondents who chose example 10 "online communities" to Q5) What type of diabetes-related information do you usually seek in online communities? Choose all the information you usually seek.

1. Information on causes or risk factors of diabetes
2. Diagnosis / symptoms
3. Information on food choices / diet
4. Information on physical exercise

5. Information on medication
6. Information on alternative medicine(s) and therapies
7. Information on blood glucose monitoring (e.g., self-monitoring techniques, device)
8. Information on health care providers
9. Information on medical costs or insurance
10. Want to talk to people who are just like me rather than seek a specific information
11. Other(s) _____

Q8. (For respondents who chose example 10 "online communities" to Q5) How often do you use online communities particularly to search for diabetes-related information?

1. Once a week or more frequently
2. 2-3 times a month, but less than once a week
3. Once a month
4. Once every 2/3 months
5. Once every six months
6. Less than once every six months

Q9. After your information search in an online community, which of the following actions did you take? You can select multiple answers.

1. I/My family member with diabetes talked with the doctor about the information I found.
2. I/My family member with diabetes applied what I learned to change diet to get healthier.
3. I/My family member with diabetes applied what I learned to change lifestyle (e.g., exercise) to get healthier.
4. I/My family member with diabetes took alternative medicine or therapy based on the information I found.
5. I/My family member with diabetes asked the doctor to change the drug for diabetes treatment based on the information I found.
6. I/My family member with diabetes changed the primary care physician based on the information I found.
7. Other(s) _____
8. Did nothing.

Q10. How likely would you talk to a doctor about health information you found from online communities?

Very unlikely ___ : ___ : ___ : ___ : ___ : ___ : ___ Very likely

                  1   2   3   4   5   6   7

Q11. How likely would you apply the information you gathered from online communities to change your or your family's lifestyle?

Very unlikely ___ : ___ : ___ : ___ : ___ : ___ : ___ Very likely
$\quad\quad\quad\quad$ 1 $\quad$ 2 $\quad$ 3 $\quad$ 4 $\quad$ 5 $\quad$ 6 $\quad$ 7

Q12. Below is a list of information sources people may use to seek for diabetes-related information. Please rate each source on its usefulness to you by circling the number in one of 7 spaces, where 7 means "Very useful" and 1 means "Not at all useful." By usefulness, I mean the information educates and helps you make decisions about treatment of diabetes. If you are not sure or don't know, mark DK for "Don't know/Not sure."

	Not at all useful						Very useful	DK
(1) Physicians	1	2	3	4	5	6	7	9
(2) Pharmacists	1	2	3	4	5	6	7	9
(3) TV	1	2	3	4	5	6	7	9
(4) Radio	1	2	3	4	5	6	7	9
(5) Newspapers including online newspapers	1	2	3	4	5	6	7	9
(6) Magazines	1	2	3	4	5	6	7	9
(7) Professional medical publications	1	2	3	4	5	6	7	9
(8) Printed materials from doctor's office, pharmacies, or drug companies	1	2	3	4	5	6	7	9
(9) Health-related websites (e.g., WebMD, Mayo clinic, American diabetes association home page)	1	2	3	4	5	6	7	9
(10) Online communities (e.g., diabeticconnect, dlife, diabetesdaily)	1	2	3	4	5	6	7	9
(11) Family members/relatives	1	2	3	4	5	6	7	9
(12) Friends/colleagues	1	2	3	4	5	6	7	9

Q13. Below is a list of information sources about diabetes. Please rate each source on its trustworthiness to you by circling the number in one of 7 spaces, where 7 means "Very trustworthy" and 1 means "Not at all trustworthy." If you are not sure or don't know, mark DK for "Don't know/Not sure."

	Not at all turstworthy					Very trustworthy		DK
(1) Physicians	1	2	3	4	5	6	7	9
(2) Pharmacists	1	2	3	4	5	6	7	9
(3) TV	1	2	3	4	5	6	7	9
(4) Radio	1	2	3	4	5	6	7	9
(5) Newspapers including online newspapers	1	2	3	4	5	6	7	9
(6) Magazines	1	2	3	4	5	6	7	9
(7) Professional medical publications	1	2	3	4	5	6	7	9
(8) Printed materials from doctor's office, pharmacies, or drug companies	1	2	3	4	5	6	7	9
(9) Health-related websites (e.g., WebMD, Mayo clinic, American diabetes association home page)	1	2	3	4	5	6	7	9
(10) Online communities (e.g., diabeticconnect, dlife, diabetesdaily)	1	2	3	4	5	6	7	9
(11) Family members/relatives	1	2	3	4	5	6	7	9
(12) Friends/colleagues	1	2	3	4	5	6	7	9

Q14. Imagine that you need to find some information about treatment options for diabetes for yourself or someone in your family right now. Where would you go first? (Please select only one source)

1. Physicians
2. Pharmacists
3. TV
4. Radio
5. Newspapers including online newspapers
6. Magazines
7. Professional medical publications
8. Printed materials from doctor's office, pharmacies, or drug companies
9. Health-related Internet sites
10. Online Communities

11. Family/relatives
12. Friends/colleagues
13. Other(s) (Please write in: _____)

<Questions for general Americans who are diabetes patients>

Q15. Are you covered by any form of health insurance at this time? If you have Medicaid or Medicare, please choose "yes."

    1. Yes   2. No   3. Don't Know

Q16. Currently, do you have a regular primary care physician you usually go to when you need health care?

    1. Yes   2. No → Go to Q18.

Q17. How long have you been seeing the current primary care physician? _____month(s)

Q18. Below is a series of statements about your feelings or thoughts on the primary care physician for you. Please indicate how much you agree or disagree with each of the statements. 7 means "Strongly agree" and 1 means "Strongly disagree." If you are not sure or don't know, choose DK for "Don't know/Not sure." If you don't have any regular primary care physician, please consider the doctor you saw most recently.

	Strongly disagree					Strongly agree		DK
(1) The doctor provides me high-quality medical care.	1	2	3	4	5	6	7	9
(2) The doctor makes medical decisions in my best Interest.	1	2	3	4	5	6	7	9
(3) The doctor listens to my health concerns attentively and takes them seriously.	1	2	3	4	5	6	7	9
(4) The doctor gives me the chance to ask all the health-related questions.	1	2	3	4	5	6	7	9
(5) The doctor explains things in a way I could easily understand.	1	2	3	4	5	6	7	9
(6) The doctor might perform unnecessary tests or procedures.	1	2	3	4	5	6	7	9

Q19. During the past 12 months, how many times did you go to a clinic to see a health care professional (e.g., doctor, nurse) to get treatments for your diabetes? _____ times

        99. None → Go to Q22.

91

Q20. How long do you usually have to wait to see doctor after making an appointment?

1. Less than a week
2. 1-2 weeks
3. 3-4 weeks
4. 1-2 months
5. More than two months
6. Don't know

Q21. Overall, how would you rate your satisfaction with the quality of health care you received in a most recent visit to a physician?

Very unsatisfied   ___ : ___ : ___ : ___ : ___ : ___ : ___   Very satisfied
                               1   2   3   4   5   6   7

Don't know/Not sure _____
                  9

<Questions for general Americans who have family member(s) with diabetes>

Q15. Is your family member with diabetes covered by any form of health insurance at this time? If your family member with diabetes has Medicaid or Medicare, please choose "yes."

1. Yes   2. No   3. Don't Know

Q16. Currently, does your family member with diabetes have a regular primary care physician he/she usually goes to when he/she needs health care?

1. Yes   2. No → Go to Q18.

Q17. How long have your family member with diabetes been seeing the current primary care physician? _____ month(s)   999. Don't know/Not sure

Q18. Below is a series of statements about your feelings or thoughts on the primary care physician for your family member with diabetes. Please indicate how much you agree or disagree with each of the statements. 7 means "Strongly agree" and 1 means "Strongly disagree." If you are not sure or don't know, choose DK for "Don't know/Not sure." If your family member with diabetes doesn't have any regular primary care physician, please consider the doctor he/she saw most recently.

	Strongly disagree						Strongly agree	DK
(1) The doctor provides my family member with diabetes high-quality medical care.	1	2	3	4	5	6	7	9
(2) The doctor makes medical decisions in my family member's best interest.	1	2	3	4	5	6	7	9
(3) The doctor listens to my family member's health concerns attentively and takes them seriously.	1	2	3	4	5	6	7	9
(4) The doctor gives my family member the chance to ask all the health-related questions.	1	2	3	4	5	6	7	9
(5) The doctor explains things in a way my family member could easily understand.	1	2	3	4	5	6	7	9
(6) The doctor might perform unnecessary tests or procedures.	1	2	3	4	5	6	7	9

Q19. During the past 12 months, how many times did your family member with diabetes go to a clinic to see a health care professional (e.g., doctor, nurse) to get treatments for his/her diabetes? _____ times

98. Don't know/Not sure → Go to Q22.
99. None → Go to Q22.

Q20. How long does your family member with diabetes usually have to wait to see doctor after making an appointment?

1. Less than a week
2. 1-2 weeks
3. 3-4 weeks
4. 1-2 months
5. More than two months
6. Don't know

Q21. Overall, how would you rate your satisfaction with the quality of health care your family member received in a most recent visit to a physician?

Very unsatisfied   ___ : ___ : ___ : ___ : ___ : ___ : ___   Very satisfied
                             1   2   3   4   5   6   7

Don't know/Not sure _____
                    9

<Questions for all general Americans>

Q22. Below is a series of statements about your general beliefs about health and health care. Please indicate how much you agree or disagree with each of the statements. 7 means "Strongly agree" and 1 means "Strongly disagree." If you are not sure or don't know, choose DK for "Don't know/Not sure."

		Strongly Disagree						Strongly Agree	DK
(1)	No medical symptom means "healthy."	1	2	3	4	5	6	7	9
(2)	A disease is a symptom of imbalance within my body.	1	2	3	4	5	6	7	9
(3)	Medication can provide only temporary relief.	1	2	3	4	5	6	7	9
(4)	Medication can completely cure underlying problems.	1	2	3	4	5	6	7	9
(5)	Eating healthy food is the best way to stay healthy.	1	2	3	4	5	6	7	9
(6)	Unhealthy eating habits or heavy consumption of unhealthy food is the primary cause of illnesses.	1	2	3	4	5	6	7	9
(7)	Western medications are too strong/powerful for Koreans.	1	2	3	4	5	6	7	9

Q23. What is your racial or ethnic background?
1. White non Hispanic
2. Black or African American non-Hispanic
3. Asian
    3-1. Korean or Korean American
    3-2. Other Asian
4. Hispanic or Latino
5. Native American or Alaska Native
6. Native Hawaiian or other pacific Islander
7. Others (Please write in:_____)

Q24. Are you foreign born?
1. No, born in the United States or its territories (Puerto Rico, Guam, American Samoa, the U.S. Virgin Islands, or the Northern Mariana)
2. No, born abroad of U.S. citizen parent(s)
3. Yes, born abroad and I was not a U.S. citizen at birth

Q25. What is your gender?
1. Male
2. Female

Q26. What is your age in years? (Please write in.) _____ years

Q27. What is the last grade or class that you completed in school?
1. None
2. Grade 1-8
3. High school incomplete (Grades 9-11)
4. High school graduate
5. Business, Technical, or Vocational school after high school
6. Some college, no 4-year degree
7. College graduate
8. Post-graduate training or professional schooling after college

Q28. Before taxes, which of the following categories did your family income fall into last year?
1. Less than $10,000
2. $10,000 to under $20,000
3. $20,000 to under $30,000
4. $30,000 to under $40,000
5. $40,000 to under $50,000
6. $50,000 to under $60,000
7. $60,000 to under $70,000
8. $70,000 to under $80,000
9. $80,000 to under $90,000
10. $90,000 to under $100,000
11. $100,000 to under $150,000
12. $150,000 to under $199,999
13. $200,000 or more

Thank you very much for your time and cooperation. To receive your gift card, please leave your name, mailing address, and email address.