

Health Information Needs and Seeking Behaviors among Korean Mothers of Young Children in the United States

미국 내에 거주하는 한인 어머니들의 건강정보 필요성과 탐색 행동연구

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ABSTRACT

Previous studies have noted mothers' roles as active health information seekers, health managers, and caregivers for their family members. However, little is known about health information needs and seeking behaviors among Korean mothers of young children living in the United States. Using paper-based surveys, this study found that *vaccination*, *child dental health*, *parenting*, *nutrition and diets*, and *physical exercise* were ranked as the five most important health topics by the Korean mothers of young children aged 0 to 10 years old in this sample. Furthermore, this study revealed that mothers of boys evaluated the importance of two topics significantly higher than those of girls: *circumcision* ($t=3.16, p < .01$) and *breastfeeding* ($t=2.47, p < .05$). Also, age of child was an important factor influencing mothers' information needs in three health topics: *child dental health* ($F=5.292, p < .01$), *physical exercise* ($F=7.107, p < .01$), and *child skin care* ($F=5.640, p < .01$). Implications for developing health information services are also discussed.

초 록

선행연구들은 어머니들의 적극적인 건강정보 탐색자로서의 역할, 가족들의 건강을 돌보는 매니저로서의 역할에 주목해왔다. 그러나 미국 내에 거주하는 한인 이민자 어머니들의 건강정보 필요성이나 탐색 행동에 관한 연구는 미비하다. 본 연구는 커뮤니티를 기반으로 한 설문 연구로서, 한인 이민자 어머니들의 건강정보 필요성과 탐색에 대한 행동을 알아보고자 하였다. 만0세부터 10세의 한인 어머니들 사이에서 가장 중요하다고 여겨지는 건강 주제들은 예방접종, 치아건강, 육아, 영양/식단, 그리고 운동 등으로 밝혀졌다. 또한 특정 주제들에 한하여 아이들의 성별과 나이에 따라 어머니들의 건강 정보 필요성이 다르다는 것을 알 수 있었다. 마지막으로, 미국뿐만 아니라 한국의 정보 전문가들이 건강 정보 서비스를 개발하는데 있어서 염두에 뒤야 할 점들을 제시하고 있다.

Keywords: Mothers, Health Information Needs, Health Information Seeking Behavior, Korean Immigrants
어머니들, 건강 정보 필요성, 건강 정보 탐색 행동, 한인 이민자들

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1. Introduction

Over the past few decades, there has been a proliferation of health-related information disseminated through different channels. In addition to offline resources, resources on the Internet have provided greater public access to health information. Previous studies (Allen and Rainie 2002; Fox and Duggan 2013; Skranes et al. 2014; Yoo 2004) showed that mothers are the most fervent online health information seekers related to family members including their children. For this study, mothers were selected as the target population in consideration of their key roles as health-information seekers, health-managers and caregivers for their family members and themselves.

This exploratory study focuses on Asian immigrant mothers, more specifically on Korean mothers. This is important to note because Korean Americans were the fifth largest immigrant group and one of the most rapidly growing ethnic groups in the United States (Hoeffel et al. 2012). It would be necessary for librarians and information professionals to have cultural competence, and therefore to be prepared to satisfy the information needs of growing numbers of Asian immigrants. Several studies have covered health information seeking/use behaviors among Korean Americans (Kim 2013; Oh et al. 2012; Park and Park 2014), or Korean women in the United States (Kim and Yoon 2011). However, none have specifically examined health information seeking/use behaviors among Korean mothers of young children in the United States. Moreover, this research would

have some implications to Korean information professionals. According to a recent report from Korean Statistical Information Service (2016), immigration population from many different countries including Vietnam, China, Japan, and Philippines steadily increases in Korea. In order to meet growing number of immigrants' information needs, librarians and information professionals in Korea need to understand their information needs and information seeking behaviors.

The purpose of the current exploratory study is twofold: (a) to explore health information seeking behaviors and needs among Korean mothers of young children, and (b) to identify significant child characteristics (age/gender of a child) which might influence mothers' health information needs. Furthermore, as an exploratory study, this study was designed to fill the gap by asking the following research questions:

- RQ1. What are health information seeking behaviors among Korean mothers in relation to their children (aged 0 to 10 years old)?
- RQ2. In terms of health topics, what are the health information needs among Korean mothers of young children?
- RQ3. Is there any relationship between child characteristics (age/gender of a child) and Korean mothers' health information needs? If any, what are significant child characteristics influencing Korean mothers' health information needs?

2. Literature Review

2.1 Health information needs among mothers

There have been a number of previous studies on health information needs among mothers of children. For instance, various studies have been conducted on information needs among the mothers of children with specific diagnoses such as asthma (Archibald and Scott 2014), chronic health conditions (McHugh et al. 2013), mental illness (Lwoga and Moshia 2013), or Down syndrome (Murphree, Whitehead and Painter 2011). For this study, however, the literature review deals with the information needs of mothers in general. The term 'mother' is defined to include both mothers of children and pregnant women.

Bernhardt and Felter (2004) claimed that women become frequent information seekers during pregnancy and the first few years following delivery. Expectant mothers wanted health information concerning pregnancy, childbirth, infant care, or baby-feeding more than other topics. A very recent focus group study among new mothers by Gazmararian et al. (2014) explicitly indicated that new mothers encounter a significant informational deficiency, especially on very basic, daily infant care information. Researchers maintained that new mothers experienced health literacy challenges and thus reported difficulties in accessing and understanding the information. Malata and Chirwa (2011) also conducted an exploratory qualitative study to identify

childbirth information needs among Malawian mothers. Researchers found that the content of childbirth education programs for pregnant mothers should include: care during pregnancy, danger signs during pregnancy, labor and after birth, the labor process and postnatal care for the mother and the baby. Larsson (2009) and McKenzie (2006) also supported the idea that pregnant mothers wanted specific information about pregnancy, childbirth, and baby-feeding. Another interesting study by Song et al. (2013) highlighted that low-income expectant mothers wanted to obtain information beyond infant and maternal health, such as information about finding jobs and accessing community/ government resources. In terms of information sources, Song and her colleagues found that low-income pregnant mothers heavily relied on interpersonal sources of information, especially family and their husbands.

Despite increasing health information needs among expectant women, Carolan (2007) pointed out information dilemmas of first-time mothers over 35 years old. Throughout her three focus group interviews of 22 mothers, she found that many mothers feel overwhelmed by 'knowing too much'. As stated above, studies were mostly limited to pregnant mothers and because of this, it is necessary to expand research on health information needs to mothers of young children.

Unlike pregnant women, mothers with young children are found to be interested in different health topics such as vaccination (Baker et al. 2007; Guillaume and Bath 2004; Kennedy, Basket, and Sheedy 2011; Pineda and Myers 2011), parenting

(Emmanuel, Creedy, and Fraser 2001), or pediatric information (Bernhardt and Felter 2004). When it comes to sources, not surprisingly, primary sources of vaccine-related and pediatric information were physicians and nurses (Baker et al. 2007; Bernhardt and Felter 2004; Kennedy et al. 2011). Interestingly, previous studies have indicated that the health information needs and seeking behaviors of immigrants differed from the native population. This will be more specifically described in section 2.2.

2.2 Health information needs and seeking behaviors among Korean Americans

As none of the previous studies have discussed the details of the health information needs and seeking behaviors among Korean mothers in the United States, the literature review broadly approaches ways for understanding health information needs and seeking behaviors among Korean Americans.

Presenters at the Asian Pacific Islander American Health Forum (2006) noted that the high level of using online health information by ethnic minority groups could be affected by several factors: low income, low language proficiency, immense cultural differences, and low rates of insurance coverage. Among those attributes, the language barrier represented the biggest obstacle for ethnic minorities (Han et al. 1996; Juon, Seung-Lee, and Klassen 2003; Oh et al. 2011; Oh et al. 2012). Results of two studies (Han et al. 1996; Oh et al. 2012) also revealed that, due to language barriers, a large number of Korean

Americans tend to seek health information from their ethnic media. Juon, Seung-Lee, and Klassen (2003) also pointed out that English-speaking proficiency was the most significant factor which influences Korean American women to schedule regular pap smears.

Beyond English proficiency, socio-demographic characteristics such as age, income, and education level were significant factors affecting health information seeking behaviors among Korean Americans. Oh et al. (2012) found that age, years of education completed, and English proficiency for Korean Americans were significantly correlated with the possibility of their online health information use. Authors also pointed out that income was another important element which differentiates Korean Americans' health information seeking behaviors. Korean Americans with higher income were more likely to seek out health information online, whereas low-income Korean Americans preferred to seek health information in Korean ethnic magazines and newspapers.

Researchers also noted how different cultural frameworks affect people's health information behaviors (Johnson and Case 2012; Ramanadhan and Viswanath 2006). According to Johnson and Case (2012), people's health information behaviors can be strongly influenced by different cultural beliefs and frameworks. Therefore, immigrants from Korea are expected to be influenced by their own cultural backgrounds and practices. For instance, as in other East Asian countries where Confucianism has substantially influenced family life, the cultural beliefs are deeply embedded in a solid family system as the building block of society (Chin et al. 2012;

Howard and Berbiglia 1997). Howard and Berbiglia (1997) made a point that the spousal relationship is regarded secondary to the parent-child relationship among Koreans and, within the parent-child relationship, the mother-child relationship is the closest. Despite rapid industrialization, westernization, and increased participation of women in the workforce since the 1960s, Korean mothers' roles within families still remain as care givers and nurturers (Howard and Berbiglia 1997; Windsor 2003).

When it comes to the types of resources used, some studies found that Korean ethnic media and the Internet are the important sources that are utilized to gather health information among Korean Americans (McDonnell et al. 2008; Oh et al. 2011; Oh et al. 2012). Although trusted health information resources among Korean Americans included health care professionals, followed by a newspaper or magazine, the least trusted resource - the Internet - was one of the most frequently utilized resources to gather health information (Oh et al. 2012). In response to the trend, researchers recently studied postings on online forums to understand health information uses and needs among Korean Americans in the United States (Kim and Yoon 2012; Park and Park 2014). Park and Park (2014) found that major purposes of posting messages on online forums included asking questions related to health (14.3%) followed by sharing information (12.7%), sharing cases (11.1%), and needing information (8.8%). Moreover, Kim and Yoon (2012) gave an emphasis to the top five health information needs among Korean women in the United States as follows: diagnosis, treatment, medi-

cation, general health, and advice on whether to consult a doctor.

3. Research Method

3.1 Data collection

From June to August 2014, the researcher conducted paper-based surveys among Korean mothers of young children at five community organizations in the Madison, Wisconsin area. Women who satisfied the study criteria were purposively recruited through the organizations and were asked to participate in the study. Selection included the following criteria: 18 years or older, mothers with at least one child between 0 to 10 years of age, and mothers who were born either in Korea or in the United States who also self-identify as having Korean ethnicity. If a participant expressed her interest in the study, a paper-based questionnaire either in Korean language or in English language was provided in accordance with her preference. Each participant was asked to read the consent form, which was approved by the Institutional Review Board (IRB) of the researcher's institute (date of approval: June 3, 2014). After agreeing to participate, each participant was asked to return the completed questionnaire voluntarily to a box at each community organization.

Of the 56 mothers who expressed interest in this study, a total of 46 mothers participated in the survey (response rate: 82.14%). One questionnaire was incomplete and excluded, which resulted in a total

of 45 responses analyzed in the study.

3.2 Instrument

In terms of the survey questionnaire, participants were asked questions concerning four categories: demographic information, health information seeking behaviors, health information needs of mothers, and health information needs for their children. The survey instrument was developed based on previous studies (Kim 2013; Yoo 2004) and Health Information Trends Survey of the United States (National Institute of Health 2013). In general, Consumer Health Information is defined as “information on health and medical topics provided in response to requests from the general public, including patients and their families (Medical Library Association and Consumer & Patient Health Information Section 2013)”. It includes information about preventive medicine, health promotion, wellness, and access to the health care systems, as well as symptoms, diagnoses, and treatments of disease (Medical Library Association and Consumer & Patient Health Information Section 2013). In this study, as we intended to understand health information needs and seeking behaviors of mothers related to their children, the definition of ‘health information’ was operationalized as consumer health information regarding children. For demographic information, the survey included questions related to age, level of education, yearly household income, self-evaluated health status, country of birth, years lived in the United States, primary language, and comfort with speaking English of the participants.

To understand health information-seeking behaviors of Korean mothers, survey instruments used by the Health Information National Trends Survey (National Institute of Health 2013) were customized for this study. Participants were asked if they looked for health or medical information related to their children in the past six months. They were also asked questions about the frequency of the behaviors and the types of utilized sources.

To assess health information needs of mothers, participants were asked to rate how important it was for them to have credible health/medical information related to their children (4-point Likert scale, 1 = *not important at all* to 4 = *very important*). Moreover, participants were asked to evaluate credibility of the following eleven sources of health/medical information using a 4-point Likert scale (1 = *not trustworthy at all* to 4 = *very trustworthy*): health care providers, TV, family or friends, books (in English/Korean), newspapers or magazines (in English/Korean), resources provided by a librarian, the Internet, social media, and government health agencies. The eleven sources were also developed and customized for this study based on the Health Information National Trends Survey (National Institute of Health 2013). For instance, questions about the credibility of books, newspapers or magazines were asked both in English and in Korean language to see if there were any differences. Moreover, credibility of the Internet in general and social media was asked separately, in order to distinguish the two different resources. Social media refers to “forms of electronic communication (as websites for social networking and microblogging) through which users

create online communities to share information, ideas, personal messages, and other content” (Merriam-Webster Dictionary, n.d.). In accordance with a number of prior studies on social media, the various social media platforms such as social networking sites (e.g. Facebook, Kakao story), collaborative projects (e.g. Wikipedia), blogs, microblogs (e.g. Twitter or Tumblr), media-sharing sites (e.g. YouTube) were included in the survey (Kaplan and Haenlein 2010; Kim, Sin, and Tsai 2014; Mitchell, Holcomb, and Page 2013).

In order to examine the health information needs for their children, health topics related to children were selected from MedlinePlus (2013), which is a health information website provided by the National Library of Medicine. MedlinePlus (2010) provides health information about symptoms, causes, treatment and prevention for numerous diseases, illnesses, health conditions and wellness issues. Those topics are reviewed on a regular basis, and the links are updated daily. Of the 174 health topics related to children and teenagers, those related to teenagers and youth were excluded since the current study focuses on information for young children. Moreover, as this study does not focus on mothers of children with specific diagnoses, the topics relevant to those

such as cancer, diabetes, and asthma were excluded. Finally, based on my literature review (Baker et al. 2007; Bernhardt and Felter 2004; Emmanuel et al. 2001; Kennedy et al. 2011; Plantin and Daneback 2009; Skranes et al. 2014), a total of thirteen common health topics were selected. In this section, mothers were asked to answer questions about age, gender, health status (5-point Likert scale, 1 = *poor* to 5 = *excellent*) for each of their children respectively. Then, using a 5-point Likert scale ranging from 1 (*not important at all*) to 5 (*very important*), participants were asked to evaluate the importance of each health topic in relation to each child.

4. Results

All the collected data were analyzed using a statistical program, SPSS. The results are presented in the following order: 1) demographic profile of participants, 2) health information-seeking behaviors among Korean mothers (RQ1), 3) health information needs among Korean mothers of young children (RQ2), and 4) association between child characteristics and mothers’ health information needs (RQ3).

<Table 1> References of each item in the questionnaire

Items in the questionnaire	Reference
1 Seeking health information	(National Institute of Health 2013)
2 Frequency of seeking health information for their child(ren)	(National Institute of Health 2013)
3 Types of utilized resources	(National Institute of Health 2013)
4 Credibility of each source	(Kim 2013, National Institute of Health 2013)
5 Specific health topics related to their child(ren)	(MedlinePlus 2013)
6 Questions related to demographic information	(Kim 2013, Yoo 2004)

4.1 Demographic profile of participants

A total of 45 responses were included in the analysis. Table 2 shows demographic characteristics of the participants. The majority of the mothers were in their 30s. To be specific, 46.7% of them were between 31-35 and 33.3% were between 36-40. Interestingly, the education level of the sample was considerably high with 50% having either masters or doctoral degrees. Only 2.2% of the participants had no college degree. Compared to the median household income of residents in Madison, which is \$53,958 (U.S. Census Bureau 2014), the income level of the sample was relatively low: over 50% had less than \$49,999. When it comes to health status, 71% of the participants self-evaluated their status either as excellent or very good. Although all the mothers' country of birth was Korea, the years that they had spent in the United States varied a lot ranging from 1 to 23 years ($M = 7.4, SD = 5.92$). In terms of primary language, 40 mothers out of 45 (88.9%) mentioned that they use Korean as their major language. On the other hand, their comfort level with English varied: very comfortable (15.6%), somewhat comfortable (31.1%), a little comfortable (35.6%), and not comfortable at all (17.8%).

<Table 2> Demographic information of participants (N = 45)

Demographics	N	Percent (%)
Age (years)		
18-25	-	-
26-30	3	6.7
31-35	21	46.7

Demographics	N	Percent (%)
36-40	15	33.3
41-45	6	13.3
46 and older	-	-
Total	45	100.0
Education		
High school or equivalent	1	2.2
Two-year college graduate	1	2.2
Four-year college graduate	17	37.8
Master's degree	19	42.2
Doctoral degree	6	13.3
Not answered	1	2.2
Total	45	100.0
Household income		
Under \$15,000	7	15.6
\$15,000 - \$29,999	9	20.0
\$30,000 - \$49,999	8	17.8
\$50,000 - \$74,999	11	24.4
\$75,000 - \$99,999	5	11.1
More than \$100,000	4	8.9
Not answered	1	2.2
Total	45	100.0
Health status		
Excellent	5	11.1
Very good	27	60.0
Good	12	26.7
Fair	1	2.2
Poor	-	-
Total	45	100.0
Country of birth		
Korea	45	100.0
Primary language		
Korean	40	88.9
Both Korean and English	4	8.9
English	1	2.2
Total	45	100.0
Comfort with speaking English		
Very comfortable	7	15.6
Somewhat comfortable	14	31.1
A little comfortable	16	35.6
Not comfortable at all	8	17.8
Total	45	100.0

4.2 RQ1: Health information seeking behaviors among Korean mothers of young children

Table 3 shows health information seeking patterns among the participants. When they were asked if they looked for health/medical information related to their children in the past six months, 39 out of 45 mothers (86.7%) answered that they did. However, the frequency of the behaviors varied. As indicated, approximately 29% of the participants sought health/medical information for their children more

than once a week, whereas more than half of the respondents (57%) sought either a few times or less than once a month. When it comes to the types of resources used, the Internet (97.4%) was the most commonly utilized resource among Korean mothers of young children followed by the order of health care providers (87.2%), books (79.5%), newspapers or magazines (69.2%), videos (59.0%), and TV programs (53.8%). Additionally, 32 mothers out of 39 (82.1%) who sought health/medical information related to their children's needs responded that they shared health/medical resources with others.

<Table 3> Health information seeking behaviors of Korean mothers (N = 45)

	Categories	N	Percent (%)
Looked for health/medical information related to child(ren) in the past 6 months	Yes	39	86.7
	No	6	13.3
	Total	45	100.0
Frequency of seeking health/medical information for child(ren)	More than once a day	2	4.4
	4-7 times a week	3	6.7
	1-3 times a week	8	17.8
	A few times a month	20	44.4
	Less than once a month	6	13.3
	Never	6	13.3
	Total	45	100.0
Utilized health/medical resources for child(ren) in the past 6 months (n = 39)	Internet	38	97.4
	Health care providers (e.g. doctors, nurses etc.)	34	87.2
	Books	31	79.5
	Newspapers or Magazines	27	69.2
	Videos	23	59.0
	TV programs	21	53.8

4.3 RQ2: Health information needs among Korean mothers of young children

To understand health information needs of Korean mothers for their children, participants were asked to evaluate how important it is for them to have trustworthy health information related to their children using a 4-point Likert scale (1 = *not important at all* to 4 = *very important*). Not surprisingly, having trustworthy health/medical information for their children was found to be highly important ($M = 3.72$, $SD = .70$). To be specific, 35 mothers (77.8%) rated the importance of having credible health information related to their children as very important and 6 mothers (13.3%) rated it as somewhat important. In other words, it can be inferred that most Korean mothers in this sample wanted to have trustworthy

health information for their children. Out of thirteen health topics related to children (see Table 4), the most crucial topic related to respondents' children was vaccination ($M = 4.72$, $SD = .49$), followed by child dental health ($M = 4.62$, $SD = .58$), parenting ($M = 4.56$, $SD = .62$), and nutrition & diets ($M = 4.44$, $SD = .64$). On the contrary, the least important topic for their children was about circumcision ($M = 2.29$, $SD = 1.26$) followed by toilet training ($M = 3.42$, $SD = .91$).

Mothers also rated the credibility of each source using a 4-point Likert scale (1 = *not trustworthy at all* to 4 = *very trustworthy*). As shown in Table 5, credibility of health/medical information provided by health care providers was the highest ($M = 3.78$, $SD = .42$), whereas credibility of information from the most frequently utilized resources - the Internet - was rated second lowest ($M = 2.45$, $SD = .55$).

<Table 4> Importance of health information needs

rank	Topics	M	SD
1	Vaccination	4.72	.49
2	Child dental health	4.62	.58
3	Parenting	4.56	.62
4	Nutrition & diets	4.44	.64
5	Physical exercise	4.40	.69
6	Child skin care	4.30	.66
7	Baby food	4.15	1.20
8	Specific symptoms or diagnoses	4.07	1.00
9	Breastfeeding	4.02	1.27
10	Specific medicine or therapy	3.82	1.03
11	Obesity	3.70	1.28
12	Toilet training	3.42	.91
13	Circumcision	2.29	1.26

Note. Scale used: 1 - Not important at all; 5 - Very important.

〈Table 5〉 Perceived credibility of resources

Rank	Source of information	<i>M</i>	<i>SD</i>
1	Health care providers (e.g. doctors, nurses etc.)	3.78	.42
2	Government health agencies	3.13	.59
3	English-language Books on health information	3.11	.54
4	Korean-language Books on health information	3.07	.74
5	Health-related programs on TV	2.98	.54
6	Resources provided by a librarian	2.91	.53
7	English-language Newspapers or magazines on health information	2.82	.49
8	Family or friends	2.71	.46
9	Korean-language Newspapers or magazines on health information	2.55	.50
10	The Internet (in general)	2.45	.55
11	Social Media (e.g. Facebook, Kakao story, Wikipedia, Twitter, blogs etc.)	2.13	.59

Note. Scale used: 1 = Not trustworthy at all; 4 = Very trustworthy.

The health-related information from social media was of the lowest credibility ($M = 2.13$, $SD = .59$). More interestingly, when mothers were asked to assess the reliability of books and newspapers/magazines both in Korean/English languages, results indicated that the resources written in English gained higher credibility compared to those in Korean. In addition, the average credibility of resources provided by a librarian was higher than that of newspapers/magazines, the Internet or social media resources.

4.4 RQ3: Association between child characteristics and mothers' health information needs

In order to explore the relationship between child characteristics and mothers' health information needs, mothers firstly answered questions about the age, gender, and health status (5-point Likert scale, 1 = *poor* to 5 = *excellent*) of their each child. Then, participants

rated the importance of each health topic in relation to their each child using a 5-point Likert scale. Consequently, 45 mothers evaluated health/medical information needs related to their 63 children between 0 to 10 years of age.

4.4.1 Gender of child

Among the mothers' health information needs related to their 63 children, 34 sets of evaluations were for boys and 29 sets were for girls. A series of independent t-tests were carried out to examine whether the gender of a child influences mothers' information needs. Table 6 presents the results: information needs for boys and girls ranked by their perceived importance. Overall, mothers' information needs for boys and for girls had a strong consensus in rating importance of the given health topics. A statistically significant gender difference was found in two out of thirteen topics: circumcision ($t = 3.16$, $p < .01$) and breastfeeding ($t = 2.47$, $p < .05$). Mothers rated

〈Table 6〉 Health information needs by gender of child

Rank	Topics	All Participants (N=63)		For Boys (N=34)		For Girls (N=29)		<i>t</i>	<i>p</i>
		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
1	Vaccination	4.72	.49	4.81	.72	4.50	.13	1.66	.103
2	Child dental health	4.62	.58	4.65	.11	4.55	.13	-.021	.984
3	Parenting	4.56	.62	4.65	.11	4.50	.14	1.29	.205
4	Nutrition & diets	4.44	.64	4.48	.12	4.50	.13	.47	.640
5	Physical exercise	4.40	.69	4.45	.11	4.27	.15	.55	.582
6	Child skin care	4.30	.66	4.32	.11	4.27	.15	.28	.779
7	Baby food	4.15	1.20	4.35	.19	3.82	.28	1.57	.122
8	Specific symptoms or diagnoses	4.07	1.00	4.16	.17	3.86	.23	.99	.323
9	Breastfeeding*	4.02	1.27	4.35	.21	3.64	.28	2.47	.017*
10	Specific medicine or therapy	3.82	1.03	3.90	.19	3.59	.22	.97	.334
11	Obesity	3.70	1.28	3.94	.21	3.77	.24	.25	.806
12	Toilet training	3.42	.91	3.55	.15	3.32	.20	.41	.684
13	Circumcision**	2.29	1.26	2.71	.22	1.73	.23	3.16	.003**

Note. Scale used: 1 - Not important at all; 5 - Very important.

* $p < .05$.

** $p < .01$.

the importance of the two topics, circumcision and breastfeeding, significantly higher for boys than girls. No significant gender difference was found in the other eleven topics.

4.4.2 Age of child

To find out how age of child affects mothers' health information needs, a series of one-way analysis of variances (ANOVAs) were carried out, one for each health topic (see Table 7). Three health topics showed statistically significant age differences: child dental health ($F(2, 60) = 5.292, p < .01$), physical exercise ($F(2, 60) = 7.107, p < .01$), and child skin care ($F(2, 60) = 5.640, p < .01$). Post hoc analyses revealed that mothers of children aged 0 to 2 tended to want information about child dental health

significantly less than mothers of the two other groups ($F = 5.292, p < .01$; $Mean_{0-2} = 4.32, Mean_{3-6} = 4.82, Mean_{7-10} = 4.74$). Similarly, mothers of children aged between 0 to 2 wanted information about physical exercise significantly less than mothers of the two other groups ($F = 7.107, p < .01$; $Mean_{0-2} = 4.00, Mean_{3-6} = 4.68, Mean_{7-10} = 4.53$). That is, mothers of children aged 3 to 6 and 7 to 10 were inclined to want information about child dental health and physical exercise significantly more than mothers of children who are newborn to two-year-old. Moreover, mothers of children aged 3 to 6 wanted information about child skin care significantly more than mothers of children aged 7 to 10 ($F = 5.640, p < .01$; $Mean_{3-6} = 4.64, Mean_{7-10} = 4.00$).

〈Table 7〉 Health information needs by age of child

Topics	Aged 0 to 2 (N=22)	Aged 3 to 6 (N=22)	Aged 7 to 10 (N=19)	<i>F</i>	<i>p</i>
	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>		
Vaccination	4.86 (.35)	4.57 (.60)	4.72 (.46)	1.994	.145
Child dental health**	4.32 (.72)	4.82 (.40)	4.74 (.45)	5.292	.008**
Parenting	4.59 (.67)	4.55 (.60)	4.53 (.61)	.059	.943
Nutrition & diets	4.32 (.72)	4.55 (.60)	4.44 (.62)	.682	.510
Physical exercise**	4.00 (.69)	4.68 (.57)	4.53 (.61)	7.107	.002**
Child skin care**	4.23 (.61)	4.64 (.49)	4.00 (.75)	5.640	.006**
Baby food	4.09 (1.31)	4.15 (1.23)	4.24 (1.09)	.067	.935
Specific symptoms or diagnoses	4.00 (1.03)	4.05 (1.19)	4.19 (.75)	.156	.856
Breastfeeding	3.91 (1.41)	4.00 (1.21)	4.18 (1.19)	.211	.811
Specific medicine or therapy	3.60 (1.14)	3.85 (1.14)	4.06 (.68)	.907	.410
Obesity	3.32 (1.00)	3.86 (1.49)	3.95 (1.27)	1.545	.222
Toilet training	3.45 (1.01)	3.35 (.93)	3.47 (.80)	.097	.908
Circumcision	2.00 (1.34)	2.33 (1.28)	2.59 (1.12)	1.043	.359

Note. Scale used: 1 - Not important at all; 5 - Very important.

** $p < .01$.

5. Discussion

The findings revealed that most Korean mothers (86.7%) of young children in this study looked for health information for their children. That number was slightly higher than previous studies conducted among mothers in the United States (Allen and Rainie 2002; Yoo 2004). Yoo (2004) found that 82% of mothers who searched information online looked for health information for their children. Allen and Rainie (2002) found that 71% of online mom health seekers received health information for their children related to their role as a caregiver. Although several reasons may explain this trend, this research agrees with other studies (Allen and Rainie 2002; Song et al. 2013) in that health information seeking is one of the maternal behaviors related to their role as a

caregiver. In particular, as other researchers (Howard and Berbiglia 1997; Windsor 2003) have emphasized, Korean mothers' roles as caregivers and nurturers within families may affect their health information seeking behaviors related to children.

Moreover, in terms of the types of resources used, the Internet (97.4%) was the most commonly utilized resource followed by health care providers (87.2%), books (79.5%), and newspapers or magazines (69.2%). The Internet as the most commonly used resource does not coincide with the findings of other studies. For instance, primary sources for pediatric information among mothers in the United States were physicians and nurses (Baker et al. 2007; Bernhardt and Felter 2004; Kennedy et al. 2011). As previous studies noted, the difference in these health information seeking practices may be due to language

barriers (Han et al. 1996; Oh et al. 2011; Oh et al. 2012). An interesting difference exists in comparison with another study among Korean Americans. For instance, due to language barriers of receiving health care from English speaking physicians and nurses, a large number of Korean Americans were more likely to seek health information from their ethnic media and the Internet both of which are in Korean language (Han, Song, and Kim 1996; Oh et al. 2012). However, Oh and her colleagues (2012) pointed out that well-educated Korean Americans with higher income preferred to seek out health information online, whereas low-income Korean Americans with less education tended to utilize Korean ethnic media as their major health information resources. The findings of this pilot study showed that this sample of Korean mothers who have high education levels with relatively low income still seek health information online. The findings, however, may be mainly due to the unique characteristics of the sample. Since this sample was recruited in a university town that is dominated by its university population, a number of participants with non-traditional characteristics (e.g. graduate students' families of high education level with temporarily low-income status) may have influenced the results.

The current study revealed that most mothers in this sample evaluated having credible health information related to their children as very important. To be specific, using a four-point Likert scale, 35 mothers (77.8%) rated the importance of having credible health information related to their children as *very important* and 6 mothers (13.3%) rated it

as *somewhat important*. This result is consistent with the findings of another study (Bernhardt and Felter 2004). In a qualitative study among mothers of young children in a Southeastern US city, Bernhardt and Felter (2004) found that mothers become active health information seekers during pregnancy and the first few years following childbirth. Moreover, the researchers found that mothers tried to determine the credibility of health information resources by confirming the motives of the information providers and by identifying the source of the information.

Compared to prior research, this study found differences in health information needs of pregnant mothers and mothers of young children, and also new patterns of health information needs. Pregnant mothers wanted health information concerning pregnancy, childbirth, infant care, or baby-feeding (Bernhardt and Felter 2004; Gazmararian et al. 2014; Larsson 2009; Malata and Chirwa 2011; McKenzie 2006). This study revealed that the following topics, on average, were the six highest ranked topics by the Korean mothers in this sample: *vaccination* ($M = 4.72, SD = .49$), *child dental health* ($M = 4.62, SD = .58$), *parenting* ($M = 4.56, SD = .62$), *nutrition & diets* ($M = 4.44, SD = .64$), *physical exercise* ($M = 4.40, SD = .69$), and *child skin care* ($M = 4.30, SD = .66$). This might be because mothers' information interests and needs change after they give birth to their children. Although other researchers also found that mothers with young children are more likely to search for information about vaccination or parenting (Baker et al. 2007; Emmanuel et al. 2001; Guillaume and Bath 2004; Kennedy et al. 2011;

Pineda and Myers 2011), the findings of this study newly suggest that mothers of young children also tend to seek out other health topics including *child dental health, nutrition & diets, physical exercise, or child skin care*. Although the participants evaluated options from a short list of health topics, the findings still reveal new information about health information needs patterns. This would be helpful for librarians and information professionals to know in advance when providing children-related health information for mothers of young children between the ages of newborn to ten.

Credibility is another crucial part to consider in people's health information seeking behaviors. Related to the perceived credibility of resources, this study found higher level of credibility for health care providers ($M = 3.78, SD = .42$) or government health agencies ($M = 3.13, SD = .59$) in comparison to the Internet ($M = 2.45, SD = .55$) or social media ($M = 2.13, SD = .59$). This finding is consistent with one of the previous studies (Oh et al. 2012), also conducted among Korean Americans. In addition, it is worth noting that the perceived credibility of English-language resources was higher than that of Korean-language resources. It might be because mothers living in the United States have access to more up-to-date English-language resources than Korean-language resources. In fact, a number of Korean-language health information resources are translated from those of English-language. Such information may take a while to be translated, and sometimes, there might be inaccurate translations as well. However, further research is needed to figure

out the exact reasons. Another interesting result revealed that the average credibility of resources provided by librarians ($M = 2.91, SD = .53$) was higher than that of newspapers/magazines, the Internet or social media resources. It implies that librarians should be educated to play important roles as high quality health information certifiers, organizers, and providers.

The results of the current study show that differences exist among certain topics of health information needs. For instance, mothers of boys evaluated the importance of two topics significantly higher than those of girls: *circumcision* ($t = 3.16, p < .01$) and *breastfeeding* ($t = 2.47, p < .05$). Obviously, *circumcision* is only relevant to boys. In the case of the topic *breastfeeding*, it is difficult to find an explanation. However, when overall ratings for boys and girls were compared, the ratings for boys were usually higher than those for girls. This trend may speak to a mother's concern for having a child with a different gender than her own. It is also possible that Korean customs in preferring sons to daughters played a role. Further research is needed to clarify.

Age of child is also an important factor influencing mothers' health information needs for their children. Among thirteen health topics, three of them including *child dental health* ($F = 5.292, p < .01; Mean_{0-2} = 4.32, Mean_{3-6} = 4.82, Mean_{7-10} = 4.74$), *physical exercise* ($F = 7.107, p < .01; Mean_{0-2} = 4.00, Mean_{3-6} = 4.68, Mean_{7-10} = 4.53$), and *child skin care* ($F = 5.640, p < .01; Mean_{3-6} = 4.64, Mean_{7-10} = 4.00$) showed statistically significant differences across aged groups. First, in the case of *child dental health*,

mothers of children aged 0 to 2 tended to rate the importance of child dental health information significantly less than mothers of the two other groups. This finding is somewhat odd seeing that children often develop teeth around 6 months; it would be acceptable for these mothers to seek out teething information. However, they did not. Second, mothers of children aged 0 to 2 were significantly less interested in health information about *physical exercise* than mothers of the two other groups. This can be explained because activities of newborn babies to two-year-old toddlers are considerably limited, whereas children become more active and are exposed to outdoor activities more frequently as they get older. Lastly, when it comes to the topic *child skin care*, mothers of children aged 3 to 6 were inclined to seek out more about this topic than mothers of children aged 7 to 10. As children aged 3 to 6 begin to be exposed to outdoor activities, mothers' information needs for child skin care might increase for taking care of their children. However, their information needs about child skin care may decrease significantly once children get used to both sunlight exposures and outdoor activities.

6. Conclusion and limitations of the study

Some limitations should be considered when interpreting the data presented in this pilot study. Despite the researcher's efforts to have a comprehensive sample, findings from this study are limited to a specific

geographic region of the United States (Madison, Wisconsin area). In addition, this small sample of Korean mothers was somewhat skewed in that the majority had high education levels. Accordingly, caution should be taken in generalizing the findings to all Korean mothers or other populations of mothers of young children. Also, in terms of health topics regarding mothers' information needs, only thirteen topics related to children were selected and used in the survey. For that reason, it is possible that other important health information needs among Korean mothers of young children were missed. Finally, as it was a one-time only survey, it is difficult to explain obvious reasons for the findings. For instance, follow-up research is necessary to figure out the explicit reasons on why Korean mothers of young children in this sample rated English-language pediatric information resources more credible than those of Korean-language materials.

In spite of these limitations, the findings from this study have implications for health information services to serve immigrant mothers of young children not only living in the United States but also living in Korea. Immigration population from diverse countries including Vietnam, China, Japan, and Philippines has been continuously increased in Korea (Korean Statistical Information Service 2016). To satisfy growing number of immigrants' information needs, librarians and information professionals in Korea need to understand their information needs and information seeking behaviors. It also suggests that mothers may represent "great target audiences" in consideration of their frequent pediatric information seeking

behaviors and high information needs. Since the findings of this study revealed that the Internet is one of the least credible, but the most frequently utilized health information resources, it would be great if librarians and information professionals could instruct those mothers to find and utilize available high quality health information related to their individual needs. Results also showed statistically significant differences in certain health topics according to age/gender of child. Future research should be conducted to investigate more specific reasons for the findings through in-depth interviews. Additionally, in order to make these findings robust, quantitative surveys administered to larger and more generalizable samples of mothers of young children are indispensable.

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