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Implications of Social Networks on Medication Information-Seeking Among Middle Eastern International Students: An Exploratory Study

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IMPLICATIONS OF SOCIAL NETWORKS ON MEDICATION INFORMATION-SEEKING AMONG MIDDLE EASTERN INTERNATIONAL STUDENTS: AN EXPLORATORY STUDY

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ABSTRACT

The study examined how international students use their social networks to seek medication information, how their social networks provide social support, and how perceived social support is related to seeking medication information online. While there has been a paucity of research on the way international students seek information in their day-to-day lives (Sin and Kim, 2013), there is still a gap in the literature regarding how social networks employed by international students have a positive impact on building bridges toward home. In particular, no studies on the use of social support in social networks to retrieve medication information exist.

This study aims to investigate whether social networking can serve as an effective channel for medication-related social support (MRSS) among Middle Eastern international students in the United States. In addition, this study investigates the factors affecting the intentions of students' medication information-seeking behaviors within social networks, including the relationships between perceived social support, health consciousness, perceived barriers during the search for medication information, and the act of seeking medication information online.

Data analysis employed a convergent mixed method design and Structural Equation Modelling techniques. This study is framed by two theoretical perspectives– (1) Chatman's Information Poverty Theory (1996) and (2) Media Complementarity Theory (Dutta-Bergman, 2004a). Of the 208 Omani, Saudi, and Iraqi students attending the

University of South Carolina, Columbia campus, 187 students completed the survey. The findings indicated that important sources of medication information in social networks for the students were their family members, relatives or friends who are medical professionals. In summary, the results reveal how a high level of health consciousness, as well as a relatively high number of perceived barriers when searching for medication information by conventional means, encouraged the students to utilize social networks more and seek social support. Increased social support leads to greater perception of emotional and esteem support thereby facilitating verification and validation of information attained through social networks. This social support can indeed benefit international students by enhancing their confidence in managing their medication information seeking.

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CHAPTER I

INTRODUCTION TO THE STUDY

The purpose of this introductory chapter is to articulate the importance of a study on social support and social networks in medication information seeking relevant to international students living in the United States. The chapter will present how this research builds on existing research in related areas.

BACKGROUND AND STATEMENT OF THE PROBLEM

International students interact with online content, local students, fellow international students, and the local community to help solve their challenges while they are abroad in a new culture and unfamiliar surroundings. Facing illness in a new host country is particularly challenging. Generally, international students face greater information needs than the average student as they struggle to navigate unfamiliar culture, policies, and infrastructure, but during times of illness the challenge is exacerbated. As the number of international students appears to be on the rise, data and information are needed to improve knowledge on information seeking practices of subsets of international students (Melius, 2017).

As seen in figure 1.1, based on a report from the National Association of Foreign Student Advisers (NAFSA), during the 2017-2018 academic year, 1,094,792 international students studying at U.S. colleges and universities contributed $39 billion in

revenue and supported more than 455,000 jobs in the U.S. According to another report, "South Carolina benefits from International Students" (NAFSA, 2019). Figures from the 2017-2018 academic year demonstrate that there are 6,207 international students enrolled in South Carolina. International students contributed $191.7 million in revenue and 2017 total jobs in South Carolina. At the University of South Carolina-Columbia (USC) in particular, international students contributed $71.7 million in revenue and supported 942 jobs (NAFSA, 2019). In other words, for every seven international students enrolled, three U.S. jobs are created. Globalization enables students from all over the world to seek education in any country of their choice. International students enrich the host country by bringing in diversity in culture and intellect.

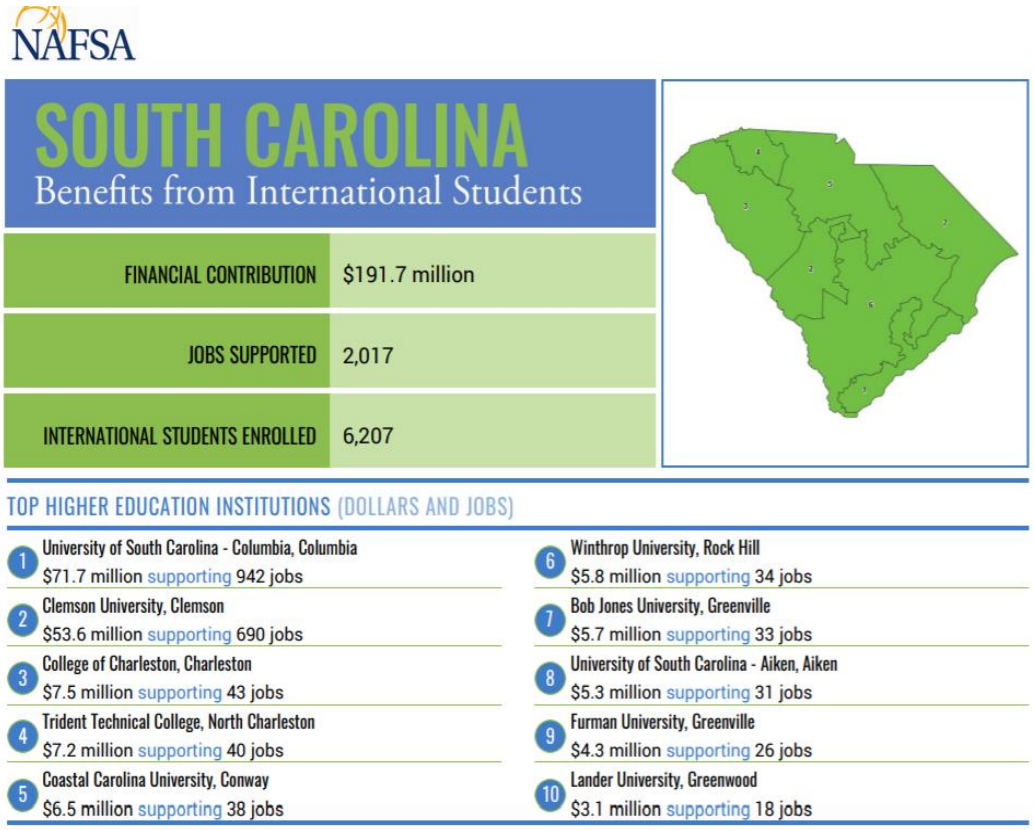

Figure 1.1
South Carolina benefits from International Students (NAFSA, 2019)

Among international student populations, students from Saudi Arabia have shown great growth in enrollment at U.S. universities in recent years. Saudi students rank third in overall international student enrollment in U.S. universities and colleges, and contributed 2.06 billion dollars in revenue to the U.S. economy in 2016. In 2015-2016, new enrollment of students in U.S. universities from Saudi Arabia was 61,287 (Melius, 2017, pp.1).

Many countries in the Middle East are investing heavily in scholarships for international studies. Saudi, Iraqi, and Omani students are part of a growing number of international students enrolled in higher education in the United States. These countries have focused efforts on supporting their students by providing academic scholarships and consider these students to be the backbone of national development in various fields to prepare a globally competitive workforce. These scholarships cover most expenses for overseas universities and educational institutions of repute (Melius, 2017).

While the number of international students increased rapidly, information about this population is still limited. International students turn to social networks to access health information and solve other problems they face in host countries (Sin and Kim, 2013). Social networks help bridge this gap as they have the potential to provide relevant guidelines, material, and suggestions. Wasserman and Faust (1994) note that a social network encompasses the social structure, which includes the social actors (such as individuals or organizations), along with their connections or interactions. Through a social networking perspective, a number of methodologies for analysis of social aspects in addition to diverse theories and patterns of behavior can be identified.

People usually utilize social networks to communicate in support of others and get social support in return in order to understand others' experiences or obtain beliefs and attitudes relative to their health (Agadjanian, 2002). Social support is defined as exchanging the aid and assistance through social relationships and interpersonal transactions (Heany and Israel ,2002). As related to health outcomes, Oh, et al. (2013) developed a conceptual framework of social support, which helps evaluate the effects of social support on health information seeking behavior.

Oh et al. divided social support into four distinct practices—*tangible support, emotional support, esteem support, and appraisal support*, each of which can contribute to health-related behavior. Tangible support is the provision of tangible goods, services, or other aid. Emotional support refers to nurturing, sympathetic, or empathetic behavior typically characterized by warmth and encouragement. Esteem support is shown in expressions of confidence, encouragement, and positive feedback. Positive, reaffirming messages from others that enhance self-esteem, self-concept, and satisfaction with life are examples of esteem support. Finally, appraisal support involves the provision of information that is useful for appraising and deciding about a situation. This includes constructive feedback, affirmation, and social comparison, which help receivers reduce uncertainty in order to evaluate and make decisions such as coping with illnesses (Oh, et al., 2013).

Social networks and social support are built on each other. Kjos (2009) states that relationships promote social support within the network. Specifically, there is an interconnection of social support and social networks in which support is distributed and acquired through the relationships of the network. This distribution is based on things like

availability of health care professionals and personal contacts to ask and receive responses about their specialized health issues (Uchino ,2004).

The positive effects of social support have been discussed in previous studies (Cohen,2001; Sin and Kim, 2013; Ford and Kaphingst, 2009). These studies show social support as having a positive implication on the health outcomes of the users. Kim (2013) discusses the benefits of social networks and social support to Korean immigrants. According to the research, most immigrants are not comfortable disclosing their health statuses to non-Koreans. They are, however, free with other Korean immigrants and can share critical information regarding their health status and general life matters.

Immigrants are often people who are separated from their families. They, therefore, need social support to have a feeling of love and appreciation of people who look like them, share the same traditions and do things their way. Immigrants also have to adapt to a new lifestyle. Social support, however, helps them adjust to a new and unfamiliar environment and adapt to new religions. Korean immigrants to America have a better perception of social support whenever they seek health information. The main network connections for Korean immigrants to get health information from social networks are friends and church members. Beyond their social circles of family and friends, they are more likely to seek health information in social circles on the internet too. They are attracted to the idea of seeking information from multiple sources. In return, seeking information from a variety of sources has a positive impact on their health outcomes (Kim, 2013).

For Korean immigrants, personal social networks are viewed as a convenient channel for communicating health information and building a sense of community with others in similar circumstances to share information about their health status. These social networks are considered a major source of information and care when Korean immigrants become ill. Korean immigrants use this source of information to understand their own illnesses and the possible medicine or treatment. Thus, utilizing interpersonal communications through social networks offers Korean immigrants opportunities for improving their personal health (Kim, 2013).

Oh et al. (2013) also discuss the role of a social network as a source of health information (Oh et al., 2013). This study explores social support on social networking sites and the impact that it has on the ability to get health-related information. Their research showed a lack of relationship between having consciousness of health issues and seeking health information online. The study indicated that instead of looking for information from search engines, people seek more personalized information from their friends on Facebook. On this platform, they discuss health issues in a networked setting, where more personal information and responses are proved as opposed to seeking health information through blogs and search engines. In Oh et al' study (2013), respondents were asked to reply to various health topics such as the specific diseases they suffered from, and the environmental dangers they face in order to measure online health information seeking. People with health concerns are likely to seek disease-specific information.

There has been increased interest in the dynamics of medication information seeking in recent years (e.g., Schommer et al., 2008; Kjos, 2009; Carter et al., 2013). In a

consumer context, medication information is defined as the type of information that students obtain to learn. It also helps students to make decisions and to engage in management of their medication therapy. Medication information may include things such as adverse effects, cost, or effectiveness (kjos, 2009). People who are seeking medication related social support (MRSS) use social networks to get medication information from others, try to find people who have experienced similar health problems, seek out medication advice from others, and update others on their health (Oh et al., 2013). While people may interact with their pharmacist to meet their needs for health information, many also seek information from other sources (Yan, 2008; Deng and Liu, 2017; Dutta-Bergman, 2004a; Sleath, Roter, Chewning, and Svarstad, 2003).

The literature to date includes a range of studies focusing on dimensions of seeking health information from the Internet and the role of social networks to access health information (e.g. Oh et al., 2013; Wing and Jeffery, 1999; Wicks, et al. 2010). However, few studies are investigating how people access medication information through social networks. Pharmacy studies also indicate that many people use interpersonal communication through social networks as a source of medication information (Schommer et al., 2008) such as cost and source in addition to that which is more directly related to health issues.

Kjos (2009) investigated the use of social networks to obtain medication and health information. Kjos stated that the structure of social networks that are employed to obtain medication information is linked with the content and function of the social network. This structure includes the components of the healthcare system, such as health professionals/ providers, or outside the healthcare system, such as family, friends, and

acquaintances. Content includes factual medication information, individual experiences, and information regarding beliefs and attitudes. Function is recognized as decision making, diagnosis, monitoring, prescriptions or recommendations, social support, staying informed, or validation.

From the study, it was concluded that social networks comprised of health professionals like pharmacists and physicians provide information that is of great use to patients and other users. On the other hand, patients also provide information that is based on personal experiences in a bid to help others (Kjos, 2009). The information obtained from the social network was used in making decisions on diagnosis, monitoring information environments, making recommendations, obtaining social support, staying informed, and invalidating the acquired or previous knowledge about a given issue (Kjos, 2009).

Despite the potential importance of this issue, there have been no research studies that have examined how social support and social networks affect medication seeking behaviors among Middle Eastern international students. Moreover, there is no research on the ways that Middle Eastern international students use their social networks as sources of medication information.

Middle Eastern students come from a community where self-medication is a primary mode of healthcare. Self-medication is defined as "the selection and use of drugs by individuals to treat self-recognized illnesses or symptoms without having professional expertise" (Suleiman, 2013). Most current research has grouped a wide variety of nationalities into one sample population (Austin, 2000; Song 2005; Yan et al. 2007).

These broad categories are sometimes misleading and may overgeneralize as they fail to identify differences in barriers, health beliefs, behavior, and needs of people representing specific cultures with different practices, systems, and traditions related to health. Therefore, the Middle Eastern population needs a separate study to analyze this kind of behavior.

Research shows that the purchase of antimicrobial drugs without a prescription is estimated to be 39% in the Middle East. People from the Middle East tend to choose their own medications based on previous doctor's prescription (36.6%), followed by advertisements from websites, social media, TV, or reading (26.5%), pharmacist advice (19.7%), friends and family (9.6%), and others (7.6%) (Alghadeer et al., 2018). The reasons behind the practice of self-medication include previous experience of using a particular antibiotic, followed by the low severity or seriousness of diseases, and lack of time. Confronted with new regulations about self-medication and different social and cultural norms in the United States, Middle Eastern students find they retreat to their own social networks to gain information about effective medical treatments.

While research in the area of medication safety is increasing, many questions remain to be answered. To improve medication safety, it is necessary to examine students' perceptions of personal social networks in relation to medication information in order to understand why students use or do not use personal social networks for medication information. Also, it is important to examine factors influencing international students' use of social networks for seeking medication information.

This study examines the medication information seeking behavior in the social context of these populations. The influences of social support on online information seeking behavior of Middle Eastern international students are analyzed.

PURPOSE OF THE STUDY

The purpose of this study is to investigate the role of social support among social networks in regards to seeking medication information online by Middle Eastern students while studying in the U.S. The goal of the study is to better understand how Middle Eastern students use their social contacts such as family, friends, healthcare providers, and others to seek medication information. Recognizing these patterns provides insight into how sources may change over time as people engage in information search. It also offers insight into their experiences with their health and medications and how social contacts shape those experiences.

This study is the first attempt to investigate Middle Eastern international students' use of social networks in the context of medication information seeking behavior. The goal of this research is to examine if the students are seeking out social support for medication issues on social networks and to understand which type of support the students seek out more. In addition, the factors that influence this behavior are analyzed. The relationships among perceived social support, health consciousness, medication related social support (MRSS) seeking on social networks, and seeking medication information online are investigated.

By integrating the domains of medication information seeking behavior and social network application or use, insight into student medication use and experiences,

perceptions of persistent cultural health disparities, and attitudes about medications as it relates to student information usage are explored.

The results are used as evidence to support an investigation of the importance of social support and social networks for international students. The evidence and resulting findings are expected to improve our understanding of how international students use various types of social networks to obtain medication information. Furthermore, the data provide evidence for how international students' needs are communicated as well as how their needs are met. In summary, this study helps establish an understanding of students' medication information seeking behavior, and considers the possibility of also understanding the use of medication information obtained, which will help to improve medication safety for people who are non-native English speakers.

As a result, the findings of this investigation shed light on communication about healthcare issues among Middle Eastern international students and what might be done to support international students' safe and appropriate use of medications. Also, understanding their information needs, medication information seeking experiences, and the sources that students use to get their medication may help pharmaceutical care practitioners and other healthcare providers to provide culturally appropriate care as well as provide effective channels for distributing important medication information. The findings may also support insights into extending special services, medication information resources, and information for all international students and Middle East international students, in particular.

RESEARCH QUESTIONS

The purpose of this study is to examine the role of social networks in regards to seeking medication information online among Middle Eastern international students who study at the University of South Carolina. This study investigates how Middle Eastern international students utilize their social networks to seek medication information. In order to bridge this gap, this dissertation addresses the following research questions:

1. What are the sources of medication information in the personal networks of Middle Eastern international students?
2. What medication-related topics do Middle Eastern international students discuss in their social networks?
3. Why is social support from an individual's network important for accessing relevant medication information?
4. What do Middle Eastern international students consider to be the most important criteria for judging the trustworthiness and credibility of medication information?
5. How does health consciousness affect students when they're searching for medication information and seeking MRSS on social networks?
6. How do perceived barriers affect students when they're searching for medication information and seeking MRSS on social networks?
7. How does MRSS seeking influence the perceived social support received on social networks?

8. What is the influence on the perceived social support on seeking medication information online?

DEFINITION OF TERMS

Defining important terms is essential to ensure a common understanding of key concepts and terminology used in this study.

Information seeking behavior: has been described as a subset of human information behavior that has been defined as "the purposive seeking of information in relation to a goal" (Spink and Cole, 2006).

Information seeking: "The purposive acquisition of information from selected information carriers" (Johnson and Case 2012, 16).

Medication Information: "In a consumer context, a description for the type of information patients obtain to learn, make decisions, and engage in management of their medication therapy. May include things such as adverse effects, cost, or effectiveness" (Kjos, 2009).

Perceived social support: "an individual's belief that his/her social network is available and adequate for his/her social support needs as a means of gaining health information" (Laireiter and Baumann, 1992).

Health Consciousness: having awareness of and active interest in one's health. Health consciousness is a pertinent factor in predicting the health behaviors of individuals and their consequent changes in behaviors (Hong, 2009).

Medication related social support (MRSS): using social networks to seek medication information.

Social networks: This term refers to "a person's set of linkages that operate as sources of social support" (Lehto-Järnstedt, Ojanen, and Kellokumpu-Lehtinen, 2004).

Social support: defined as aid and assistance exchanged through social relationships and interpersonal transactions (Heany and Israel, 2002).

Tangible support: Provision of tangible goods or services, or tangible aid (Oh, et al., 2013).

Emotional support: Offering of warmth and nurturance, such as encouragement, empathy, and sympathy aimed at reducing stress or negative affect (Oh, et al., 2013).

Esteem support: This type of social support is shown in expressions of confidence or encouragement. Messages that helped recipients restore self-concept or self-validation. Positive feedback from other users enhanced self-esteem and satisfaction with life, whereas negative reactions from other users decreased self-esteem and satisfaction (Oh, et al., 2013).

Appraisal support: involves the provision of information that is useful for self-evaluation purposes: constructive feedback, affirmation, and social comparison that help receivers reduce uncertainty and cope with illness (Oh, et al., 2013).

CHAPTER II

REVIEW OF THE LITERATURE

This chapter reviews the basic arguments in the literature to give the reader insight into the topics that are relevant to this study. The literature review is sub-divided into the major concept areas that are fundamental to this research. To understand the relevance and significance of the study, it is necessary to study the population and focus on their information needs in general. It is also necessary to understand the area where the study was conducted. Therefore, this chapter begins with international students in the United States, then focuses specifically on international students at USC. Health seeking information behavior as well as medication seeking information behavior is also addressed. Also, the importance of social support and social networks is highlighted. A data collection instrument that was used in a previous study is discussed in this chapter. Finally, the literature about the theory applied in this study is presented.

INTERNATIONAL STUDENTS IN THE UNITED STATES.

The diversity of cultures in America is an invitation to enhance individual career prospects. This cultural experience and the huge number of universities and colleges are the key factors that make America the world's primary destination for international students from around the world (Ely and Thomas, 2001).The academic reputation of the

United States, known for its quality of education and the comprehensive courses and degree programs available in its educational institutions, is appreciated by both graduate and undergraduate students.

The United States is considered the first choice for most international students, who are non-U.S. citizens holding a student visa. Every year, hundreds of thousands of international students come to America from all over the world in order to obtain the distinguished education for which universities in the U.S. are known. According to the data provided by Open Doors, published by the Institute of International Education (IIE), the number of international students in universities in the U.S. continues to grow. During the 2013-2014 academic year, about 900,000 new international students enrolled in higher education institutions in the United States. This number represents an increase of 8 percent (IIE, 2016). In the past decade, the population of international students has steadily increased significantly across the U.S. In 2016, for instance, the number of international students was 14% higher as compared to 2014 (IIE, 2016).

Education in America is not limited to specializations, but extends to include the training of students in all professional and academic skills that enable them to enter the workforce and to obtain the best professional, academic, and functional abilities. One of the most important characteristics of education in America is not only the distinctive educational experience that the international student undergoes, but also the cultural and social experiences the student has during this period of study, which creates an openness to the whole world with its different nationalities, races, religions, and orientations.

NAFSA's latest analysis (2018) finds that “the 1,078,822 international students studying at U.S. colleges and universities contributed $36.9 billion and supported more

than 450,000 jobs to the U.S. economy during the 2016-2017 academic year." (NAFSA, 2018). As seen in figure 2.1, the increasing number of international students has positive impacts on the U.S. economy. "International students contributed more than $30 billion to the U.S. economy in 2014, according to the U.S. Department of Commerce." Open Doors 2015 reports that seventy-three percent of all international students are sponsored by their governments, which are considered to be outside sources by the United States. Furthermore, international students share their cultural perspectives with U.S. citizens and play an important role in improving technical and scientific research in the U.S.

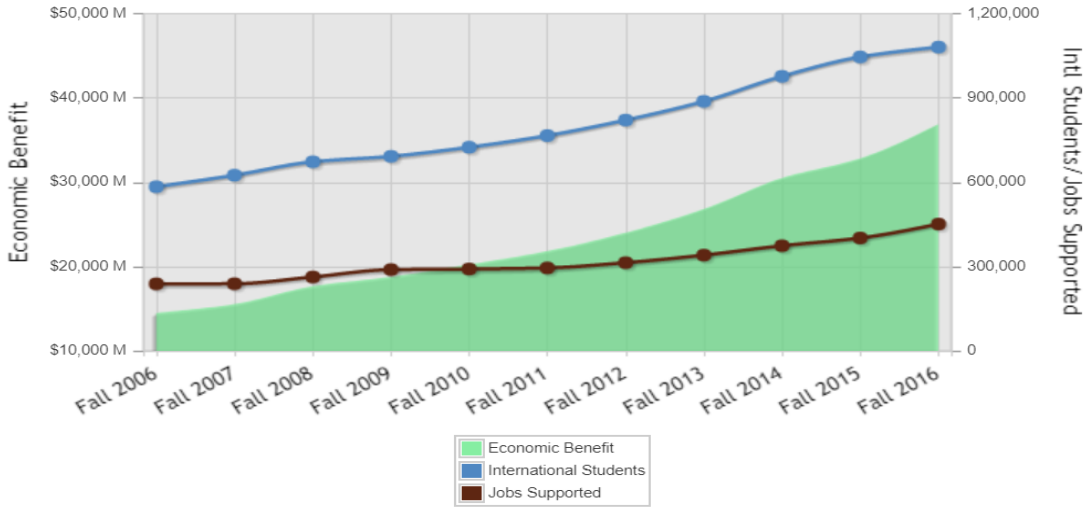

Figure 2.1
The Economic Benefits of International Student Enrollment to the U.S. (NAFSA, 2018)

Today, most Countries also want to keep pace with the progress and development in teaching methods and training so as to equip their national workforces with scientifically qualified personnel in various disciplines. Saudi Arabia, Oman, and Iraq have had great development in higher education institutions in both the public and private arena.

- Saudi Arabia

According to the Institute of International Education (2016a), Saudi Arabia has become the third-largest source of international students studying in the United States after China and India (see table1.1). In the 2015-16 academic year, there were 61,287 Saudi students studying at the universities—both public and private institutions—in the United States. This number includes those on scholarship and others studying at their own expense (IIE, 2016). Saudis have been studying in the United States for decades based on the founding of the Saudi Arabian Cultural Mission, which was established in America 60 years ago.

The King Abdullah Scholarship Program (KASP), supported by the Saudi Government and implemented by the Ministry of Education (MOE), funded more than 70, 000 scholarships between 2005-2010 for its students to study at universities worldwide. Based on trends at the time, it was predicted that the United States would continue to be the top recipient of KASP students until at least 2020 (Melius, 2017). The Saudi Arabian government is very concerned with educating its citizens in order to gain a wider range of knowledge, skills, and abilities as well as to deepen their experiences in various fields so they can bring back innovative skills and diverse work experiences upon their return home. This approach will help fill essential roles to boost the economy and improve educational quality within Saudi Arabia as well as many of those who are educated abroad assume faculty positions in universities and other educational institutions at home (Melius, 2017, pp.1-2).

Table 2.1
Top Places Origin of International Students

Rank Order	2014/15	2015/16	% of total	% of change
1. China	304,040	328,547	31.5	8.1
2. India	132,888	165,918	15.9	24.9
3. Saudi Arabia	59,945	61,287	5.9	2.2
4. South Korea	63,710	61,007	5.8	-4.2
5. Canada	27,240	26,973	2.6	-1.0

Note. Data taken from IIE (2016a) reproduced in (Melius, 2017, p.2)

- Oman

Oman is located on the southeastern coast of the Arabian Peninsula of Western Asia. Because of its geographical location and its national boundaries, Oman has many similarities with its Arab neighbors, especially in cultural characteristics. Since 1970, the government of Oman has placed a high priority on education in order to develop a domestic workforce. The number of schools in Oman has increased dramatically over the past fifty years (School Education in the Sultanate of Oman, 2018). The Government of the Sultanate of Oman offers scholarships for both undergraduate and graduate students to study abroad in different fields. These scholarships are administered by the Embassy of the Sultanate of Oman. It aims to provide educational support for Omani citizens across multiple universities and educational institutions having a reputation of competence. Based on data from Open Doors, in 2014 the number of Omani students studying in the

U.S. was 1,504. This number increased substantially compared to 2012, which reported 980 students. Thus, the number of Omani students increased by more than 54% (IIE, 2016).

- Iraq

The Iraqi government offers scholarships and provides opportunities to get financial aid for students to study abroad. Students from Iraq began to arrive at U.S. universities more than 70 years ago. There were 40 Iraqi students enrolled at the University of California-Berkeley in the late 1940s. The Iran-Iraq War, the aftermath of Saddam Hussein's invasion of Kuwait in 1990, and the U.S. invasion in 2003, all had a tremendous impact on the economic, political, and social position of the nation. Experiencing a lack of infrastructure and a national brain drain, as the country's elite fled in droves, the Iraqi government encouraged Iraqi students to study abroad (Madhani, 2011).

According to statistics compiled by the Institute of International Education and the State Department, the number of Iraqi students in the United States increased to 1491 students from 1,074 students, during the academic year 2012-2013. The report stated that 941 were graduate students, 212 were undergraduate students, and 302 were enrolled in non-degree programs (IIE, 2016). All of these students were coming to the U.S. to achieve their goals by studying various types of academic institutions, programs, and subjects with quality facilities, resources, and faculty. This opportunity will help them to become highly skilled and competitive leaders within the global community. Also, they will be more knowledgeable about the American education system, culture, and history (IIE, 2016).

INTERNATIONAL STUDENTS AT USC

According to the demographic report provided on the USC website, in 2016-2017 the total enrollment of international students at the University of South Carolina included 1800 international students from 95 countries. During 2016-2017, there were 604 new international students in the USC. Notably, the number of international students increased by 9.6% when compared to 2015. At USC, students from China represent the largest population of international students. There were 502 Chinese international students enrolled at USC in 2016, representing nearly 30% of the total international student enrollment. International students from India and South Korea have also demonstrated significant growth: 53.5% compared to Fall 2015 (from 56 to 86) (International Student Enrollment Report, 2017).

Recently, the number of new international graduate students at USC has increased more than international undergraduate students. In 2016 there were 951 international graduate students and 508 international undergraduate students at USC. This represents a noticeable increase in the number of international undergraduate students from 350 in 2015 (International Student Enrollment Report, 2017).

As seen in figure 2.2, the number of international students from the Middle East increased by 17% in 2016. A total of 76 Saudi international students enrolled at USC in 2016. This number includes 40 undergraduate and 36 graduate students. There is a greater disparity between the graduate and undergraduate numbers in Omani students, as seen in the demographic report, with 76 Omani students at USC, including 74 undergraduate and 2 graduate students. With regard to Iraqi students, there are 66

students from Iraq with all of them being graduate students. All of them are sponsored by their governments.

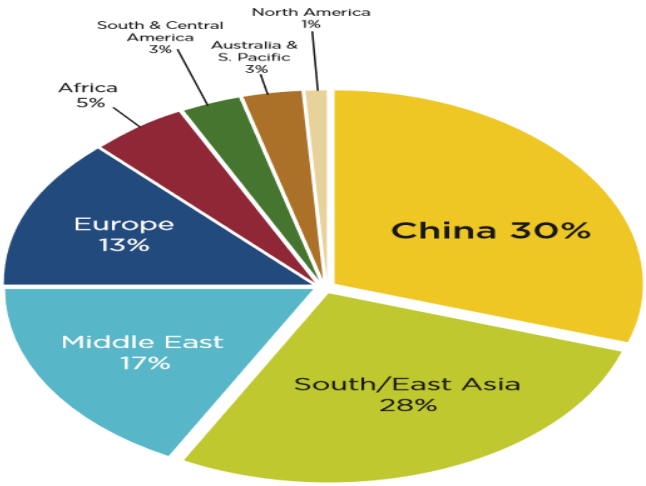

Figure 2.2
Student Enrollment by Country and Region at the USC (International Student Enrollment Report, 2017).

THE INFORMATION NEEDS AND USES OF INTERNATIONAL STUDENTS

Socio-cultural stress is a prominent factor, and its importance cannot be overlooked (Shoham and Strauss, 2008). International students face the challenge of being in new environments and attempting to make new friends. Indeed, a study in Australia that involved 200 international students found that 67% were unhappy, 71% of these students wanted more local friends but were unable to bond, and 51% were unhappy to the point of being depressed (Chataway and Berry, 1989). Some students have a problem developing interpersonal relationships because of the diverse culture. This phenomenon, known as "culture shock," is a big stressor to international students (Brown and Holloway, 2008). The culture in the US promotes self-reliance, independence, and individualism. This is unlike Asia and many other areas where everything is done

collectively. A study by Libermen in 1994 showed that a majority of international students criticized American social norms, which they thought promoted individualism.

Evidently, most of the international students differ in race, cultural background, financial capability, and often also face a language barrier. This leads to a socio-cultural disorder that inhibits student orientation in new environments. For instance, students in Asia learn more communally, unlike in America where individuals tend to learn independently. Asian students studying in America may experience cultural shock, stress, or depression, which affects their academic results (Wilton and Constantine, 2003). Notably, the main problem lies in the understanding of complex cultural norms, behavior, and curriculum practices. Foreign students' success depends on their ability to navigate differences in culture, language, and technology within the education system. More so, the culture and language of the student impact their access to information retrieval systems, which directly affects their academic study. This paper reports on sensitive information needs as prioritized by international students.

International students need information for various purposes to make successful adjustments to a new culture. Poyrazli and Grahame (2004) stated that among the highest priority needs for international students are basic writing and communication skills to succeed in their daily coursework, like assignments, participating in classroom dialogues, and composing research papers. Most students face difficulties in mining existing research reports in addition to challenges in composing research papers as expected by American institutions of higher education (Poyrazli and Grahame, 2004). Most considerably, international students fail to recognize the role of tutors and office hours in research and learning, claiming that some professors only attend class to write on the

boards. More so, there are challenges with basic language while learning and communicating. Lack of proficiency in conversing and writing hinders such students in academics as well as the communication needed to exist in a society with differences in various systems including health care and access to necessary medications. For instance, there were notable cases of conflict between students and professors in which the tutor thought that the student was not ready for class because he could not speak English (Wu, Garza and Guzman, 2015). Another critical need for international students involves access to information and resources for completing basic day-to-day chores like accessing groceries, banks, and shopping. Thirdly, a few students had problems with American culture and immigration rules and regulations, while others had problems with professional development (Poyrazli and Grahame, 2004).

Despite a well-documented need for access to various types of information that could be met by library systems, many problems still occur with international students accessing these information resources. One reported barrier to accessing information was a difficulty with the use of web search engines and the Internet. Most students face language difficulties due to the lack of multiple language interfaces, and lack awareness of searching by keywords and categories (Poyrazli and Grahame, 2004). Also, some reported low flexibility in using search engines, unavailability of the web when off campus, and low-speed Internet connectivity. Library resource technologies used on American campuses also seemed challenging, especially while searching using the library website. Most challenging in the searching process was that features like the spell check and thesaurus, and sorting if results were missing (Poyrazli and Grahame, 2004). Online databases provided by the library website with a variety of different interfaces similarly

made web searching a challenge; this led to difficulties when searching on different subjects, not to mention the impact of language barriers on interpreting search results (Badke, 2002). Ultimately, outdated information, inadequate resources, and a complicated library search system often led to the development of anxiety in using library resources.

Wilton and Constantine (2003) detailed the barriers for international students in adjusting to the American culture on campuses. One such barrier is the expense of attaining immigration compliance, especially with the redrafting of the rules after 9/11. International students study under strict regulations and scrutiny of the federal government. Further, these measures perpetuate anxiety within a significant number of American students, which has contributed to the escalation of anti-immigrant prejudice. According to Poyrazli and Grahame (2004), some native students fear that international students may pose a threat due to terrorism or may become a burden on the economy. Furthermore, the lack of intercultural communication hinders those students from interacting with other people, which further perpetuates stereotyping. Consequently, establishing peer and professional relationships within the campus life can be challenging for international students (Andrade, 2006-2007). This also leads to barriers in participation in the classroom and curriculum, such as participating in class and group discussions, tests, and even approaching tutors and faculty (Vaughn, Schumm, and Sinagub, 1996). Moreover, international students face other barriers in everyday life like locating places to stay, grocery stores, and transportation among facilities essential for their daily chores. These documented challenges paint a picture of the welfare of international students in higher education, which should guide higher education

institutions in the country to take further steps to facilitate the adjustment of these students into campus life and the academic curriculum. Some responsibility certainly rests on the international students themselves. Wilton and Constantine (2003), reported that proactive students who participate in extracurricular activities, connect and interact better with fellow students and professors and consequently have better chances for successful graduation. Even so, newcomers with supportive families and societies have better experiences adjusting to new environments. In spite of the challenges of ethnicity, racism, or other barriers hindering education for international students, there should be a collaborative effort including support, mentoring, and counseling to orient international students into campuses appropriately (Wu, Garza, and Guzman, 2015).

INFORMATION SEEKING BEHAVIOR

The term information behavior as we know it today has been the subject of amendments based on new knowledge. In the past, research on the deliberate and explicit endeavor to search for and locate information was called “information seeking and gathering” or “information needs and uses”. As time went by, these terms were replaced by the phrase “information seeking research” to include research on ways in which people searched for and interacted with information (Bates, 2010). More recently, however, the use of the phrase “information behavior” has been pervasive and globally accepted to signify all the ways employed by people to locate information and how they interacted with this information. Even though this move faced strict rejection from the

proponents of the old order, the term “information behavior” remains commonly and widely used today.

Fisher, et al (2005) described information behavior as how people need, seek, give, and use information in different contexts. In its simplest form, information behavior is how people find and then interact with the found information. There are various models that have been used to represent the information seeking process, relationships among theoretical propositions, and the processes connected with identification and satisfaction of information needs. In an effort to understand the users of information resources, library scientists became increasingly interested in studying the information seeking behavior of different groups and identities of people (Bates, 2010). For example, they sought to understand the information seeking behavior of different scientists according to their disciplines and specialties and different members of the public in accordance with their social status and economic situation. This happened in the late 1960’s and early 1970’s with U.S. government support to advance science and engineering education. At the turn of the 21st century, more research was carried out by social scientists to unearth the information seeking behavior of people who willingly participate in activities that reward them with self-fulfillment.

The task for early Library and Information Science (LIS) historical research and resulting theories was to provide a general approach to identify key components of the LIS research context and identify the basic methodological phenomena and concepts of the field. Various theories, frameworks, models, and conceptions of information-seeking behavior, have helped to shape the LIS field to highlight different levels of analysis for research attention.

Case (2002) illustrates the main difference between a theory and a model. A theory is a generalized statement aimed at explaining a phenomenon. A model, in contrast, is often used to describe an application of a theory for a particular case, and, therefore, it cannot be as fully descriptive as a theory. Improvement in a model results either from a new theory, empirical testing of a model, or descriptive research, which unearths new insights into the phenomena under study. "By illustrating causal processes, models make it easier to see if hypotheses are consistent with what we observe in real life" (Case, 2002, p. 115). Models, as purposeful representations of reality, are helpful tools to understand specific phenomena. Information seeking behavior models aim to "describe an information seeking activity, the causes and consequences of activity, or the relationships among stages in information seeking behavior" (Wilson, 1999, p. 250). Diagrams are often used to represent models visually. The following are examples of dominant models used in information behavior and information seeking behavior.

- Wilson's models

One of Wilson's earliest works (1981) discussed the factors that produce a "need for information" and barriers that prevent the person from seeking information. Wilson developed a series of models of information seeking, which reflect insights from his research and that of others (1981, 1996, 1997, and 1999). Wilson noted that the "information needs" conception was not helpful in considering information behavior research (following Belkin) and needed to be focused on actual "information-seeking behavior" over indeterminate "information needs". Also, it must be kept in mind that Wilson's models are not independent of one another and there is a need to fully understand all of the models as evolutionary.

In 1981, Wilson discussed the factors that produce a need for information and obstacles that prevent the person from seeking information. Wilson's 1996 model is comprised of three important aspects of information seeking: how needs determine the information sought, how information sources are prioritized, and how individuals' self-confidence with information influences their success in meeting their information goals (Wilson, 1999). This model is specified with different fields other than information science in mind, including decision-making, psychology, innovation, health communication, and consumer research. Wilson's 1971 model developed the idea of the personal, social role, and environmental context that leads to an increased need for information. Wilson's 1999 model focuses on the "information process," such that the information gathered in one search is fed back into subsequent searches in an iterative process (Wilson, 1999).

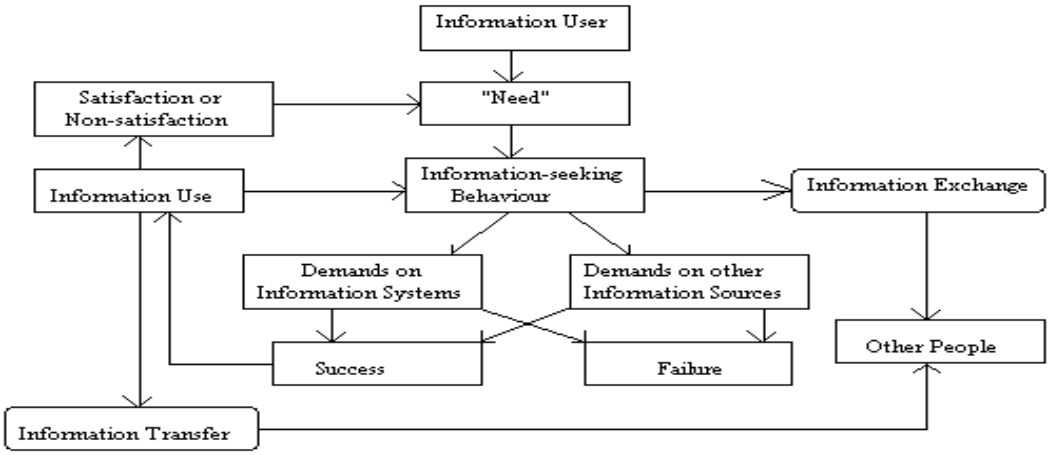

Figure 2.3
Wilson's Model of Information Behavior (1981)

As seen in figure 2.3, Wilson's model starts with an *information user* who has a need which may or may not stem from user level of satisfaction with previously acquired

information. In this model the user may follow two different forms of *information seeking behavior:* they may make demands on *information systems* or on *other information sources*. Those demands will either lead to *success* or *failure* in locating related information (Wilson, 1999). In Wilson's model, failure is a dead-end that could be the end of the process. However, if the user is successful then the found *information* is put to *use*. It may be used in any of three ways: satisfaction or non-satisfaction, information transfer, or further information seeking behavior. Further information transfer or information seeking behavior, both lead to the exchange of information with other people. Information transfer is an important part of this model. Case (2002) states that Wilson noted in many situations, particularly through face to face interaction in traditional systems, that people can be sources of information. The type of information behavior shown in this model is exemplified when a user asks a librarian for information.

Wilson (1999) defines the concept of information behavior as "the totality of human behavior in relation to sources and channels of information, including both active and passive information seeking and information use". Thus, information seeking behavior is the process that individuals use to search for and make use of what they find (e.g., 'information'), considering the factors or circumstances encouraging the use of information and recognizing the channels used to secure information. Information seeking behavior involves the interaction of an individual with a variety of information sources to identify needed information (Wilson, 1999).

According to Case (2002), the most significant characteristic of Wilson's second model, as seen in figure 2.4, is the way it distinguishes between different types of behavior that motivate the search process. Wilson (1996) breaks down "Information

Seeking Behavior" into four categories and makes these determinations based on the level of activity or passivity of the search and whether or not the seeking process is ongoing.

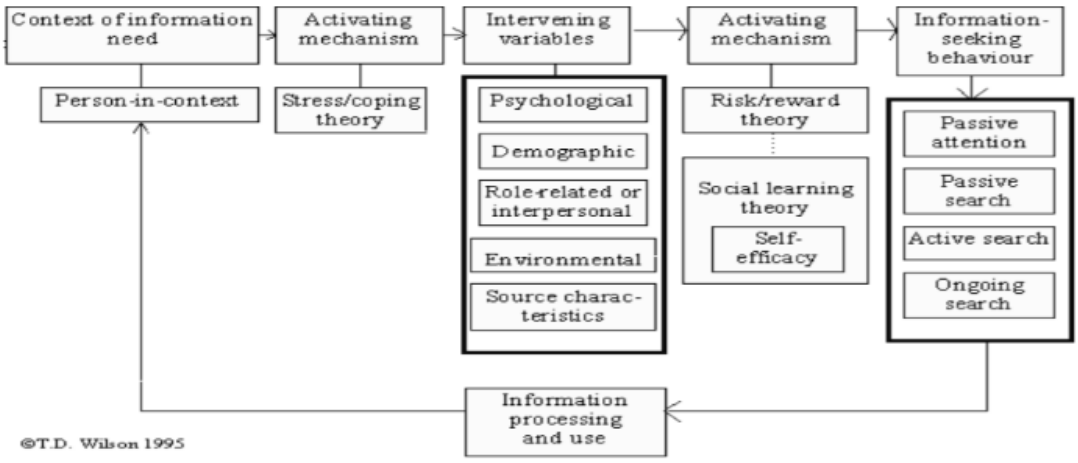

Figure 2.4
Wilson's Information Seeking Behavior (1995)

Comparing Wilsons' first and second model, Wilson's second model is much more complex. As the previous model was focused on active search, Wilson's first model is very broad; it does not consider documents as sources, but instead looks at systems, sources, and people. Also, it does not value source characteristics and personal preferences (Case, 2002). Wilson's second model, however, introduces some new aspects to the first model. It recognizes not only personal variables and modes of seeking, but also introduces other theoretical models of behavior. The stress/coping theory seeks to explain why some needs invoke information-seeking behavior, and some do not. The risk/reward theory helps explain which sources of information are preferred by certain individuals. The social learning theory addresses the concept of self-efficacy—the conviction that one can successfully execute the behavior required to elicit the desired

outcome. Because Wilson second model incorporates these three theoretical models of behavior it provides a richer source of hypotheses than his earlier model. (Wilson, 1999).

Beyond theoretical or conceptual models, which support hypothesis generation or insight, improving research methods within LIS is important because of a need for practical solutions that can be applied. It is important to give the early historical researchers the respect that they deserve. It is also important to consider the fact that researchers still can build on earlier research. For example, by paying attention to the research methods and findings of earlier research, we put ourselves in a better position to advance our understanding of information behavior. This understanding, in turn, should help us to design information systems and services, given existing and emerging technologies, for people with a wide range of information seeking problems. For example, Wilson's model began as a theoretical framework but now the model links theories to action. It continues to serve as a framework supporting understanding of the information behavior concept with as much validity as at the time of its conception and various evolutionary developments. In short, it is a very general model that helps to describe and possibly explain fundamental aspects of human behavior related to information seeking and use.

Wilson's model was used in the context of health information seeking by Das (2013) who investigated health information-seeking behaviors of low-income pregnant women in rural India. Das' study utilized Wilson's ideas to show that low-income pregnant women with high information needs and low barriers will be more likely to seek information. Thus, the perception of risk may influence personal beliefs about health self-efficacy. Other theories of information seeking behavior have complemented or expanded

Wilsons (1981) model to include additional stages to fill the gap between situation and use.

- Dervin's Sense-Making Theory

Dervin's Sense-Making Methodology builds a bridge between two types of theories (Fisher et al., 2005). Sense-making is a generalizable approach to thinking about and studying human sense-making and sense unmaking in its variant forms. It also rests on a set of philosophical assumptions, which mandate a set of methodological efforts. Thus, in addition to a focus on sense made and unmade, Sense-Making seeks to provide a method to pursue traditional studies of information seeking use and also open up alternatives. To reiterate: Sense-Making seeks to bridge together method and possibilities for alternative theories of information seeking and use (Fisher et al., 2005). This theory might help elucidate international students' information seeking behavior. International students may perceive difficulties with everyday data. International students may not know something. Thus, they may face a 'gap' of some sort, which leads to their sense-making.

Brenda Dervin first reported the Sense-Making theory in 1972. Following that, she developed her work into a communication theory and method to study communication. Dervin uses the behavior of an actor both internal, such as cognitive, and external, such as procedural (Dervin, 1983, p. 3). According to Fisher et al. (2005), Sense-Making is integral to understanding how human beings gain meaning from information. This theory has been used within various disciplines to study information seeking in environments with a multitude of services and settings. Sense-Making has

evolved with the growing interest of "information behavior" and the process of information need, seeking, and use. Sense-Making's main focus is on how individuals make sense of information and the variety of emotions, feelings, and communications in association with this concept. Sense-making is an approach to thinking about and studying human sense-making and sense un-making in its variant forms. Dervin's Sense-Making theory builds the bridge between a theory that results from observation and theory that directs observing. Dervin's approach focuses on the individual and the sense that the individual makes trying to cross the gap to obtain necessary knowledge to bridge the gap (Fisher et al., 2005, p.25).

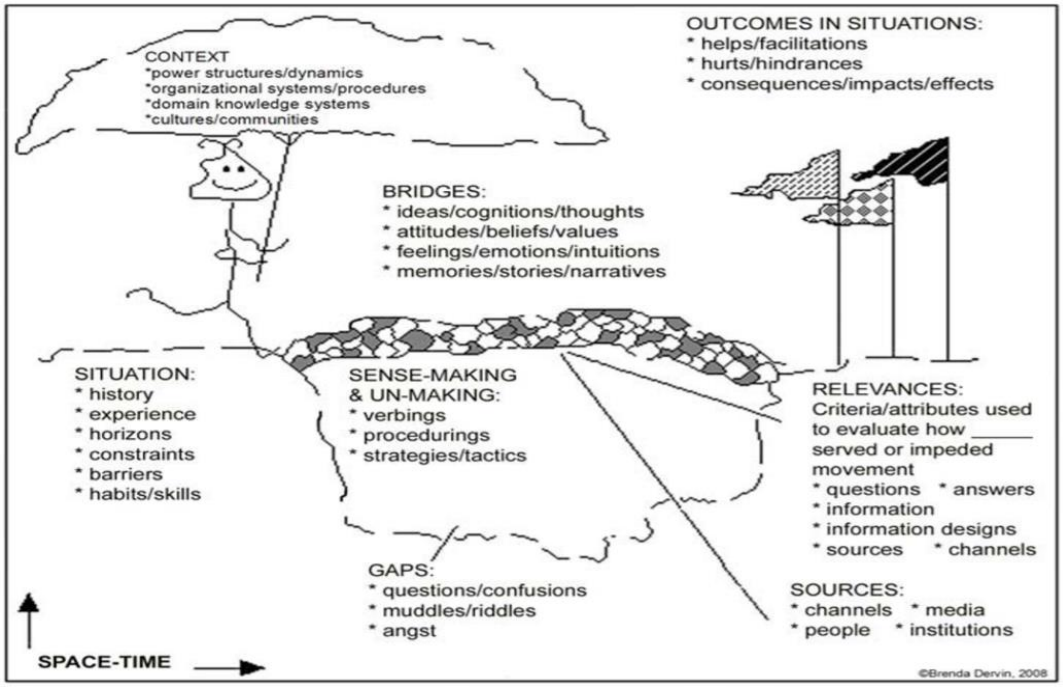

Figure 2.5
Sense-Making Methodology Metaphor (2008)

As seen in figure 2.5, Sense-Making Methodology involves four main steps: Situation, Gap, Bridge, and Outcome. The Situation is the context that requires

information need. Examples of this include history and experience. Second, the Gap is usually the questions or worries that the information seeker asks. Third, the Bridge is the solution offered to solve the problem. It may involve some strategies, ideas, or opinions. Finally, the Outcome is the result, which can facilitate or obstruct the situation. (Dervin, 2008).

Sense-Making's foundations include time, space, horizon, gap, bridge, movement, power, constancy, and change. This model provides a larger view of possibilities. Each new moment in time-space requires a gap-bridging step. Due to this movement in time, change is always possible. Gap-bridging can be responsive and resistant to changing conditions (Dervin, 2008). The characteristics used in this approach are not constant and will be changed based on a particular situation. Also, this model provides detailed descriptions of gaps in knowledge and the methods that individuals form to bridge over these gaps (Dervin, 2008).

Sualman and Jaafar (2013) utilize the sense-making approach in healthcare situations. They "looked at factors influencing the seeking of needs and usage of health communication among the public" and found that "individuals who face a health situation will actively seek suitable information to overcome their health predicaments." Their findings indicate that an individual's health predicament strongly influences their information seeking behavior. In other words, an individual with a health situation is more likely to actively seek health information than an individual who does not have a health situation. Thus, a health situation can be used to predict the type of information being searched for by individuals with particular health situations.

Okoniewski et al. (2013) investigated the health information needs of adolescents and how they use technology to meet their health information needs in a certain order of preference. The analysis of their focus group data was guided by Krikelas's ''Information Seeking Behavior'' framework. According to Krikelas, the process of information seeking starts when an individual notices a lack of adequate knowledge required to answer a current need or problem—a gap in the terms of Brenda Dervin. The process ends once this void is filled. This means that if adolescents have a gap in their knowledge (e.g., primary information sources), they will seek another adequate information source (external sources) to fill the gap and meet their urgent health needs.

> In order to understand how the 'gap' is filled, all of the activity of adolescents is studied to identify how they [adolescents] use health information resources in order to satisfy their needs. Of interest is how adolescents perceive their health needs, search for information, find information, and evaluate the information—either to their satisfaction, or to their dissatisfaction—once obtained.

As noted, a focus group methodology was used to explore key issues in depth from a sample of ethnically diverse urban adolescents. By using mobile health technology, adolescents have different experiences and health information needs, which guides them to seek health information. Okaniewski et al's findings indicate that adolescents rely on external sources (e.g., direct contact, recorded literature) more than internal resources (e.g., internal memory, direct observations). Participants frequently searched for health information on the Internet (recorded literature -external information

sources). However, they prefer to contact family members or a health professional (direct contact -external information sources) to get reliable information to address their urgent health needs. Regarding urgent health needs, adolescents trust family members or health professional more than the internet to get reliable information (Okoniewski et al., 2013).

The Okoniewski et al. (2013) study shows the importance of improving mobile health technology because most adolescents utilize mobile technology to meet their health information needs. Also, Krikelas's model helped to guide the analysis of the focus group data and allowed the researchers to explore key issues in depth to figure out adolescent's experience in using mobile technology and how they identify their needs, search for information, find the information, and finally evaluate the information obtained. Also, the authors use tables in this study to help create a visual understanding of how things work and help to establish clear links between the research objectives and the summary findings derived from the focus group transcripts.

Further, the findings show that adolescents like to use personal computers to obtain health information more than mobile devices because personal computers have a larger screen, which displays a larger amount of information when compared to the mobile. However, they reported that they use their mobile devices when they need information and they do not have access to a computer. For example, the following cases reported utilizing mobile health technology: an urgent need for diagnosis, treatment for recognized symptoms, and how to provide emergency care for others (Okoniewski et al., 2013).

Aref-Adib et al. (2016) studied the rate and purpose of internet usage for acquiring mental health information by people suffering psychosis. The researchers point out that not only is the internet an excellent source of information, but that it can help so many people deal with their conditions comfortably albeit when used collaboratively with their doctors. The researchers point to information from reliable sources such as the European survey and the report available from a UK online statistics entity, to support the high rate of internet usage. Thus, previous research supports the theory they proposed. For example, the statistics of people who have access to the internet works to promote the idea that a mobile app that provides supervised information to psychosis patients may be highly welcomed given the high numbers of people who can access such an application (Aref-Adib et al., 2016).

The research reported in the article claims that internet usage for information on mental health is high, and as such, it is only practical that healthcare practitioners embrace the internet to be able to monitor and provide mental health care services through an application. Also, there is a claim that the information available on the internet is not sufficiently beneficial since it has the potential to change the behavior of a psychosis patient, a scenario that could lead to either good or bad outcomes. As such, the researchers believe that a considerable number of participants stopped their treatment or medication after using the internet for information on their conditions (Aref-Adib et al., 2016).

Aref-Adib et al. (2016) used a semi-structured methodology to ascertain and confirm, with a purposefully selected group of psychosis patients, their online mental health information seeking behavior. Using this methodological approach, the researchers

sought to discuss the present and past use of online mental health services to establish the effect of the information and services available via the internet on the behavior of the psychosis patients. Furthermore, the study examined the acceptability of a mobile mental health application (Aref-Adib et al., 2016).

As this study was based on qualitative data collection, the research design uses interviews that seek to identify the experiences that participants have had with their usage of mental health online information and services. The interviews were conducted with 22 participants. This study was conducted at one of the National Health Service (NHS) mental health providers, in Camden and Islington NHS Foundation Trust in the UK. The interview transcripts were analyzed by using a thematic analysis. The interviews were semi-structured in that they were created to allow the researchers to follow-up on a response given by the participant. For example, if the question required a Yes or No answer, the answers from the different participants will not necessarily be the same. Therefore, to be able to follow-up on each participants' experience, each question will have to follow-up on the issues that apply to the response and experience shared.

The researchers used a thematic form of analysis to identify patterns in the data that either applies to existing theory, support theory development and/or offer implications for practice. Once such patterns have been identified, they are reviewed to identify any anomalies in the data or to suggest the need for further data collection or analysis. For example, if a pattern in the data is identified among the female participants, the researcher will typically perform further analysis to determine if the pattern is, for example, an instantiation of the phenomenon or if it is an effect caused by something unrelated. In the Camden/Islington (UK) research, the researcher applied a critical

epistemic orientation by assessing the usage of the internet for mental health care as well as questioning the benefit of such usage.

The research findings show that the researchers sought to clarify the rate of internet information use by psychosis patients, and relied on the conclusions of the results to show the viability of creating an application that would perform that purpose. The research findings show that the number of people suffering psychosis is high and that their use of information from the internet is equally high. The results also show that the usage of the internet was common across age groups, with the majority of participants aged between 21-54 years admitting to using the internet for mental healthcare purposes and seeking information about mental health conditions. Some specific online platforms and sites were more accessible than others and could better provide support to an application meant to manage the usage of the internet for mental health care services (Aref-Adib et al., 2016).

The article "A Qualitative Study of Online Mental Health Information Seeking Behavior by Those with Psychosis," presents the possibility of a crisis in the treatment of and care for mental health conditions (Aref-Adib et al., 2016). Already mental health challenges are tied to stigma, and the use of the internet to seek information for mental health care can be one way to assist the many people who might be suffering from the various conditioned to maintain their privacy. However, there is too much information on the internet, and the bulk of it is misrepresented, not applicable, or inaccurate. Arif-Adib et al. suggested that there is a lack of awareness of which online resources, particularly primary mental health websites, are reliable and how to access them. Therefore, the idea for the creation of an application to perform this task of providing suitable information to

the many suffering people is worthy of consideration and offers the potential of highly practical application (Aref-Adib et al., 2016).

Hong Kong is a highly educated city, which is recorded to hold a very high number of PC ownership--with a record 74.2% with almost every household connected to the internet. Forty-four per cent (44%) of Hong Kong residents are recorded to search for information from the internet. However, among this huge group, only 60% of the users find health information from online sources useful. It translates to the fact that 40% who look for data on the internet do not find it useful (Yan, 2008).

There is however a disparity in terms of confidence in online information amidst this group. Out of the users who find the health information useful, 40% of them are likely not to trust the information obtained from the internet. The confidence that health surfers have in online health information is limited, and the surfers are only likely to have confidence in 50% of the online information. The users surf for almost every kind of health information ranging from women's health to sexual information. The users are shown to have used different criteria in believing in the information. The important criteria were the professionalism displayed in the information, how current the information is, how easy it is to understand, availability of links to the sources, and the reputability of the site (Yan, 2010).

Hong Kong residents display various actions after acquiring information over the internet. There was a widespread change of lifestyle, users consult doctors in order to gain more information and make other decisions regarding treatment, altered compliance to medication was also noted, and even the purchase of over the counter drugs without

consulting doctors saw the change. However, a considerable percentage of them do not take action after acquiring the information (Yan, 2008).

Health surfers visit websites providing health information. Most respondents, a whopping 78% recorded having visited professional websites. The professional websites visited include government sites, which contribute 28.8%; a non-profit organization, which add 22.3%; and hospital sites, which provide 16.2%. Support group websites are some of the other sites alongside drug companies which contribute 11.8%, and 7.3% respectively. Commercial sites and chat rooms are also among the places where health surfers find medical information (Yan, 2008).

Yan (2008) states that health surfers give many reasons for seeking health information over the internet. The research utilized 440 responses to find out what topics health surfers searched for. According to the study, the main topics were disease-specific searches, healthy lifestyle information, well living, information on medication, health services, support, and newsgroups, with 27.5%, 22.5%, 13.9%, 12.0%, 10.9%, 10.9%, and 2.3% respectively.

Thirty-six percent of the health topics searched for (healthy lifestyle information and well living) relate to health consciousness. Hong's study (2009) attempted to define *health consciousness* as a pertinent factor in predicting the health behaviors of individuals and their consequent changes in behaviors. It also identified the scopes of health consciousness and presented an accurate scale for measuring Health consciousness. The consciousness of an individual was measured according to the responses the participants issued on the health information they receive. The issue of being health conscious,

therefore, refers to the whole concern towards one's health, rather than having specific outlooks on topics such as smoking. Further, according to Hong, strategic interventions in matters of health are expected to rise higher conceptually and theoretically (2009).

There are basically five dimensions of health consciousness. The first dimension regards the integration of health behaviors where people learn about their wellness and lifestyle. This dimension shifts people from a traditional outlook to a more rational outlook, where they are weight, health, and even environmentally conscious. The second dimension regards psychological wellness, where people learn about psychological health more directly. The third dimension regards seeking and utilization of health information beyond what a doctor provides. The fourth dimension involves personal health responsibility, which dictates self-management of oneself. The last dimension involves health motivation, where one learns to make personal health goals with an achievable strategy (Hong, 2009).

Health consciousness is comprised of awareness of one's health, making it an individual's responsibility to be motivated towards healthy behavior. A pilot study, which sought to measure health awareness and the perception thereof, was made use of (Hong, 2009). The results generated 11 distinct items of health that comprise of health awareness. Health consciousness scales are inclusive of an individual's sensitivity to a healthy environment, being physically fit, having personal responsibility towards health, being alert and conscious on health matters, involvement in health, self-monitoring, and healthy eating. Others include healthy consumption of alcohol and exercising. In a broader context, scales of health consciousness include health motivation, valuation of health, environmental and weight consciousness, responsibility regarding health

motivation and information. Consciousness in health information allows one not only to predict attitudes and behaviors but as well as improve them (Hong, 2009).

MEDICATION INFORMATION-SEEKING BEHAVIOR

Carpenter et al, (2015) state that patient medication adherence in partners is much dependent on the emotional support that they accord to each other. To explain this phenomenon, the Information-Motivation-Behavioral skills model is put in place. Patients, who have people that support them to adhere to medication, have positive behavior and are likely to acquire motivation and further positive behavior towards their medication. That is, when information is shared between partners, patients change their perception of the medication. With a positive outlook towards medication, these patients are likely to have higher adherence to the medication.

To understand this exploration, a case of people with arthritis and the support they received from their partners was used. Among this group of patients, there were those who acquired information from their spouses, while the other group never acquired information from their partners. Every patient who acquired information from their spouse displayed trust in the medication. Medication effectiveness was the topic most discussed among those patients who shared information with their spouses. Also, those spouses usually sought more information regarding their patient's health--especially if they have complex medical issues (Carpenter et al., 2015).

Patients seeking information from their partners are likely to have instrumental trust in their partners. However, this trust is not adequate among partners who are young

or those who are under light medication. It is more prevalent in those who have complex medication regimens and in elder patients. Trust in spouses regarding medication is therefore not acquired lightly. Critical conditions such as old age or complex treatment necessitate it. Nonetheless, upon acquiring this information, confidence in the medication process is built in the patient. Although it is not evident, seeking information from spouses is likely to yield higher adherence and dedication to the medication (Carpenter et al., 2015).

SOCIAL SUPPORT AND SOCIAL NETWORKS

Social support and social networks are likely to be very important to Foreigners. Kim's research paper is evidence for the tremendous need for social support while seeking health information (Kim, 2013). The study focusses on the case of Korean immigrants in the United States. Social support is seen to be of very great importance to immigrants, and they are likely to access social support in their social networks. Consistent with the findings, the study suggests that the perceived availability of assistance in any social network leads to improved health seeking behavior (Kim, 2013).

The importance of social networks cannot be understated in the case of immigrants. They need social networks and support to promote their health statuses. With a social network, immigrants can discuss healthy behaviors while living in the United States. Most often, they would fear to talk over their health issues with people who are not Koreans as they have some cultural reasons (Kim, 2013).

Kim (2013) uses the Social Network Theory (Marsden and Campbell, 1984) to examine the influences of social support and size of social networks on health

information seeking behaviors of Korean Americans. A social network involves the relationship between several of actors such as the relations that connect organizations or families and exchange resources. “These resources may contain data, information, goods and services, social support, and financial support “(Kim, 2013, P.37). Also, an individual’s social networks include strong ties and weak ties. A tie is defined as the relationship between a particular individual and a certain network member (Marsden and Campbell, 1984). Kim examined both strong ties, which are more intimate, involving individuals who have similarities in attitudes, background, and experience (i.e., family and close friends), as well as weak ties, which require less frequent maintenance and involve, for example, churches and organizations.

Social network sizes were not pertinent to the behavior of seeking health information. However, Korean American females are more likely to seek a variety of health information from online sources because they perceived higher social support. The probability of seeking health information from social networks among Korean Americans increases with the length of their stay in the country (Kim, 2013).

Research shows that health information-seeking behavior is very dependent on the social networks shared by the immigrants. The availability of social networks allows Korean Americans to be able to look for health information such as recommendations for doctors and hospitals. Gaining this key information often lands them in a position where their unique needs and language are understood. Mostly, contacts with social network members will also give them the motivation to look for more health-related information (Kim, 2013).

Oh et al. (2013) explored social support on social networking sites and the impact that it has on access to health-related information. Emotional support appears to be the only significant predictor of health self-efficacy among the four dimensions of social support already mentioned. Its effectiveness is maximized when the support one receives matches the type of support that one requires. The findings of the research proposed that emotional support is well acquired on Facebook. Resources available at the disposal of Facebook users address emotional support immensely and can be understood in term of the expected outcomes (Oh et al., 2013).

Different types of social support are accessible from social media sites. Consumers acquire a greater understanding of their illnesses and the medication required to treat them. They become more confident in handling more medical related information, which increases their health self-efficacy. Online health seeking shows that in most instances, social media platforms like Facebook are likely to produce more personal reactions and information in contrast to blogs and search engines. Respondents are not only informed but can share their specific experiences too. Accurate information regarding a particular disease is therefore very likely to be accessed on Facebook. The frequencies of information seeking on these sites are however variant (Oh et al., 2013).

Specifically, social sites are often peer-based, which means that they often facilitate a discussion among peers. As such, peers are likely to share critical health concerns in an association where social support is guaranteed, and chances of fear are minimal. Information is thus freely shared regardless of its sensitivity. There is reduced anxiety when health information is shared on the social network scape as opposed to face to face discussions.

Oh et al (2013) state that social support has a huge impact on the sharing of health information over social platforms. A high correlation between social support and health self-efficacy is seen, which assure individuals of three dimensions that come with health challenges inclusive of information, esteem, and tangibility of the information. Sharing information is enhanced by these three dimensions where individuals can build relationships that are lasting.

Kjos (2009) investigated use of social networks to obtain medication and health information. The study's purpose was to determine the role of social networks in medication information seeking behavior by describing the structure of social networks that provide information, as well as the content and the function of information. The study also examines the individual characteristics of people who use various types of social networks to obtain medication information. The Network-Episode Model served as a dominant conceptual framework. The study builds on the theory of planned behavior and self-efficacy to relate the social aspect of health to its resultant impact on the medication process. This research is based on the health environment where patients can source information regarding their medication from pharmacists, social networks, etc.

The approach used in the study was based on an exploratory qualitative research design where qualitative methods of data collection were used. The study employed interviews of self-selected participants, and there were three setting types used for interviews. Firstly, a primary care clinic located in the University of Minnesota Metro area (i.e., Minneapolis/Saint Paul) was used as a site for interviews. Community pharmacies outside the Minneapolis Metro area were used as the second site, and a senior center located in Saint Paul, Minnesota was used as the third site in this study. (Kjos,

2009). The interview process began with a one-on-one private meeting with the essential examiner. This resulted in 36 initial examination interviews and four pilot meetings, resulting in a total of 40 interviews over five months. The time spent on a single interview was roughly 45 minutes long, however, more time was permitted if necessary. The interview content had three parts. The first part was comprised of individual foundation questions. This part additionally depicted unique characteristics of persons who utilize different sorts of social networks to get medication information. The second part consisted of fundamental inquiries that identified "who" among a person's social networks were depicted as the vital ties and relationships and that was also considered as medication information sources. The third part aimed to describe the content and the function of the information that is provided through individuals' social networks (Kjos, 2009).

In this study, a thematic hierarchy was used for the initial coding of interviews. Ethnographic content analysis provided the themes and subthemes sustained from theory and previous research. The initial thematic hierarchy developed was based on the 'Network Episode Model' framework. This thematic hierarchy was separated into two trajectories for defining the medication information environment and for providing a basis for comparison between the two trajectories. The first trajectory was use of social networks. The second trajectory was non-use of social networks (Kjos, 2009).

The first thematic hierarchy (first trajectory) showed how the structure of social contacts and the themes and subthemes related to content and function are linked together to provide a complete vision of the role of social networks in medication information seeking behavior. The second thematic hierarchy (second trajectory) involved no social

contact. Rather, it included the Internet or other print sources. This thematic hierarchy developed in order to explore data, and to provide *a priori* subthemes as a conceptual foundation. This approach showed the link between sources and the themes and subthemes of content and function to provide a view of medication information seeking behavior when social networks were not involved. The final overall thematic hierarchy (trajectory), as seen in figure 2.6, involved the first and second thematic hierarchy in order to achieve the first three study objectives related to structure, content, and function.

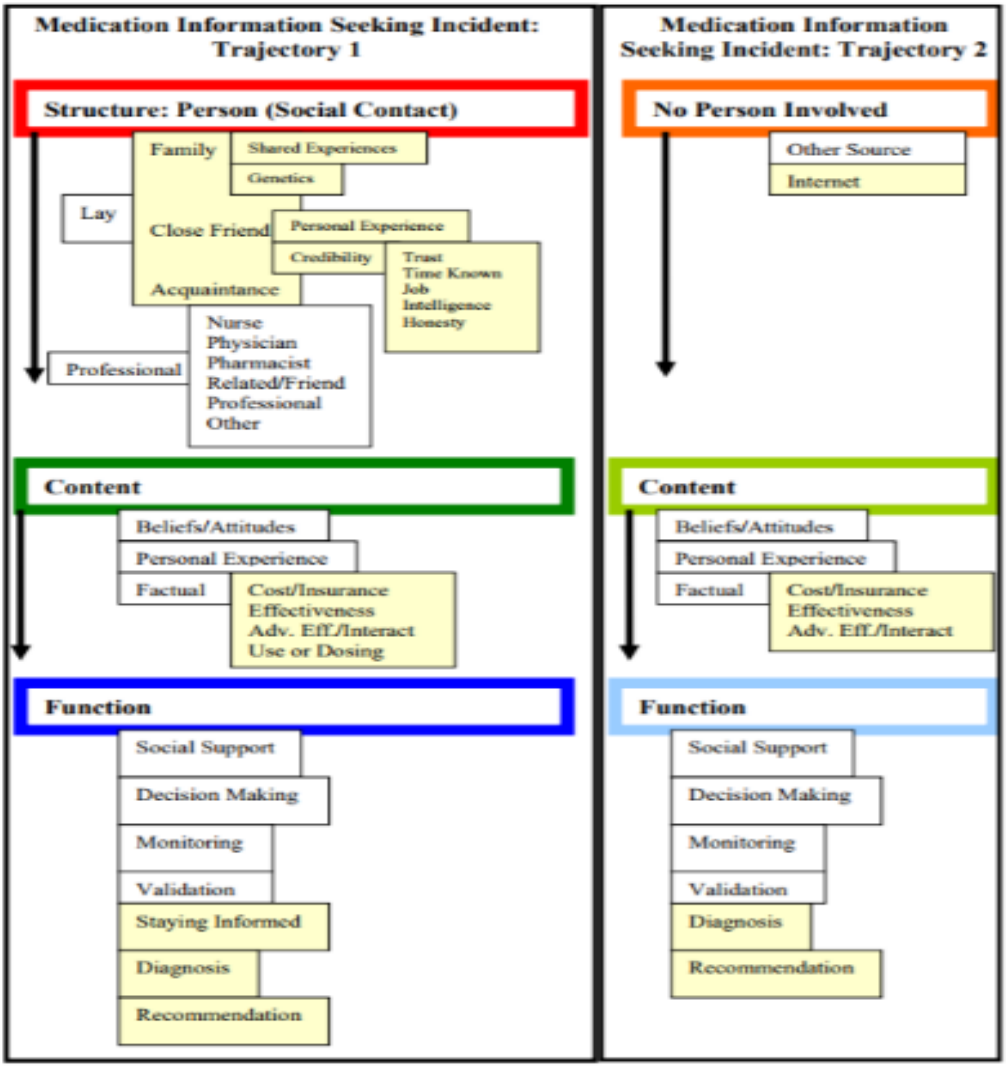

Figure 2.6
Final Thematic Trajectory (Kjos, 2009)

The results describe the role of social networks in medication information seeking behavior of patients as complex, dynamic, and essential to the medication use experience. The final remark for these findings is that patients use social network contacts to satisfy all types of information needs. This implies that social networks are significantly used by people to seek medication information and even to suggest medication use. A result is the suggestion that medication facilities and institutions should adjust their electronic information systems to incorporate current information technology to capture this huge customer base through social networks. Many patients utilize personal contacts to meet their health information needs. The role of family members is not the same as the role of a health care professional or a pharmacist when it comes to obtaining medication information. For example, the main role of family members is as follows: to provide factual medication information; to provide information in regard to personal experiences, beliefs and attitudes related to medication information; to function as a social support that allows a patient to make decisions and follow recommendations as the patient views appropriate information; and to monitor the medication information environment and validation of information.

THEORETICAL PERSPECTIVE

This study is framed by two theoretical perspectives – (1) Chatman's Information Poverty Theory (1996) and (2) Media Complementarity Theory (Dutta-Bergman, 2004a). Both are discussed below. Previous theoretical and empirical articles develop a conceptual framework for the study. Literature from health information seeking behavior and social network domains form the literature base and theoretical framework. Scholars

have utilized these theories to understand how information seekers demonstrate protective behavior, which limits their access to useful information. Information Poverty Theory and Channel Complementarity Theory can help to explain some of the personal factors that affect information-seeking behavior in international students.

(1) Chatman's Information Poverty Theory

In 1996, Chatman provided a conceptual definition of Information Poverty. Information Poverty is characterized by an unwillingness to share information, a desire to only approach people in their usual social environment, and/or an aversion to engage in information seeking for needed information. The reasoning behind this is because "they perceived themselves as being isolated, they mistrusted their surroundings or they want to give the appearance of normalcy" (Bronstein, 2014, p.1). This will cause the information poor to disregard information that is needed. Chatman (1996) stated that the disregard of an information need expressed in situations of information poverty can negatively impact individuals' lives, health, and level of educational achievement.

Chatman considers the information behavior of janitors, retired women and women looking for employment, drawing on the insider/outsider sociological concept and building on her previous work on economically poor groups and information (Chatman 1991, 1992). Related studies using information poverty for information behavior research have also concentrated on particular groups and were conducted primarily in physical environments (Hasler, et al. 2014). Internet use shall, if at all, be regarded as part of the broader process of information seeking. The Internet offers anonymity as well as a source of information and support that may not be accessible

elsewhere to assist individuals to escape their information poverty situation (Hasler, et al. 2014).

Theory of Information Poverty has four key concepts: deception, risk-taking, secrecy, and situational relevance. Deception is a deliberate attempt "to hide our true condition by giving false... information." Risk-taking is an attribute that affects the acceptance or refusal of "innovation." Secrecy is viewed as having the purpose of protecting "ourselves from unwanted intrusion." Situational relevance is defined as consistent with utility, or that it addresses an expressed need (Chatman, 1996, p. 194)

Chatman predicts that people within a community tend to look within that community for information that they need instead of outside their community. Culture also influences the meanings that people impart to their illness. In their own country, they may have a wealth of information and know how things work, but when they come to a new country they will be in a state that may be characterized as information poverty. Information poverty is not to be equated with social poverty. It is not that international students are necessarily poor in the traditional economic sense, but that they do not have the skills or knowledge needed to overcome their difficulties. They do not have the information that promotes ease of seeking medication information in their host country. For this reason, it is understandable that students are likely to experience anxiety.

Scholars have utilized this theory to understand information seekers who demonstrate protective behavior, which limits their access to useful information. Also, information poverty theory can help to explain some of the personal factors that affect information-seeking behavior in international students. This theory, then, could help us to

understand how international students seek medication information to bridge the gaps of their knowledge in order to obtain the knowledge and understanding needed to improve their health status for medical conditions, which require medication.

(2) Channel Complementarity Theory (Dutta-Bergman, 2004a)

Dutta-Bergman's Channel Complementarity Theory (2004a), has gained increasing attention due to the widespread use of the Internet and social media platforms to spread information. The Channel Complementarity Theory presents one of the theoretical frameworks offering perceptions on the utilization of information. The central postulate embraced by the theory is that people seek information from any source (i.e., Internet, print, interpersonal) to satisfy their needs. The Dutta-Bergman (2004a) Media complementarily theory proposes that individuals who seek information about specific topic are likely to seek further information from multiple sources. Dutta-Bergman indicated that individuals (international students) who visited healthcare providers were likely to have obtained healthcare information from sources such as the Internet, newspapers, and television.

Channel Complementarity Theory is applied across many disciplines. Particularly in healthcare provision, channel complementary theory has been applied to students, work groups, and other social groups of people to study how they find and access healthcare service providers. For instance, Rains and Ruppel (2016) argue that most students (and other healthcare users) use information sources like online support groups, print media, and information about healthcare providers to make healthcare decisions.

The research by Dutta-Bergman (2004a) found that the surge in new media including primary healthcare information, internet communication, print readership, and interpersonal communication were leading sources of information. These three sources are mostly associated with health-information oriented and -conscious people who have strong health beliefs. For the other group, the non-health oriented, information sources were primarily radio and television, which Dutta-Bergman (2004b) termed as passive consumption channels. The distinction between health self-consciousness and non-health self-consciousness individuals is important in developing a theory about medication information seeking behavior. Health conscious persons feel more responsibility to take care of their health, tend to engage in preventive care, receive information from various communication channels, and tend to actively participate in online and/or offline health communities as well (Dutta-Bergman, 2004a). Since the theory of channel complementarity indicates that media sources complement each other, it was observed by Rains and Ruppel (2016) that communicating health issues was best suited through a combination of the use of the Internet, interpersonal networks, and print media.

Students use personal networks to ask for health information and other health-related topics. The Internet provides a network of individuals where information can be shared to influence the choice of a health service (Rains and Ruppel, 2016). Conceptualization of Channel Complementarity Theory in healthcare is increasingly shaped by the changing media platforms. In healthcare, the Channel/Media Complementarity Theory is applied given the general likelihood that people seeking information will go to all extents, internalize all available sources of information based on the healthcare topic of interest. Personal networks have the effect of exchanging

information that can benefit the students. Many sources of healthcare information include family members, magazines, friends, television programs, in-support groups, and online support groups. The use of Channel Complementarity Theory in seeking healthcare information keeps advancing due to the evolving channels of information. Presently, the amorphous nature of cultural diversity and dynamism has seen acculturation as a very potent player in social circles. As such, social support has been proposed by Marmot and Syme (1976) and Rogler (1994) as a crucial factor in the acculturation process. People have to undergo an acculturation process that involves acquisition and interpretation of various information from divergent channels, all processed to help adapt to the new culture. In the face of Channel Complementarity Theory, people tend to choose different media to acquire information, which is anchored in their native society. For example, it becomes paramount for newcomers in any society to depend on family and close relations for information as opposed to highly acculturated individuals who have richer social networks. A language barrier is a crucial deterrent on the level of social interactions that students face in trying to search for relevant information. Kim (2013) argues that Korean international students rely more on their country-mates instead of Americans because of ethnicity and language incompatibility. In a nutshell, the acculturation process is highly dependent on personal connections and networks that a person has--making family and friends a crucial factor in immigrants' and international students' coping with social challenges in host communities.

In the context of the current studies, and in line with Channel Complementarity Theory, I expect that medication information seeking will be driven by curiosity and interest in these substances, and that information acquired from different sources will be

combined to fulfill informational needs (Dutta-Bergman, 2004a). Finally, this study builds upon the existing literature by considering the extent to which social network engagement with information sources occurs among international students, and the motivations of these students for movement across sources. Furthermore, this study explores medication information needs, medication information-seeking behaviors, and the perceived information support of Middle Eastern international students who study at the University of South Carolina.

CHAPTER III

METHODOLOGY

The purpose of this chapter is to present the methodology to investigate the research questions and test hypotheses for this study. It begins with rationale and positionality, and then explains the mixed method approach that has been used. The study population of interest is presented as well as the sampling method. Also, research ethics and participant privacy are described. Next, data collection instruments and survey protocols are presented, followed by the data analysis process. Finally, the anticipated limitations of this study are addressed.

RATIONALE

This study examined the influence of social support on online medication information-seeking behavior of Middle-Eastern international students who study at the University of South Carolina. Also, this study explored the influences of (a) health consciousness, (b) perceived social support, (c) MRSS seeking on social networks, and (d) seeking medication information online. The survey research method was used to provide insight into how students utilize their social networks to seek medication information.

Therefore, this study examined the relationships among perceived social support, medication information seeking behavior, (especially seeking medication information online), MRSS seeking on social networks, and health consciousness in interpersonal communications among members of a student's social network, and health consciousness in interpersonal communications among members of a student's social network. As stated in chapter one, the research questions are as follows:

1. What are the sources of medication information in the personal networks of Middle Eastern international students?
2. What medication-related topics do Middle Eastern international students discuss in their social networks?
3. Why is social support from an individual's network important for accessing relevant medication information?
4. What do Middle Eastern international students consider to be the most important criteria for judging the trustworthiness and credibility of medication information?
5. How does health consciousness affect students when they're searching for medication information and seeking MRSS on social networks?

H1: Higher level of health consciousness is positively related to social network sources.

H2: Higher level of health consciousness is positively related to MRSS seeking on social networks.

6. How do perceived barriers affect students when they're searching for medication information and seeking MRSS on social networks?

H3: International students who experience high levels of perceived barriers when searching for medication information are more likely to seek MRSS on social networks.

7. How does MRSS seeking influence the perceived social support received on social networks?

H4a: Emotional support is positively related to MRSS seeking on social networks.

H4b: Esteem support is positively related to MRSS seeking on social networks.

H4c: Appraisal support is positively related to MRSS seeking on social networks.

H4d: Tangible support is positively related to MRSS seeking on social network.

8. What is the influence of the perceived social support on seeking information online?

H5a: Emotional support is positively related to seeking medication information online.

H5b: Esteem support is positively related to seeking medication information online.

H5c: Appraisal support is positively related to seeking medication information online.

H5d: Tangible support is positively related to seeking medication information online.

A model of the hypothesized relationships was examined through the methods outlined is illustrated in Figure 3.1. Apart from testing the above-mentioned study hypotheses, this study also examined some indirect relationships

(as indicated by the dotted lines in Figure 3.1), which were expected to be helpful in generating future study hypotheses.

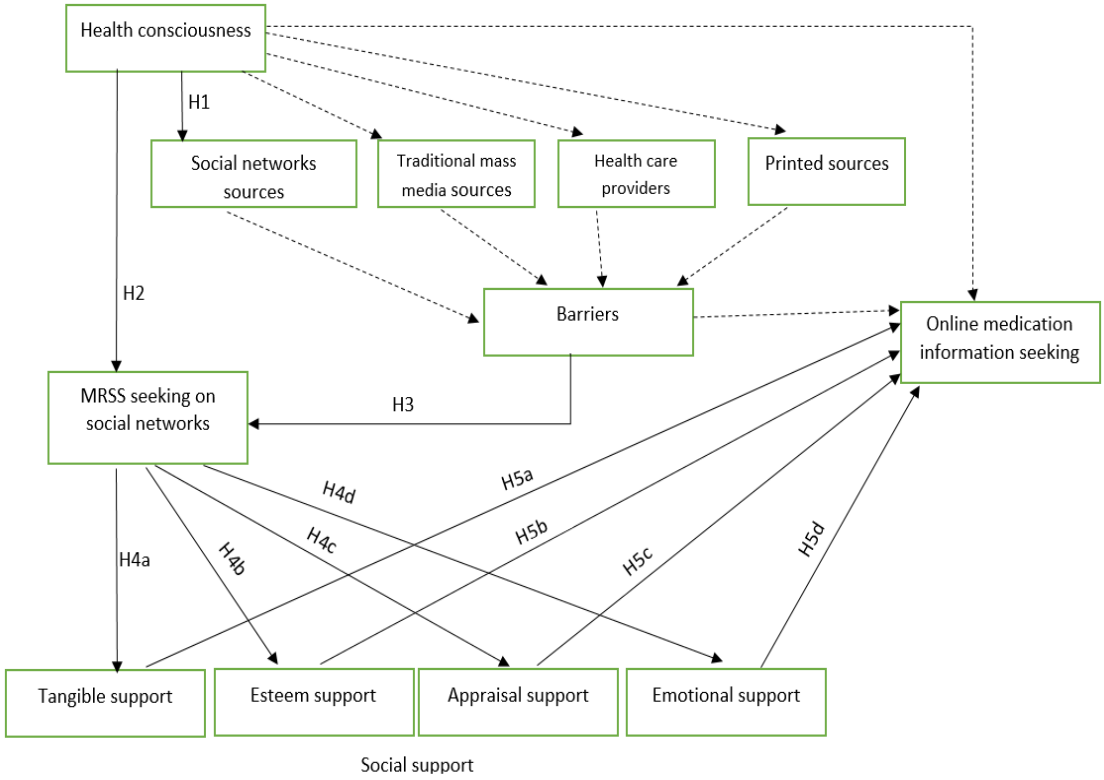

Figure 3.1
Model of Hypothesized Relationships

POSITIONALITY

I am a female international student from Saudi Arabia. My first language is Arabic. According to Jingfeng (2013), there are two different perspectives, “emic” and “etic”. The etic perspective of a culture is that of an outsider looking in. In contrast, the emic perspective of culture focuses on that which is meaningful to the members of a given society, often considered to be an ‘insider’s’ perspective.

As a researcher, I employ the etic perspective. However, as a member of this culture, I also share the emic perspective. I communicate with other Arabs and understand the Middle Eastern behavior very well. Also, I have acquired a view of the world which provides explanations for most of what international students from the Middle East experience. This study emphasizes the emic perspective to include more detailed and culturally rich information than studies done from solely an etic point of view.

MIXED-METHODS APPROACH

The goal of this study is to examine the use of social networks in the study population Mixed method employing both social networks to retrieve medication information for the population and open-ended questions were used to explore the role of social networks in medication information seeking behavior for the population. Closed-ended questions were employed to obtain specificity of response from the study participants; open-ended questions were used to obtain depth of response to understand participants' medication information seeking experiences in the social networks of Middle Eastern students while studying in the U.S.

Mixed method designs are more than simply collecting quantitative and qualitative data for the same study. Such designs use one form of data collection and analysis as a vehicle for weighing another form of data collection. Thus, separate analyses of quantitative and qualitative data are accomplished before weighing and then integrating the separate findings. Creswell describes four important features of mixed method

studies: collecting and analyzing both types of data, rigorous means of collecting data, combining the two forms of data using a specific type of mixed method design, and using a broader network of knowledge such as philosophy, theory, or experiment to frame the mixed method design (Creswell, 2012).

A mixed method approach is used to confirm predicted patterns and expose unpredicted patterns in order to best answer the research questions for this study. Creswell explains that there are three main types of mixed method design: a convergent design, explanatory sequential design, and advanced mixed method design. Of these, a convergent parallel design mixed methodology is used for this study. Qualitative data collection methods were used to collect data through open-ended questions. Quantitative data was also collected through structured surveys. The quantitative and qualitative data collection methods in this design were accomplished at the same time during the same stage of the research process in order to obtain explanations for communication behaviors and outcomes.

In sum, this study used a convergent design. Basically, the researcher collected and analyzed quantitative data through close-ended questions, and at the same time, collected and analyzed qualitative data through open-ended questions. Data was merged to compare the results and get explanations for behaviors and outcomes.

RESEARCH ETHICS AND PARTICIPANT PRIVACY

This research project and procedures was submitted to the University of South Carolina IRB for review and approval before data collection. Participation in this study

was voluntary. Participants had the right to withdraw from the study at any time. Participants also had the right to refuse to answer any questions from the survey (see Appendix A).

To ensure privacy in the administration of the survey, the SurveyMonkey website, which is an online survey website with Secure Sockets Layer (SSL) technology, was used. The SSL is a protocol developed for transmitting private documents or information via the Internet. When a student accesses secured areas of the survey, this SSL technology protects user information with both server authentication and encryption of sensitive information. Also, the researcher is the only one who can access the data.

THE STUDY POPULATION

The research was conducted at the University of South Carolina, Columbia campus, in the summer and fall of 2018. The target population was international students from Oman, Saudi Arabia, and Iraq who study at USC. This study will examine the medication information seeking behavior in the social context of these populations. This study focuses specifically on three nationalities from the Middle East who study at USC. This study occurs at a time when USC has the largest population of international students from Oman, Saudi Arabia, and Iraq that it has ever seen. According to the demographic report provided on the USC website, in 2016-2017, the top sponsorships for international students at USC are the Oman Government, Saudi Arabia Government, and Higher Committee for Education Development in Iraq (International Student Enrollment Report, 2017).

Students from these three countries were chosen because a researcher needs to ensure that they can get a sufficient sample size for the study. Based on the USC International Student Enrollment Report (2017), there are a couple of students who come from countries in the Middle East that are not from Oman, Saudi Arabia, and Iraq, but they do not have student associations, so it is difficult for a researcher to access these students. Oman, Saudi Arabia, and Iraq have large population at the USC, therefore, these countries have club presidents that are easy to get in contact with. In addition, these three countries have the same language, and similar cultural and traditional attitudes related to health and medicine.

SAMPLING METHOD

After getting Institutional Review Board (IRB) approval, the researcher contacted the club presidents of the Saudi, Omani, and Iraqi Student Associations at the University of South Carolina at Columbia. The researcher obtained membership lists from club presidents and contacted the students whose names were randomly drawn via phone to ask them to participate in the study.

Once a student agreed to participate, the survey link was sent to them immediately via an email, which also asked for their cooperation to help locate additional potential subjects. This email detailed the goal of this research and stressed the importance of participation. Students who completed the survey replied "done" to avoid receiving a reminder email. See Appendix A for the complete email including additional details not already mentioned.

Potential study participants were told that the survey was expected to take about 30 minutes or less to complete. If participants agree to be in this study, they were asked to click the online survey link in the email.

The estimated population of Middle Eastern students was 208- this is just the number of registered students. For a 95% confidence level, and a confidence interval of 5%, the minimum sample size was calculated to be 136 (power analysis). In order to ensure a fully sufficient sample, the researcher carried on enlisting until 187 students had agreed to participate. A sufficiently large sample ensures that the sample statistic will most closely correspond to the population statistic.

INSTRUMENTATION

The survey was developed to collect data on international students from the Middle East about medication information seeking behavior. The survey sought to ascertain the perceptions of MRSS via social networks and examine how social networks can influence medication information seeking behaviors of Middle Eastern students studying in the United States. To enhance the validity of the results, the instrument used in this study was adapted from previous research to provide as much comparability as possible (Appendix B). This study did modify the language of previous surveys (Kim, 2013; Carpenter et al., 2015; Oh et al., 2013; Kjos, 2009; Yan, 2008) to reflect the focus on medication information instead of general health.

Part 1 of the survey represents the demographic information of respondents and health consciousness (Hong, 2009). Part 2 of the survey was modified from a previously

validated survey, which was used to assess health information-seeking among Korean American immigrants (Kim, 2013). Part 3 combines the data collection instruments of studies by Carpenter et al. (2015); Oh et al. (2013); Yan (2008); and Kjos (2009) to establish the questions about social support and social networks. The question regarding medication topics discussed most often was adopted by Carpenter et al. (2015). Furthermore, perceived MRSS was measured by criteria that were adopted from Oh et al. (2013). Participants were also asked to provide a narrative of their conversations with others about their medications; these questions were adopted from Kjos (2009). Participants were also asked to state and rate the criteria by which they judged the trustworthiness and credibility of obtaining medication information from their personal social networks. This question was adapted from Yan (2008). Finally, participants were asked about their reasons for using their social networks to seek medication information (Kim, 2013).

As mentioned, modifications were made to the previous surveys. First, changes were made to eliminate a few activities that were not specific to seeking medication information online (question four, part two). This was done in an effort to make it more applicable to medication information seeking behavior and to decrease the length of the survey. Second, changes were made to the language of the survey. Also, question one, part two was modified by dividing the medication information sources into four major categories: “printed sources,” ”social network sources,” “traditional mass media,” and “health care providers.” The same options were used for questions one (part two) and seven (part two).

Also, question six regarding health websites was posed as an open-end question by Kim 2013, but was adapted to a multiple-choice question for this study. Furthermore, the question "As an international student in the U.S., why is personal social support important to access relevant health and medication information?" was modified to include reasons that international students from the Middle East may find social support networks important to seek medication information.

In an attempt to improve on previous studies of information seeking on social networks (Kim 2013, Oh et al, 2013) that asked individual questions and relied on the self-reporting of health status, itemized measurements on health consciousness were added. By using a scale of health consciousness, this study can better measure the context of health concerns among Middle Eastern international students. Health conscious cannot be measured by asking question such as, Tell me on a scale from 1 to 10 how health conscious you are as there would likely be a lack of consistency of responses across respondents. The scale of health consciousness is similar to the one developed by Hong (2009). Health conscious was measured by asking eleven questions. Measuring various aspects and scoring them. The survey was designed to be sensitive to cultural norms regarding health information.

In order to re-validate the survey following these modifications, each question was read and examined by an information science expert, six graduate students majoring in public health, and a statistician. The validators were subsequently asked to provide feedback and the questions that they considered ambiguous or improper were revised.

Based on their recommendations, all appropriate modifications were made. For example, through the process of pretesting the questionnaire, it was evident that the

language in several sections was not clear. Descriptive text was consequently added to the beginning of each part to help participants completely understand the questions being asked so that the survey results would yield relevant answers. Also, based on the suggestion of my statistical consultant, changes were made to some Likert scale items to enhance data analysis.

The survey was initially piloted with 10 students from the Middle East. From this, issues of language clarity were identified and addressed. The final iteration of the survey was piloted with five international students from the Middle East. This time the language in all sections was found to be clear and the questions were determined to be meaningful and appropriate. No changes were made following the second pilot. The final version of the survey instrument is provided in appendix B.

SURVEY PROTOCOLS

The survey includes measures for assessing health consciousness, medication information seeking, and perceived MRSS seeking on social networks. The introduction to the survey explains the research purposes and provided information about the informed consent procedure (see Appendix A). The remainder of the survey has three parts (see Appendix B). The first part is associated with the demographic information of respondents and health consciousness. The demographic questions were expanded upon to reflect further potential variables found in the literature. The demographic factors included age, college, nationality, and gender.

The second part was related to respondents' objectives regarding medication information-seeking and sought to examine information sources in order to determine patterns of internet search. This part addresses how the participants use information sources to acquire medication information. For example, participants were asked questions about the ways they seek medication information, the kinds of information they were looking for, whether they seek information for themselves or someone else, their information needs, the health websites they visited, and how much they trust particular information sources.

In the third part, participants were asked to think about their medication information seeking experience in social networks. This part included the items for constructs related to social support and social networks. It was designed to measure the respondents' perceptions on each item. All of the items were measured on a four-point Likert scale ranging from "strongly disagree" to "strongly agree."

Participants were asked to think about times when they had sought medication information advice from other people. This part included open-ended questions about medication information–seeking experiences on social networks and their importance. For example, participants were asked with whom they discuss their medications, why they choose those people, and what things were discussed. They were instructed that there are no "right" or "wrong" answers to the questions on the survey.

DATA ANALYSIS

For the quantitative portion of data analysis, descriptive statistics (frequency and percentage distributions, mean, median, standard deviation, range, etc.) were used to describe the demographics and other characteristics of respondents in the collected

sample. The hypotheses in the proposed model in Figure 3.1 were tested using a Structural Equation Modeling (SEM) framework analysis. Both Analysis of Moment structures (AMOS) and SEM were used in this study to measure unobserved variables. The scale constructs presented in the model in Figure 3.1 were obtained after averaging responses on Likert items under each scale. The Likert type scale was used in the measurement of the main constructs. Reliability of the constructed scales was assessed using Cronbach's alpha measure of reliability. Before fitting the structural equation model, the proposed model in Figure 3.1 was validated through a Confirmatory Factor Analysis (CFA). The statistical software IBM SPSS 24 and IBM AMOS 24 was used for the statistical analyses.

For the qualitative portion of data analysis, the data was designed with the aim of creating descriptive data that provides deeper insight into student medication information seeking behavior in the social context. The open-ended questions were entered into the NVivo 10 qualitative data analysis software program. Through open coding, these data were evaluated and coded as recurrent regularities and patterns. These patterns became categories and themes that were coded and used as supporting evidence for the quantitative analysis.

CHAPTER IV

RESULTS

This chapter presents the results of the data analysis, including a section on demographics and the results of the scale development and research model test. In this chapter, two approaches will be presented. For the first four questions, the convergent design of the mixed method was used. For the rest of the research questions, Structural Equation Modeling techniques were used. The following sections detail the results of the analysis and the relevant findings for each research question.

Of the 208 Omani, Saudi, and Iraqi students attending the University of South Carolina, Columbia campus, 187 (90%) students agreed to participate in the study and completed the survey, beginning in August 2018 and ending on December 2018. The 187 participants provided stories regarding their experiences seeking medication information through their social networks. Among these stories, 153 (82%) were included in constant comparative analyses after excluding erroneous or irrelevant data.

DEMOGRAPHIC DATA

In order to provide accurate demographic data, the participants were asked to answer demographic questions regarding their age, gender, degree, college, and nationality. A summary of characteristics for demographic variables is presented in Table 4.1.

The mean age of the 187 participants was 29.11 years (SD=7). A majority of the participants fell into the age group 17-24 (n = 73, 38.6%). While 16.4% of the participants were in the age group 25-30 (n=31). There was no statistically significant difference between the number of participants in the age groups 31-35 (n = 40, 21.2%) and 36-48, (n = 43, 22.8%).

As shown in Table 4.1, in terms of gender, the distribution was skewed towards males (75.1%, n=142) in relation to females (23.8%, n= 45). Student degrees were categorized as, 94 (49.7%) bachelors, 13 (6.9%) masters, and 80 (42.3%) Ph.Ds. An attempt was made to determine the most represented colleges of the students out of the 13 colleges at USC. The largest number of the students (88) came from the engineering and computing college. The second largest number came from the arts and sciences college, making up a total of 28 students. The third largest number came from the college of public health medicine at 23 students. The fourth highest was the college of medicine at 15 students. According to the statistics, 11 students participating in this survey belonged to business, 7 students to EPI's intensive English program, 7 students to the pharmacy college, 3 students to education, 3 students to information and communications, 1 student to hospitality, retail and sport management, and 1 student to social work. Finally, regarding the nationality of the participants, 75 (39.7%) were Saudi, 54 (28.6%) were Iraqi, and 58 (30.7%) were Omani.

Table 4.1
Respondents' Profile (N = 187)

Variables		Frequency (Percentage)
Age (year)	17-24	73 (38.6)
	25-30	31 (16.4)
	31-35	40 (21.2)
	36-48	43 (22.8)
Gender	Male	142 (75.1)
	Female	45 (23.8)
Degree	Bachelor	94 (49.7)
	Master	13 (6.9)
	Ph.D.	80(42.3)
College	Arts and Sciences	28(14.8)
	Business	11 (5.8)
	Education	3 (1.6)
	Engineering and Computing	88 (46.6)
	EPI's intensive English program	7 (3.7)
	Hospitality, Retail and Sport Management	1 (.5)
	Information and Communications	3 (1.6)
	Medicine	15 (7.9)
	Pharmacy	7 (3.7)
	Public Health	23 (12.2)
	Social Work	1 (.5)
Nationality	Saudi Arabia	75 (39.7)
	Iraq	54 (28.6)
	Oman	58 (30.7)

RESEARCH QUESTION 1

What are the sources of medication information in the personal networks of Middle Eastern international students?

Table 4.2 shows which sources of medication information in personal networks were preferred. Most respondents, 168/187 (89.9%) reported they used their family "often" or "all the time." An additional 170/187 (55.6%) indicated that they preferred friends, and 83/187 (44.4%) indicated that they preferred to only ask relatives. Forty (40/187, 21.4%) of respondents used Community. The highest mean range was for "Family" as compared to the lowest mean "Community clubs." This statistical ranking provides an initial idea of social network use as a source of medication information by the students.

Table 4.2
Student's use of social network as a source of medication information

	Never	Sometimes	Often	All the time	Mean	Std.
Family	9 (4.8%)	10 (5.3 %)	77 (41.2%)	91 (48.7%)	3.33	0.78
Friend	11 (5.9%)	72 (38.5%)	53 (28.3%)	51 (27.3%)	2.77	0.91
Relatives	35 (18.7%)	69 (36.9%)	71 (38.0%)	12 (6.4%)	2.32	0.85
Community clubs	125 (66.8%)	22 (11.8%)	38 (20.3%)	2 (1.1%)	1.55	0.84

These qualitative findings correspond with results from the Likert scale section that assessed sources of medication information in social networks. Five primary categories emerged from the qualitative portion: (1) family, (2) friend, (3) relatives, and (4) relatives or friends who are medical professionals.

A summary of the responses follows for the first qualitative question: “Tell me about a time when you talked with someone about a medication. Who did you talk to and why do you choose to discuss things with these people?” Of the 187 students that proceeded to answer the qualitative section, 175 responded to this question. Twelve (7%) students stated that they only discuss health issues and medication information with specialized.

A family member was the second most popular source in the quantitative data after doctors. Sixty seven of the 175 students stated that they use their family members’ network to seek medication information while they are studying abroad. The first primary category was “Family” that includes “mother,” “father,” “sister,” “husband,” “wife,” and “brother” as major subcategories. The most utilized information sources were mother (n=27) and sister (n= 16) followed by brother (n=8). Other sources that were listed were less common and included wife (n=7), husband (n=6), and father (n=3).

Mother was cited 27 times in the qualitative descriptions, mostly when the participant needed emotional and esteem support. Representative responses included:

> “When I get sick, I talk with my mom. It makes me feel good to tell someone who is responsible for me and cares about me. I have a good talk and make at least some progress in my health. She always available in the ways that I need and deserve. I trust her. She listens, understands, encourages, believes, and cares.”

> “I talked with my mother because I can contact her any time even with the time difference between countries. She helps me feel I can solve my problems. Also, she helps me to manage my health issues while I am studying abroad.”

> "I was discussing with my mom because she is the only person who cares about me. She helps me to manage and even prevent some of the major health issues in my life. She encourages me to eat healthy. She always said to me that the perfect mind is in a healthy body. She encourages me to strengthen my immune system so as not to get diseases."

There were sixteen stories that involve the "sister." The following are several examples of "sister" as a source for medication information that emerged from the data:

> "I like to talk to my sister. She supports and encourages me to stay on track. She reminds me to take all of my pills and medications on a strict schedule. Also, I feel comfortable talking with her about my medication fears. Because some medication in the past made me feel dizzy and I could not drive, I feel nervous after taking new medication and she helps me to calm down."

> "I like to talk with my sister. She cares about me after my mother died. She helps me when I have problems with eating, self-esteem, and so on. She advises and gives me strategies to deal with difficult situations. My sister and I share ideas when we have to make decisions. Whenever I am frustrated I like to talk with her to help me calm down and think about a solution."

The following are several examples of other family members such as "father," "husband," "wife," and "brother" that emerged from the data:

> "I always talk with my brother about symptoms when I am sick or in pain. He helps me to identify and cope with these symptoms. I like talks with my brother

when I am sick. He listens to me and answers me immediately. Since I was child when I was sick, I asked him what I should do. He has given me some over count medicine or if I was too sick he took me to the hospital."

"I prefer to talk about my health issue with my old brother because he knows about my medical history and all of my migraine symptoms. I trust him, and I can talk with him about my fears, frustrations, and worries. I usually feel better after talking to him."

"My wife wants me to be well. Talking about medications with someone close to me helps me until I am ready to seek doctor help to get better."

"I like to talk with my husband because he encourages me, he is quiet and he listens to me, all I want is to raise my spirit. I feel like he can understand what I'm going through."

"My father always has good advice for me. Talking to him about my health issues help me to provide information, support, and guidance. We can probably share many of the symptoms due to genes"

The second primary category that emerged was "friend" (n=56). The following are several examples of "friend" as a source of medication information that emerged from the data:

"I talked with my friend. Simply talking to someone sympathetic can reduce my stress level and improve my mood. Talking to a friend who also looks forward to the birth of their first child and is afraid of what will happen is good because we share the same concern and talk together to feel comfortable."

> "When I was sick my friend expressed sympathy and wanted to make me feel better. She cares about me and is rooting for me. She was going to the grocery store and she was close to the pharmacy and picked up my prescription."

> "My friend loves to offer help when I am sick. He provides a ride to a doctor's appointment without asking him to ensure that I get to my doctor's appointments. One night, my asthma symptoms kept getting worse. I had severe breathlessness even after I took medication as my doctor directed. Also, I did not find improvement after using a quick-acting inhaler, as the coughing would not stop. At that time, he came and took me to the emergency room."

> "My friend because he usually bought for me some common medicines that I need before going back to America. The medicines for fever, food allergies, coughs, colds and ear infections, diarrhea and vomiting and so on."

The third primary category that emerged as a type of social network source of medication information was "relatives or friends who are medical professionals (n=31)." This category of response emerged from the analysis of the qualitative findings but was not included in the list of possible responses for the quantitative survey. Below are quotes from the subjects:

> "My cousin used to be my medical doctor but now because I am studying abroad I keep in contact with him for medical advice but he cannot write prescriptions for me. I always rely on his opinions regarding any health issues. I keep him updated with my health condition"

"I discuss with my friend, because he is a doctor, about the kind of medicine either for me or for my family. He is one of my best sources of reliable information. For instance, I follow him on Facebook and he usually posts some particular articles. They are very helpful for me and my family. I believe social media is a very convenient way to communicate with doctors and ask them for medical advice"

"My brother knows more about the medications because he is a pharmacist. He helps me to stay on a budget. Because I am looking for expertise and availability, he is an ideal resource to answer all my questions and to help me find the best over-the-counter medications. He helped me evaluate whether I needed to see a doctor or if he could recommend a treatment."

"It easy to communicate her since she is my sister. She is a pharmacist in my country and I trust her. She knows about drugs more than others. I do not have to go to the hospital to just ask questions like that. Because I am a student I do not have much time. So I need someone to answer me quickly."

The fourth primary category that emerged was "relatives (n=15)." A relative is considered to be anyone who is part of the subject's family that is not a first degree relative. For example, "cousin," "aunt," "grandmother," and "uncle" subcategories emerged. The following are several examples of "relatives" that emerged from the data that students relate in terms of obtaining medication information:

"When I am sick I like to talk with my uncle. Because he talks gently, affectionately and tries to understand me and feel that I am a positive person, and he makes me feel important."

"I feel my aunt would just be honest, even more than a doctor. Plus, I feel that doctors in general tend to make me exaggerated, they give a sense that you will die if you do not comply with their orders, advice and prescription so it is best to go to a doctor only in difficult situations."

"I discussed with my cousin because he has lived in the US for 15 years. He helps me to understand American healthcare systems."

RESEARCH QUESTION 2

What medication-related topics do Middle Eastern international students discuss in their social networks?

As illustrated in Table 4.3, the respondents were asked to rate the frequency with which they discussed their medication information with their social networks on a 4-point scale (1 = Never; 4= All the time). Scores were calculated as mean ratings and standard deviations to report frequencies for each topic.

According to the questionnaire results, "Information about prescription drugs" was the most-discussed topic for students within their social network, (mean=3.36, SD= 0.88), followed by "over-counter drugs" (mean=3.36, SD=0.96), "how effective medicines are

in treating your symptoms" (mean=3.39, SD=0.75), and "alternative/holistic medicines or therapies" (mean=2.98, SD=1.04).

Table 4.3
Medication topics students discussed most often with their social network

Topics	Never	Sometimes	Often	All the time	Mean	Std.
Medicines (general)	36 (19.3%)	92 (49.2%)	49 (26.2%)	10 (5.3%)	2.1	0.80
Medicines' side effects	12 (6.4%)	15 (8.0%)	53 (28.3%)	107 (57.2%)	3.3	0.88
How current medicines interact with other medicines you are taking.	52 (27.8%)	82 (43.9%)	32 (17.1%)	21 (11.2%)	2.1	0.94
How to take medicines (with meals, with water, in the morning)	46 (24.6%)	65 (34.8%)	57 (30.5%)	19 (10.2%)	2.2	0.94
The financial costs of your medicines	27 (14.4%)	60 (32.1%)	59 (31.6%)	41 (21.9%)	2.6	0.98
How effective medicines are in treating your symptoms.	4 (2.1%)	18 (9.6%)	65 (34.8%)	100 (53.5%)	3.3	0.75
Alternative/holistic medicines or therapies (e.g. get herbal medicines)	20 (10.7%)	43 (23.0%)	44 (23.5%)	80 (42.8%)	2.9	1.04
Over-counter drugs	12 (6.4%)	28 (15.0%)	27 (14.4%)	120 (64.2%)	3.3	0.95
Preventive care (e.g. vaccines)	48 (25.7%)	68 (36.4%)	48 (25.7%)	23 (12.3%)	2.2	0.97

Of the 187 students that answered the qualitative section, 171 (91%) responded to the following: *What things did you discuss? Was the medication something you took or were thinking about taking? Offer specific details*. The goal of this question was to ensure that

the data collection included any medication-related topics the students discussed in their social networks.

Sixteen students stated that they do not like to discuss medication with their family and friends. “Over-the-counter drugs” was the most-discussed category that students broached with their friends and family (n=60). Below are quotes from the subjects discussed in their social networks about medicines that are sold directly without a prescription from a doctor:

> “I could not sleep at night yesterday from acute sinusitis, nasal swelling, and pain. I contacted my brother, and we discussed prospective medications that could be available over the counter.”
>
> “I have circular eczema all over my hand, and I text my sister to find over the counter lotions for Eczema. It has to be natural and gentle to help relieve dry and itchy skin associated with eczema. I want it to be moisturizing without being heavy. I do a lot of lab experiments and I want cream without perfume.”
>
> “I have tooth pain and I was thinking of over the counter medicine to stop the pain until I saw the dentist, and he advised me to buy mouthwash and toothache paste from a specific brand he tried before and it really worked for me very well. Within a couple of days the pain would just completely disappear and I avoided another hospital visit.”
>
> “I talked to my cousin on a video call last week. I was looking for cough medicines for my wife. I showed him two medicines from the shelf and asked him to talk through what each one is for. He asked me to take a picture of the

medicine's label because the brand here in America is different than my country. After choosing one, he told me the best way to take her temperature and indicated the normal values according to the chosen method. Also, he determined the recommended dosage for my wife."

The next category related to medicinal "side effects" emerged from the data (n=36). Below are quotes from the subjects about the side effects of certain medications that were discussed in their social networks:

> "I discussed the use of a medication that helps with acne. I was thinking of taking Accutane to get rid of face acne. I still have not taken it, but I certainly will in the coming weeks. I asked my sister. She is a doctor in my country about the side effects of Accutane. If it causes hair loss, dry lips, and so on. Also, she told me that it could cause depression, but I believe that having severe acne is much more likely to cause depression than Accutane. She gave me an idea of how medicine will work on me. What are the negativities and positives of using that medicine?"

> "I was discussing with my cousin, she is a pharmacist in my country, whether or not to take vitamin D. She told that a high dosage of vitamin D will affect my body. She advised me to be exposed to sunlight because it is one of the most important sources of vitamin D and to eat foods that contain vitamin D naturally and drink milk. She told me that an increase in vitamin D may cause a problem to a body organ. For example, it can cause excess neuropathy, feeling nauseous, feeling tired, and Kidney failure if it is taken for a long time. Therefore, I need to follow the dosage prescribed by physician."

> "Two days ago, I suffered a severe cough, and I could not sleep because if it. I went in the morning to the emergency room and met with the doctor. I bought the medicine from the pharmacy, but I did not know what the side effects were. I forget to ask the doctor if it causes sleepiness or not. Therefore, I called my sister to read if it causes sleepiness because I do not want to sleep since I have an exam after tomorrow. "

Effectiveness of the medication on treating the symptoms was the third most common theme that emerged (n = 25). Below are quotes from the subjects discussed with their social network regarding the effectiveness of medicine on relieving symptoms:

> "During the testing period, I did not have time to cook so I ate fast food and pizza, so I got heartburn frequently. Last night, I woke up with a sour stomach to painful heartburn. I had stomach pain and heartburn. I vomited and I felt full during a meal and was not able to finish eating. I talked with my mom and she advised me to take Tums antacid chewable. I told her I could not take anything right now but she said Tums taste good like candy and are very effective. I now keep a bag of them in my bag for when I eat out. The Tums took control and I feel much better."

> "My friend makes sure that I have all of the necessary equipment to treat an asthma attack. One day, we were working together in lab. I started coughing, wheezing, and my chest tightened whenever I was working with certain types of chemicals such as xylene, which is used frequently in biology labs. The symptoms became continuous throughout the workday, and I noticed that they would even

get worse as the week progressed. My doctor prescribed for me Metaproterenol, but my friend said I need to go to doctor again because I need to control my asthma symptoms. He said my asthma may not be under control, and I may need the doctor to change my dose of daily control medications."

"I called my brother to ask him because I got cold and felt dizzy. He told me that dizziness may be caused by colds. He advised me to rest and take vitamin C with Panadol Cold and Flu and to inhale Vicks that I bought from my country. I like to bring some medications from my country especially some brands that I trust using because I know the effectiveness of these medications for me."

Twenty-four of the students stated that they discussed "the cost of medication" since they have a limited budget. Some excerpts by participants are as follows:

"After hours of sitting in front of my computer screen, my eyes feel terribly dry. My doctor recommended me to use eye drops. I contacted my brother to find me one with a good price. Medicines are expensive and talking to someone who has tried the medicine before helps me to make the right choice"

"We were talking about how medical care is expensive in America. In the Kingdom of Saudi Arabia, healthcare is offered for free to Saudi citizens. Last month I was going to throw out garbage and I cut myself with a metal can. I called my friend and he took me to Doctors Care on Main Street. After the doctor's supervision, the nurse sterilized the wound and sewed it. At that time, I did not pay anything, and I thought that the insurance would cover it. A few days later, the bills started coming and I couldn't believe how much it cost"

"I did not understand the difference between my deductible and my out-of-pocket maximum. After a dentist visit, the bills started coming and I couldn't believe how much it cost because the insurance did not cover everything. I discussed with my cousin about dental cost."

"I texted my brother to find less costly saline nasal sprays. I was using a specific brand but I could not write the name of it. When I ran out, I needed a new nasal spray. So, I asked him to look for another alternative brand that has the same effects. He turned me onto a generic brand available at CVS."

"After I texted my brother, he searched online and read drug facts for the saline nasal sprays. He bought me the medicine and shipped it to me within a day. He did that for me all the time and he did not accept any money. I used the new saline multiple times a day and it works just as well and costs much less."

Seventeen of the students stated that they discussed the herbal medicine or home remedies. They like to depend on natural sources. Below are examples by participants:

"My mom talked with me about some home remedies that are good for asthma. She provided reassurance that asthma is fully manageable and will not prevent me from living a long and full life. She listened and helped me to make a plan for how to deal with the issues. She encouraged me to depend on natural remedies for asthma that can provide some relief. She encourages me to put a teaspoon of thyme in boiling water, and leave it for ten minutes and then drink a cup after each meal."

"In our culture, we believe in herbal remedies. Home remedies for bleeding gums are effective and after trying the remedy I got good results. Even though I will not get immediate results, by using this remedy I will keep my gums healthy and strong."

"We believe that there is still much more to be learned from the past. I prefer using natural home remedies whenever possible with my family and it really does work. My grandmother has cultural knowledge about specific home remedies. As a student, I have a limited budget and the home remedies will save me a lot of money."

"I did not understand how to check if your dentist is in the UnitedHealth care networks. Also, I was trying to look for a dentist specializing in gums and the closest doctor inside the network I found was in Charlotte. I talked with my mom and she suggested I use tea bags and gargle my mouth with salt water for the treatment of bleeding gums."

"I'm annoyed by dandruff on my head and I feel embarrassed by that white crust. I talked with my grandmother and I asked her how I can get rid of dandruff completely with natural herbs since I do not like to use dandruff shampoo. Dandruff shampoo dries out my scalp and hair. She advised me to mix a little coconut oil with an apple cider vinegar and rub this mixture on the scalp, and then gently massage for a few minutes. After at least 20 minutes, I have to wash my hair and repeat this method two or three times a week."

"I talked with my old sister because I wanted her to give me natural home remedies for severe headache. She told me that there is an effective way to get rid

of my headache. She used it for herself. This remedy was to compound one teaspoonful of chamomile herb with ginger into a cup of boiled water and soak for 15 minutes. She told me to drink it daily in the morning and evening."

"My mom absolute favorite home remedy for a severe headache is boiled ginger. It strengthens the immune system and prevents a cold. It is her natural remedy for everything."

"My mom and I believe in a natural remedy to manage asthma. Since she knows the effectiveness of home remedies, when I was a kid she treated me with these remedies that she knew from her grandmother, and I felt much better. Now, I feel closer to home when I use these remedies. Sharing natural home remedies techniques and what works for our family can help me feel better without using dangerous and toxic drugs. My mother always tried to heal us naturally as often as she could. Like my mom, I do not like to take aspirin when I feel a headache coming. I believe that when using aspirin makes me dependent on it."

Seven of the students stated that they discussed medications in general. Below are accounts by participants:

"In winter, our discussion is usually about the common winter diseases that affect our kids such as colds, sore throat, cough, and flu. These diseases usually occur due to the transmission of the virus from one kid to another through sneezing and runny nose, and spread in daycares and schools. We talk about how to protect our kids from winter sickness and any diet that strengthens their immune system. For example, last week we were gathering in the park and my 7 year old daughter had

a sinus headache and a lot of congestion. One of my friends advised me to give her 2 tablespoons of Sudafed Nasal Decongestant. This medication had great effect on the congestion."

"We discuss different topics. One day, we discussed my medications that I take and how they make me feel. Also, we talked about how I can refill my prescription without seeking a doctor because it will take time to schedule an appointment with my doctor. My brother suggested being careful by keeping track of my medicines and using them safely, since he is studying to be a pharmacist."

RESEARCH QUESTION 3

Why is social support from an individual's network important for accessing relevant medication information?

Participants were asked to rank each potential reason according to the Likert scale responses of 1 through 4. (1= strongly disagree to 4= strongly agree). A response of 1 indicated that this reason did not apply to them at all, while a ranking of 4 indicated that the reason is perceived as most substantial for the participant. Among the survey respondents, "Shared experiences" was the most-common reason that made the students discuss medication information with their social network, (mean=3.4, SD=0.79) followed by "Sense of belonging and personal comfort" (mean=3.36, SD= 0.79), and finally "Shared same-cultured beliefs about medication, health, and alternative health practices" (mean=3.36, SD= 0.85)

Table 4.4
Reason for discussing medication information with social network

	Strongly Disagree	Somewhat Disagree	Somewhat agree	Strongly agree	Mean	Std.
Shared experiences	5(2.7%)	20(10.7%)	44(23.5%)	118(63.1%)	3.47	0.79
Comfort with language	5(2.7%)	34(18.2%)	98(52.4%)	50 (26.7%)	3.03	0.74
Sense of belonging and personal comfort	5(2.7%)	23(12.3%)	59(31.6%)	100(53.5%)	3.35	0.79
Shared understanding of healthcare systems and practices	4(2.1%)	23(12.3%)	118(63.1%)	42(22.5%)	3.05	0.65
Shared same-cultured beliefs about medication, health, and alternative health practices	6(3.2%)	34(18.2%)	61(32.6%)	86(46.0%)	3.21	0.85

The third question in the qualitative portion asked: "*Why did you think it was important for you to discuss these things with someone?*" shared experiences (n=87) and feelings of belonging (n=32) were the most prevalent reasons. For example:

> "I like to talk with my friend because I like to get information from her experiences. She has 5 kids and has a lot of experience in this kind of situation. My friend's son is the same age as my son. They are in the same school too. I like to get experience from her. Actually, I like to listen to her stories about her kids' experience. I want to be sure that my son follows the same pattern of development."

"Moving to a new country may be a difficult experience for anyone, especially because I have children. Receiving support from friends around me help me because they are experiencing and the way they feel because they have often passed the same experience as well. I feel comfortable to talk with them about my kids' health issues since they have the same culture and language."

"I prefer to talk with my friend Omar because he has the same health issue. I believe that a great source of information is talking with other people who have used the same medication. When my friend shares his medication experience, I feel I am not alone."

"I believe in the well-known popular ideals in our communities "Ask an experimenter and do not ask a doctor". So, when I need information about medicines or medical advice, I feel it is better to ask those who preceded me in the experience, and in particular the experiences of older people."

"I had a toothache once. I talked to my friend because he had the same problem and he went to a doctor. He helps me to recognize the signs of specific health problems and connects me to professional help. I asked him what processes are taken to go to a doctor!"

"I prefer to take advantage of the experience of others because they provide many benefits, giving you skills and techniques to deal with illness, but the doctor gives one perspective and it could be different from other doctors. The biggest evidence of this is the words of mothers who preceded us with the experiences of pregnancy, childbirth and the problems of infants. Although doctors have done many studies on

these matters, we still trust in the experiences of those mothers. I believe that knowledge lies in experience and culture"

"Because in some circumstance, when I am under pain, I may not think clearly or choose rationally. So discussing with someone can give me reassurances on my decisions. Know previous experiences of any medication or treatment and how effective treatment. It is possible that they have some information that I do not know and that may benefit me in my health problems. It is important to discuss these things with people who have gone through them in order to make a decision as to what the next step is."

"I love staying connected with home. Especially when I don't feel well. I talk about my fear and concerns with someone I trust who has understood me since I was a kid. Sometimes I feel homesick, missing family and friends, especially when I feel sick. My sister helps me to make decisions and overcome my health fears."

"I like to share my medical information with my family. I like to stay connected with them, which makes me feel that I belong to my community and helps me feel less alone while I live in a different country. Studying abroad is an exciting adventure but it is also a major life transition. For me this is the first time I am away from home. Sharing this information with my family eases the tension that I feel about the many unknowns."

RESEARCH QUESTION 4

What do Middle Eastern international students consider to be the most important criteria for judging the trustworthiness and credibility of medication information?

Participants were asked to rate each source with Likert scale responses of 1 through 3. A response of 1 corresponded with the least amount of trust while a response of 3 corresponded with the most. As seen in table 4.5, respondents were asked to rate criteria. Among the survey respondents, "The information is from a professional" was the most-important criteria, (mean=2.68, SD=0.52) followed by "The information is easy to understand" (mean=2.54, SD= 0.64), and finally "The person has links and source of information" (mean=2.42, SD= 0.79)

Table 4.5
Student's criteria for judging the trustworthiness of medication information

	Not important	Somewhat important	Very important	Mean	Std.
The information is from a professional	6 (3.2%)	46(24.6%)	135(72.2%)	**2.68**	0.52
The information is personally relevant to me	15 (8.0%)	98 (52.4%)	74(39.6%)	2.31	0.61
The information is current and up to date	10 (5.3%)	93(49.7%)	84 (44.9%)	2.39	0.58
The information is easy to understand	15 (8.0%)	55(29.4%)	117 (62.6%)	**2.54**	0.64
The information agrees with most healthcare professionals	28 (15.0%)	71(38.0%)	88(47.1%)	2.32	0.72
The person has links and source of information	26 (13.9%)	65(34.8%)	86 (46.0%)	**2.42**	0.79
The person is accredited with a reputable organization	67 (35.8%)	52(27.8%)	68(36.4%)	2.00	0.85

To get a deeper understanding, students were asked to state and rate the criteria by which they judged the trustworthiness and credibility of obtaining medication information from their personal social networks. One hundred seventy of the one hundred eighty-seven participants responded to the qualitative questions at the end of the survey. The last qualitative question was: "*What makes you think that the information you received is trustworthy?"*

Fifty-eight students stated "the medication information was from a professional" as being a very important trust criteria. Most of them have relatives or friends who are medical professionals in their countries. For example:

> "She is a pharmacist and she usually advises me to use WebMD's Drug Interaction Checker application to avoid harmful drug interaction. Now, I download this app on my phone so I can use it when I am taking medications. Even after picking up a prescription from my physician I like to check the information more just to be safe and read more about drugs facts."
>
> "My cousin is a pharmacist, so even after visiting my doctor I like to send him the prescriptions to look at it and give me valuable information about the prescriptions."
>
> "Since they are doctors, I trust their educational opinions. I don't ask any random person. The information will be accurate if it comes from people who work in the field like health care providers they are a source of trust"

Fifty-five students stated "check reliable sources" after discussing the subject with their social networks (n=55) as being a very important trust criteria. This category of response

emerged from the analysis of the qualitative findings but was not included in the list of possible responses for the quantitative survey. Below are quotes from the subjects:

> "I trust my mom, she prepared a cup of thyme when I was in my country. This drink helped relieve my symptoms of asthma. I was curious to know about the effectiveness of the thyme to relieve the symptoms therefore I searched online from reliable websites to learn more facts."

> "My grandmother grew up with these home remedies. I used this remedy for about one month and I got rid of my dandruff completely. I read from a reliable website about the benefits of coconut oil with an apple cider vinegar."

> "Normally I do not trust the information that I get from people, but what I do usually compare info from people to info on trustworthy websites."

> "After I called her I checked online about back exercises. I watched YouTube about this and read many people's reviews. Most people said it is really helpful and keep the muscles comfortable."

> "After discussing with them on the WhatsApp group, I checked it on the Internet with a couple of other sources about how I could refill my prescription without seeking a doctor and then I found out going to urgent care is the fastest way to get the prescription. So, I decided I would do it."

> "My mom is one person that I always listen to. She takes care of my health since I was a child. Plus, I noticed a difference on the first day after taking TUMS. Also, I

read about it on the Walmart website. Many people recommended them to relieve heartburn."

"Sometime after discussing with my doctor about the medications he is prescribing, I find this information is insufficient. Therefore, my wife likes to contact someone who has used the drug or searched online."

"After getting this information I searched online but I did not find scientific studies to prove the effectiveness of herbs in weight loss. Even though this is not scientific I will try some of the natural herbs because maybe they will improve my health even if I do not lose weight."

"After getting the information from my friend, I read the safety warning on the label behind the bottle and the vitamins are made from natural and used organic ingredients. It is suitable for my son's age too."

"My wife usually has accurate, firsthand information about my health condition, treatment and needs. After getting the information from my doctor, she likes to get more information. Therefore, she searches on the internet from reliable websites to provide for me accurate, up-to-date medical information."

Also, this medicine helped my daughter feel better fast. After that, I went to CVS and I was looking over the options. I did not want a multi-symptom product because she only had the stuffy nose. Sudafed was the only one I saw that was just for nasal congestion."

Following this, thirty-two of the students stated that they would trust the person who "provided links and a source" of information.

> "I trust him because he is very knowledgeable and has read more about our health issues. Also, he usually sends me up-to-date articles and studies related to migraines."
>
> "Because she usually searches online about drug information from the National Library of Medicine website. She reads about side effects, dosage, special precautions, and more. I have found it helpful in getting reliable and accessible information about the medications to talk with some about who is really caring about my welfare."
>
> "I feel fine after drinking the cup of my mom's remedy which she was actually right about. My mom has many books about natural home remedies. She read a lot about effective techniques. Therefore, I trust her information."
>
> "The information my brother gave me made sense and I trust him. He usually searches online and reads from many websites. Sometimes, he chats with doctors online and gets the information from them."
>
> "My wife usually has accurate, firsthand information about my health condition, treatment and needs. After getting the information from my doctor, she likes to get more information. Therefore, she searches on internet from reliable websites to provide for me accurate, up-to-date medical information."

Twenty-five of the students stated “the information is easy to understand” as very important trust criteria for them. For example:

> “Moving to a new country may be a difficult experience for anyone, especially because I have children. I feel comfortable to talk with them about my kids’ health issues since they have the same culture and language.”

> “My mom showed me how to cut the ginger in small pieces. Then I boiled them into a cup of water and after this cooled, I added one spoon of natural honey. Her information was provided in a clear and very understandable manner.”

> “The information agrees with the emergency room doctor. Advil is a trusted brand of medicine that people use for pain. Since my son cannot take strong medicine Advil was the best choice for him.”

STRUCTURAL EQUATION MODELLING

Questions 5,6,7, and 8 are all related to the hypotheses which taken together form a single model. These questions address a set of statistical hypotheses as presented in figure 3.1, which were tested using Structural Equation Modelling using IBM SPSS AMOS 24.

AMOS implements the general approach to data analysis known as structural equation modelling (SEM). SEM consists of a set of various multivariate modelling techniques. SEM was used to examine the research hypotheses and to analyze structural relationships to support exploration of the research hypotheses. In other words, SEM is

used to confirm that the data supports the theory. Theoretically, two types of models are involved in the SEM: measurement model and structural model (Byrne, 2009). The measurement model is concerned with the reliability and validation of the items, which are employed to measure the construct. Based on the theoretical considerations outlined earlier in the literature review, the measurement model was initially created. Latent variables were combined into a full structural model. The structural model, however, represents the theory showing how constructs are associated with other constructs.

THE MEASUREMENT MODEL (DATA): RELIABILITY AND CONSTRUCT VALIDITY ASSESSMENTS

By examining their internal consistency reliability (Cronbach's alpha) and a range of inter-item correlations, the reliability of each measure was assessed separately. In this study, internal consistency was tested for the 41 items in the 11 constructs. Table 4.6 shows Cronbach's alpha coefficients, means, and standard deviations of the participants for each item on the scale. All items were scored from 1 (strongly disagree) to 4 (strongly agreed) on a four-point Likert scale. Higher scores show more agreement with the item or scale of the assessment.

The responses to those items should be highly inter-correlated because all the items in a measure are measuring the same construct. In this study, the acceptable alpha coefficient of Cronbach was previously set to 0.70. For the eleven constructs, the results shown in Table 4.6 had values ranging from 0.75 to 0.96, all of which were considered acceptable.

Two items showing comparatively low item-to-total correlation and a higher Cronbach's alpha were subject to potential elimination, as shown in table 4.6. Items should be highly inter-correlated as low inter-item correlations indicate that some items do not match the construction's relevant content domain and cause error and unreliability. The Cronbach's α values for each of the items forming the construct are in the acceptable range (0.76 to 0.92) (Churchill, 1979). For example, the 11 score is taken from individuals and the average to represent the unobserved health consciousness of the individual, allowing this process to be reliable. Taking the average provides a score of every individual's level of health consciousness. Reliability tests indicated that the 11-item health consciousness scale had high internal consistency with a Cronbach's Alpha of 0.76. This means that there is a highly inter-correlated response to health consciousness items. This study shows that the average score will give health consciousness a highly reliable scale.

Table4.6
Item Analysis

Construct and Items	Corrected Item-Total Correlation	Cronbach's α if Item Deleted	Cronbach's Alpha	Mean	SD
Health Consciousness Items:			0.76		
1(I am very self-conscious about my health),	0.49	0.72		3.44	0.62
2(I am generally attentive to my inner feelings about my health),	0.33	0.74		3.24	0.58
3(I reflect about my health a lot),	0.40	0.73		3.12	0.65
4(I am concerned about my health all the time),	0.48	0.72		2.68	0.68
5(I notice how I feel physically as I go through the day),	0.41	0.73		3.13	0.70

6(I take responsibility for the state of my health),	0.57	0.71		3.65	0.56
7(Good health takes active participation on my part),	0.54	0.72		3.65	0.56
8(I only worry about my health when I get sick),	0.03	0.78		2.90	0.72
9 (Living life without disease and illness is very important to me),	0.41	0.73		3.73	0.54
10 (My health depends on how well I take care of myself),	0.48	0.72		3.52	0.62
11(Living life in the best possible health is very important to me)	0.37	0.74		3.67	0.55
Traditional mass media			0.77		
Items:					
1(TV, radio)	0.39	-0.19		1.25	0.44
2(Newspapers, magazines)	0.35	-0.05		1.20	0.40
3(Internet)	**-0.06**	**0.76**		3.72	0.49
Health care providers			0.89		
Items:					
1(Doctors)	0.74	0.88		3.52	0.76
2(Nurses)	0.82	0.81		2.82	0.75
3(Pharmacists)	0.79	0.84		3.00	0.69
Social Network			0.87		
Items:					
1(Family member),	0.66	0.74		3.33	0.78
2(Friends/Co-workers),	0.76	0.68		2.77	0.91
3(Relatives)	0.73	0.70		2.32	0.85
4(Community associations or clubs)	**0.38**	**0.87**		1.55	0.84
Printed sources			0.79		
Items:					
1(Leaflets that come with the medicines or printed by the pharmacy),	0.66			2.25	0.96
2(Books or pamphlets).	0.66			1.84	0.82
Perceived Barriers			0.96		
Items:					

1(It took a lot of effort to get the information I needed),	0.90	0.96		2.58	0.89
2(I felt frustrated during my search for the information),	0.93	0.95		2.54	1.01
3(I was concerned about the quality of the information),	0.93	0.95		2.61	1.00
4(The information I found was hard to understand).	0.91	0.96		2.51	1.00
MRSS seeking on social networks			0.95		
Items:					
1(I have used social networks to get medication information from others),	0.88	0.94		3.26	0.98
2(I have used social networks to seek out people who have experienced similar health problems as I have),	0.91	0.94		3.22	1.00
3(If I have a medication question, I often go to social networks to seek out advice from others),	0.87	0.95		3.08	0.96
4(I have used social networks to update others on my health).	0.90	0.94		3.10	1.00
Emotional support			0.95		
Items:					
1(Will give me encouragement),	0.90	0.92		3.17	0.97
2(Will show me sympathy),	0.86	0.94		3.05	0.93
3(Will make me feel relieved).	0.91	0.90		3.17	0.96
Tangible support			0.95		
Items:					
1(Drive me to the doctor if I ask for a ride),	0.92	0.93		2.97	0.97

2(Buy me medicine if I ask for it), 3 (Provide a quick emergency loan if I need it for my health issue).	0.92 0.89	0.92 0.95		2.90 2.95	0.97 0.94
Esteem support Items: 1(They show confidence in my ability to deal with my health concern), 2(They make me feel good about making health decisions), 3(They make me feel able to solve my health problems).	 0.92 0.89 0.93	 0.94 0.95 0.92	0.96	 3.10 2.96 3.16	 0.93 0. 86 0.91
Appraisal support Items: 1(They make me feel comfortable sharing my private worries and fears about health), 2(They provide objective feedback on how to solve the problem), 3(I am comfortable discussing sensitive medication topics with them).	 0.91 0.94 0.90	 0.94 0.93 0.95	0.96	 2.47 2.48 2.36	 1.03 1.01 1.10

Note. Bold values refer to those items subject for potential removal.

STRUCTURAL MODEL (THEORY): CONFIRMATORY FACTOR ANALYSIS

After indicating that each construct has a strong level of reliability, a confirmatory factor analysis (CFA) model was performed to assess the structure of the theoretical conceptual model of relationships between the constructs. As summarized in figure 4.1, employing CFA, the measurement model was tested. The constructs (latent variables) are included in ovals according to the AMOS analysis guideline (Arbuckle, 2007). As seen in

figure 4.1, rectangles contain the items (observed indicators), whereas ellipses contain the measurement errors. CFA was evaluated with eleven constructs correlated with each other (Health Consciousness, traditional mass media, healthcare providers, social networks, printed sources, Barriers, MRSS, Emotional support, Tangible support, Esteem support, Appraisal support) that are connected with double-headed arrows, representing a pattern of inter-correlations. The single-headed arrows leading from the ovals to the rectangles are regression paths representing the connection between the constructs and their respective set of observed variables; these coefficients represent factor loadings. In addition, the single-headed arrows from the ellipses to the rectangles represent errors of measurement associated with the variables observed.

Some modifications made that were significant included deleting items with poor factor loadings to improve model fitness as; this is elaborated below. Large modification indices indicated that the two items correlate beyond what their factors can explain. Typically all items of the same construct can be correlated, which allows covariance between several pairs of error terms.

As seen in figure 4.1, the research examined modification indices that showed that the first covariance was drawn between the error term of "Q7b2"(" I am generally attentive to my inner feelings about my health.") and that of "Q7c2"(" I reflect about my health a lot."). The second covariance was drawn between the error term of "Q7c2" ("I reflect on my health a lot.") and that of "Q7d2"("I am concerned about my health all the time"). The third covariance was drawn between the error term of "Q7i2" and that of "Q7k2" ("Living life without disease and illness is very important to me.") and ("Living life in the best possible health is very important to me.").

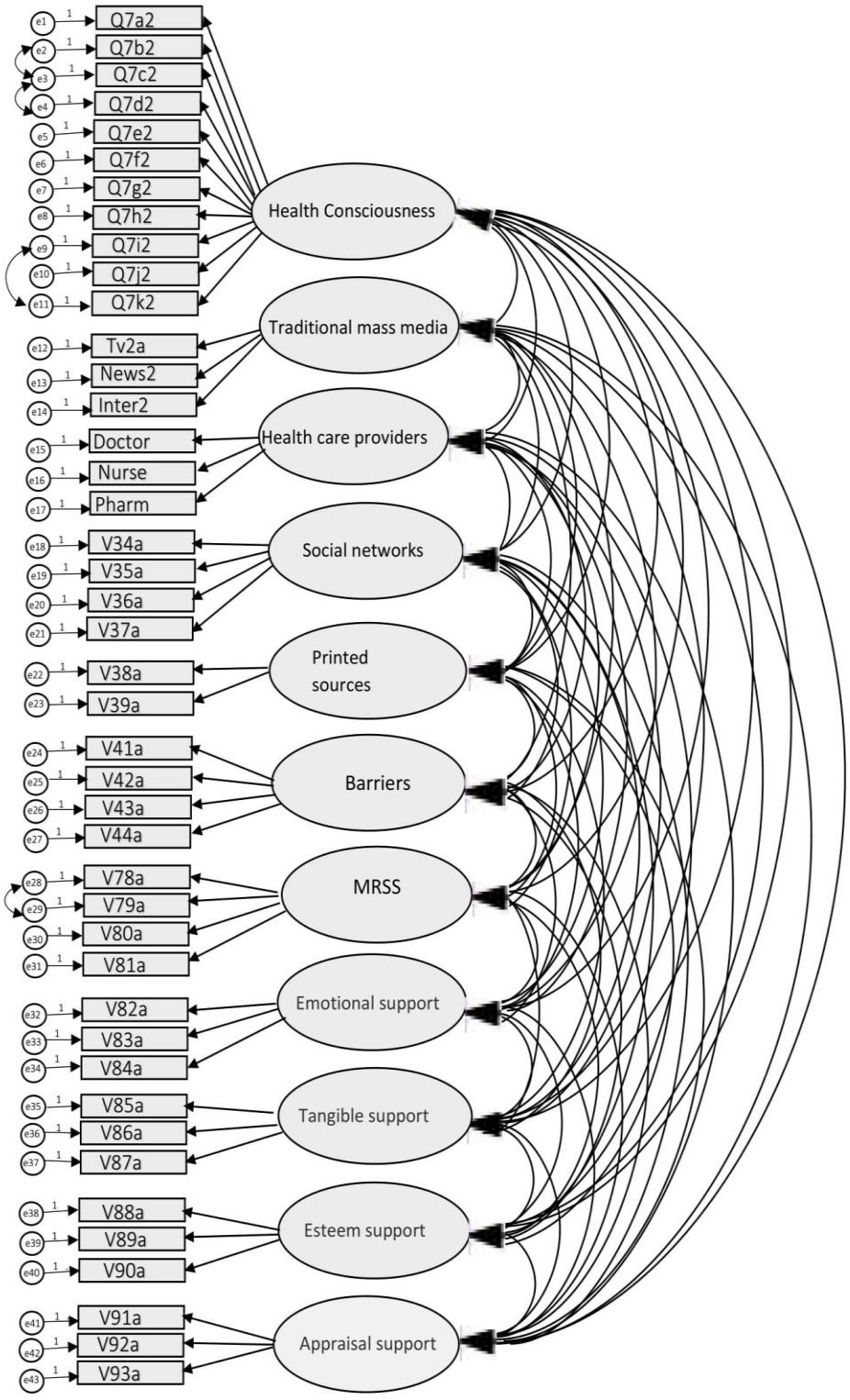

Figure 4.1
Confirmatory Factor Analysis

The last covariance was “V78A” (“I have used social networks to get medication information from others.”) and that of “V79A” (“I have used social networks to seek out people who have experienced similar health problems as I have.”). After drawing covariances between four pairs of errors, the indices of modifications suggested that: “Q7H2” (“I only worry about my health when I get sick.”) and that of “Q7J2” (My health depends on how well I take care of myself.”) be deleted so that the overall model fit can be significantly improved.

Polit (2010) recommended that a variety of fit indices be considered in order to counteract the weakness of a particular index by another's strength. The model's goodness-of-fit indices yielded in all respects highly acceptable indices. In summary, as seen in table 4.7, several fit indices with their commonly accepted cut-off values were considered in the evaluation of model fit: The Incremental fit index (IFI $\geq$ 0.922), the Goodness-of-Fit Index (GFI $\geq$ 0.90), the Tucker Lewis Index (TLI $\geq$ 0.914), the Normed Fit Index (NFI $\geq$ 0.811), the Comparative Fit Index (CFI $\geq$ 0.921) and the Standard Root Mean Square Residual (SRMR $\leq$ 0. 055). As the majority of the fit indices indicate an acceptable model, it can be claimed that the theoretical model is supported by the data.

Table4.7
Goodness-of-fit statistics of the confirmatory factor analysis of the measurement model

Goodness of fit index	Recommended level	Measurement model
CMIN/DF	< 3.00 (Byrne, 2001)	1.569
Comparative Fit Index (CFI)	> 0.90 (Kline, 2005)	0.921
Normed fit index (NFI)	> 0.80 (Ullman, 2001)	0.811
Incremental fit index (IFI)	> 0.80 (Garson, 2006)	0.922
The Tucker-Lewis Index (TLI)	> 0.90 (Kline, 2005)	0.914
Relative fit index (RFI)	> 0.80 (Garson, 2006)	0.79
Root Mean Square Error of Approximation (RMSEA)	< 0.10 (Tabachnick and Fidell, 2007)	0.055

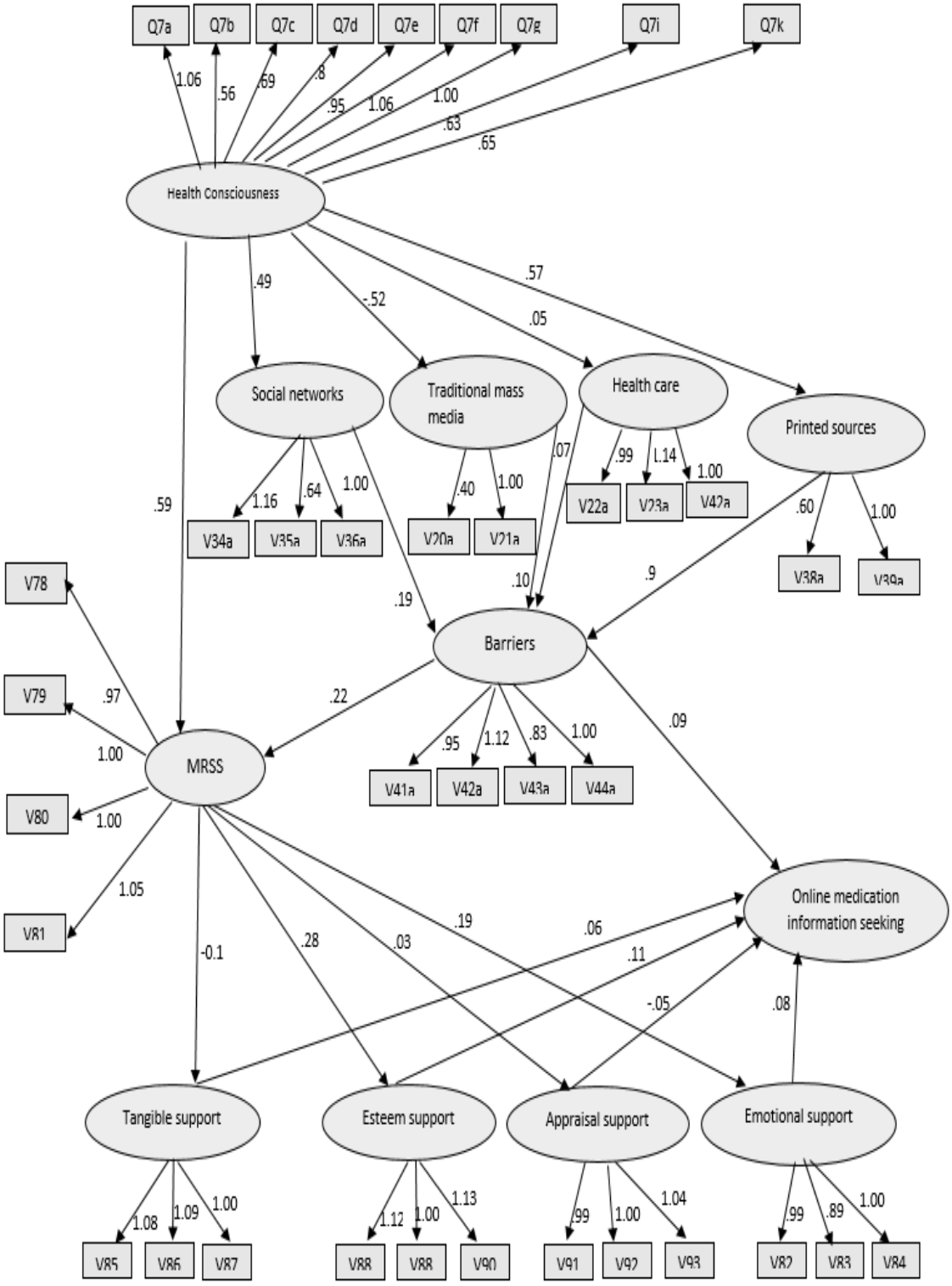

Figure 4.2
The SEM presenting the relationships between the latent constructs

Table 4.8
Results of structural equation modeling

Parameters			Hypotheses	p-value
Social networks	←	Health Consciousness	H1	0.018
MRSS	←	Health Consciousness	H2	0.003
MRSS	←	Barriers	H3	0.001
Emotional support	←	MRSS	H4a	0.012
Tangible support	←	MRSS	H4b	0.840
Esteem support	←	MRSS	H4c	0.007
Appraisal support	←	MRSS	H4d	0.704
Online seeking	←	Emotional support	H5a	0.037
Online seeking	←	Tangible support	H5b	0.154
Online seeking	←	Esteem support	H5c	0.030
Online seeking	←	Appraisal support	H5d	0.139

RESULTS OF HYPOTHESES TEST AND CORRELATIONS

The association among perceived social support, health consciousness, MRSS, and online medication information seeking on interpersonal communications within social networks was investigated by developing the hypothesized relationship in the light of previous theory and the literature. The results provided in Table 4.8 provide support for the acceptance and rejection of the hypotheses.

H1) (p-value= 0.018 < 0.05) confirmed a positive influence of health consciousness on social network sources. This finding supported the research hypothesis 1.

H2) (p-value= 0.003 < 0.05) indicated a positive influence of health consciousness on MRSS seeking on social networks. This result provided strong evidence supporting the research hypothesis 2.

H3) (p-value= 0.001< 0.05) indicated a positive influence of perceived barriers on MRSS seeking on social networks. This finding supported the research hypothesis 3.

H4) (p-value= 0.012 < 0.05) indicated a positive influence of seeking MRSS on emotional-support, implying evidence to support the research hypothesis H4a. (0.007 < 0.05) indicated a positive influence of MRSS seeking on social networks on esteem support implying evidence to support the research hypothesis H4b. However, there was no association between appraisal support and MRSS seeking on social networks (p-value= 0.704 > 0.05) and also, there was no association between tangible support and MRSS seeking on social networks (p-value= 0.840 > 0.05). This finding did not support research hypotheses H4c and H4d.

H5) (p-value= 0.03 < 0.05) indicated a positive influence of online medication information seeking on emotional support, implying evidence to support the research hypothesis H5a.(p-value= 0.03 < 0.05) indicated a positive influence online medication information seeking on esteem support implying evidence to support the research hypothesis H5b. However, there was no association between appraisal support and online medication information seeking (p-value= 0.139> 0.05) and also, there was no association between tangible support and online medication information seeking (p-value= 0.154 > 0.05). This finding did not support research hypotheses H5c and H5d.

CHAPTER V

DISCUSSION, CONCLUSIONS, AND IMPLICATIONS

This chapter discusses the research findings. First, an overview of the discussion section is provided. Then, relevant findings to each research question are discussed. In the conclusion, areas for further research are suggested.

OVERVIEW OF DISCUSSION

Information needs arise out of the adaptations that international students must make to the practices and cultural traditions of their new societies. There has been an increase in the number of international students, especially Middle Eastern international students, in the United States (Melius, 2017). However, their daily information behavior, as well as that of other international students is not well understood. While there have been a few studies focused on the ways that international students seek information in their day-to-day lives (Sin and Kim, 2013), there is still a gap in the literature on how social networks that international students utilize can have a positive impact on building bridges to home (Sin and Kim, 2013). Also, limited empirical studies have examined cross-cultural differences in social networking perceptions as a valuable channel for seeking medication-related information purpose, among international student populations.

The present study investigated the ways that Middle Eastern students use their social networks as sources of medication information. Also, the study examined how social support and social networks affect medication-seeking behaviors among such students. In sum, this study surveyed this population at a U.S. university, examining the use of social networks for medication-related information by international students.

This study used a mixed method convergent design and SEM. Phase 1 of the data analysis used the mixed method convergent design to answer the first four research questions. Close-ended questions were used to obtain specificity of response from the study participants; open-ended questions were used to obtain depth of response to understand participants' medication information-seeking experiences. Phase 2 of the data analysis used SEM to explore the relationships between the demographic variables, health consciousness, medication information seeking, MRSS seeking using social networks, and perceived social support, in particular, seeking medication information online.

The study included 187 participants with diverse characteristics, including age, degree, college, and nationality. The most frequent subject was male, pursuing a bachelor's degree, a student of the engineering and computing college, with an average age of 29.11 years.

SIGNIFICANT FINDINGS

RESEARCH QUESTION 1

This question explored medication information sources by Middle Eastern international students in their social networks. Kjos (2009) states that "medication

information-seeking behavior is a complex behavior that often involves many types of people from within one's social network" (p. 173). Middle Eastern international students utilize their social networks to access medication information. Social networks play a vital role as a significant source of support and information exchange for these students. The important role social networks play as a source of information for international students is found in the literature (Ekundayo et al., 2019; Sin et al., 2013; Sleeman, et al.,2016).

The findings indicated that important sources of medication information in social networks for Middle East international students included their family members, friends, relatives, a special group, and relatives or friends who are medical professionals. Regarding the frequency of using social networks for medication information purposes, 45 (24.1%) of the participants reported that they acquire medication information from personal contacts and support networks 1-3 times a day while 96 (51.3%) of participants used them 1-3 times a month.

The findings indicated that among the students' social network sources, healthcare providers like relatives or friends who are medical professionals were reported as sources of medication information used during their most recent search almost twice as often as friends and family. This idea of utilizing social networks such as friends and family, who are knowledgeable of health and medication issues, is strongly associated with desired health behaviors due to their potential to provide not only information but also the social support that is found in the literature (Redmond et al., 2010; Cohen, 2001; Ford and Kaphingst, 2009). This interaction of friends and family with medication

knowledge of those people is an important finding—related to trust and previous social connection.

The internet, social network, and healthcare providers, including doctors, nurses, and pharmacists, were the most consulted medication sources, they did not all make the list of most trusted. This could be because trust is something that is not easily achieved (as it needs to be earned) and thus health/medicine knowledgeable friends/family are more strongly used for health information on social networks due to the interaction of knowledge and long-standing familial connection. The internet ranked lower than all other sources. One hundred and nine out of one hundred and eighty-seven (109/187, 58.5 %) participants reported that they trust the internet as a source for medication information "sometimes." However, it was the most consulted medication information source. Most participants, 140/187 (74.9 %) reported that they use the internet as a source for medication information "all the time." That suggests that the students are aware of credibility issues with online sources.

This is consistent with findings in the literature that students are likely to go to close family, friends, and relatives as a source of medication information first (Manias, 2013; Sin et al., 2013; Carpenter et al., 2015). The findings of this study are unique in that the students state that they like to utilize social networks as a source of medication information, which could be due to the ease of access for the student. Despite the fact they acknowledge that these are not the most reliable sources (Kim, 2013).

These findings suggest that the students feel most comfortable discussing medication information or difficulties of accessing medication information with "family," especially their mothers, while they are living abroad. Family members play an essential

role in supporting the students in decision making regarding managing medications and negotiating communication exchange with a doctor (Manias, 2013). Most of the time participants needed emotional and esteem support. Students have different types of relationships with different members of their social networks. “Family members are more likely than friends to provide unconditional support, while friends and other non-family members are more likely to share activities and interests and to bring people into contact with new ideas” (Rözer, et al.,2015, p. 810).

Students may feel that they want to talk with someone who is responsible and cares about them, rather than a medical professional. Those individuals provide emotional support. Most participants reported that they would rather talk to a family member about medications and health problems because family members listen, understand, encourage, believe, and care about them. Also, the students tend to turn to family members when they have concerns and fears about their health. Many participants reported that they feel much better after talking to a family member about their fears, frustrations, worries, and any concerns about medications.

These findings are also related to appraisal support as the findings show that the students seek family members for medication information until they are ready to seek help from a doctor or other medical professional to get better. Their families may assist them to identify symptoms and otherwise think through their health issues requiring medication, etc. Family support may be particularly important because the students have feelings of attachment with their family, who provided them with appraisal support while they are children. Also, some participants stated that a family member could assist them to understand the terminology of the leaflets that come with the medicines. This is

consistent with Information poverty in that students utilize their social networks and seek information from those who are close at hand (in this case not by location but by long standing relation) as part of the process of information seeking that extends over time.

The second most important source of medication information in social networks was "friend." A close friend is considered someone who the subjects can rely on and trust, is always there for them, and who cares about their well-being and shares with them information about medications.

The findings found that students like to share with a friend and classmate their concerns as they talk together and give different ideas about health and medications in a comfortable way. Perhaps because students tell the truth to friends more than to family members, and lie or omit details sometimes to their family in order to keep them happy. Some participants stated that talking with friends about medication information will be kept confidential. This is consistent with Kim's study (2013), which suggested that the most common sources of information are friends.

One commonly reported reason for seeking medication information from friends is the prospect of tangible support, for example, asking for advice from a pharmacist, picking up prescriptions, or getting a ride to a doctor's appointment. Tangible support is conceived as physically providing needed money and services to the students. This can vary from actually doing the task for the person to helping or assisting in some other manner (Annette et al., 1995).

The third most important source of medication information in social networks was relatives or friends who are medical professionals. The participants reported that they

talked to relatives or friends who are medical professionals about a variety of matters related to medical advice, factual medication information such as interactions between medicines, the effectiveness of the medicine, as well as information related to use and dosing. The participants kept their friends who are medical professionals updated regarding their health condition in order to find the best over-the-counter medications. It may be the most convenient and directly beneficial way for a student who studies abroad to remedy their health situation. Following this, participants acknowledged the role relatives play within their social network, providing feedback about how to handle issues, which is useful for self-evaluation.

Finally, the participants like to share medical knowledge and experiences with groups such as social media groups, WhatsApp, a friend group, or people who have a similar health issue. Iftikhar and Abaalkhail (2017) stated that WhatsApp influenced approximately half of their respondents who either started or stopped medication, reflecting the importance of how this platform influences people's health. Many participants reported that they share their concerns, fears, health information, and medication questions with WhatsApp groups who have similar experiences. One commonly reported reason for seeking medication information from such a group is that its members have similar experiences with medication information seeking behaviors. Naturally, they like to share medication-related information with group members who go through similar issues and problems. This might be related to privacy concerns or may be attributable to Chatman’s information poverty.

RESEARCH QUESTION 2

This question explored medication topics students discussed most often with their social network. Shaghaghi et al. (2014) state that "People react differently when encountering an illness. The chosen treatment option may depend on socioeconomic and cultural factors and also on the sick persons' perceived susceptibility to/seriousness of the disease" (p. 136).

Most respondents, 160/187 (85.5%) reported that "medicines' side effects" was the most-discussed topic for students within their social networks, selecting "often" or "all the time." All drugs—including prescription medicines, over-the-counter medicines, and herbal remedies—can cause side effects. Side effects can range from minor to serious, or just plain strange. The risk of getting side effects differs from drug to drug. The participants check the side effects of certain medications with their social networks. They share medication information—not medication or methods for obtaining prescriptions. The findings reveal that most of the participants reported that they discussed the medication they were talking with someone. They always ask about the efficacy and side effects of the medication to get an idea of whether what they were feeling is from the side effects or not. It may be because they forget to ask a doctor about such side effect, or because they don't want to go through the process of meeting with one. However, other participants like to discuss health and related medication issues with their social networks to assist them in creating a list of questions, before or during medical appointments, while they sit in the waiting room. This list may contain headings such as side effects, pros, and cons of different prescriptions, and how different medications interact with one another.

Also, 165/187 (88.3%) reported that they discussed “over-counter drugs” topics with social networks “often” or “all the time.” The findings reveal that students discuss prospective over-the-counter drugs with their social networks when encountering illness, in case of emergency, or regarding diseases not considered serious enough to consult a doctor, such as a painkiller, or cold and flu medicines. In this last case, they access medications without the need of a doctor visit or missing school. The previous research addressed the fact that one of the main sources of information about an over the counter self-medication was family (Haghighi, et al., 2016). Haghighi, et al’s study was undertaken to determine the frequency of over-the-counter self-medication among students in Chamran universities of Ahvaz, Iran in 2015. The study found that “the prevalence rate of self-medication among selected university students was 81.6%. The most frequent medicines used by the students were adult cold (69.05%) and analgesics (48.23%),”

Finally, 124/187 (66.3%) reported that they discussed “alternative/holistic medicines or therapies” topics with social networks “often” or “all the time.” Some participants like to use natural home remedies, which are better for common diseases because of the side effects of pharmaceutical medicines. The results indicated that many students like to use natural home remedies strongly recommended by friends or family members who have tried them and seen great results. Most of the participants believe that all-natural treatments and herbal medicines are safe. They do not think there are negative side effects for using any natural treatments.

Herbal medicine is one of the oldest types of alternative medicine. A type of herb is used to treat a disease. Herbal medicines have passed through thousands of years of

successful experiences treating all sorts of illnesses (Fürst et al., 2015). Most students used to take home remedies in their countries to get instant relief from illness. Discussing natural home remedies with their social networks helps students avoid taking chemicals all the time when they get sick. However, when the situation doesn't allow for making home remedies, there is no alternative to doctors and prescription medicine. The students need to know when to rely on home remedies and when to go to a doctor. So, it is all about a balance. Many students reported that they start with home remedies first if the illness is in the beginning stages and then go to the doctor if they do not feel any improvement. There are a plethora of studies about this (e.g., Firenzuoli, et al., 2007; Fürst et al., 2015).

Finally, 113/187 (60.4%) reported that they discussed "the cost of medication" with social networks "often" or "all the time." Perhaps, when medication becomes available over the counter, insurance no longer covers it. The student, in that case, will end up paying out of pocket. Therefore, the students like to contact their social network to help them search online for a particular medicine with a good price. Also, the findings show that some participants like to discuss the difference between the cost of the medications in the USA and their counties with their social networks.

This study examines the reasons students seek medication information through social networks instead of seeking a doctor's advice. The findings of this study reported that the most vital reasons when the students seek medication information through social networks instead of a doctor's advice were the prior experiences with a particular drug (n=111, 59.4%), lack of time (n=110, 58.8%), the disease is not considered serious enough for consultation (n=85, 45.5%), financial constraints (n=64, 34.2%), and long

waiting time to visit a physician (n=50, 26.7%). Lack of a trustful medical doctor might not be a vital reason (n= 5, 2.7%).

RESEARCH QUESTION 3

This question explored the importance of social support from an individual's social networks for accessing medication-relevant information. "Shared experiences" (162/187 (86.6%)) was the leading reason that students discussed medication information with their social networks, selecting "somewhat agree" or "strongly agree." This made "Shared experiences" the most common reason for students to discuss medication information with their social networks. The student, when needing medication information and medical advice, communicated with those who have had similar experiences. Many students like to share similar medical experiences and medication consultations with their friends, co-workers, or other people who have been exposed to the same issues. Taking advantage of others' experiences is important as it provides many benefits, including enhancing the students skills and techniques to deal with their illness. Thus, they search for a friend or relative who has suffered from the same disease and whose condition is similar to theirs.

Iftikhar and Abaalkhail (2017) illustrated that 25.1 percent (89/355) of respondents never talked to their physicians about medication information. This may be because they did not have a regular physician or they didn't find it relevant to talk to a health care professional about it. The results show that discussing medication information with their social networks is very important to most female students. Female students

were more likely to discuss medication information with their social networks for authenticity as compared to males. Female students mentioned the need to use other resources for immediate information, such as family members and friends. Another study showed that male students sought medical assistance less often and tended to avoid medical consultations (Iftikhar and Abaalkhail, 2017). As international students who have kids, they have to learn about kids' health issues when they study abroad, and they need someone who has experienced similar situations. One of the benefits of having social networks is that they can share similar experiences and kids' health issues since they have the same culture and language. They like listening to stories about kids' experience to make sure that their kids follow the same pattern of development. Moving to a new country may be a difficult experience for someone, especially those who have kids. Therefore, receiving social support from social networks is very important because the members of the social network often have had the same experiences.

Of the participants 159/187 (85.1%) reported that "feelings of belonging" was the most common reason students discussed medication information with their social network, selecting "somewhat agree" or "strongly agree." The students feel more comfortable talking with others who have similar cultural values, beliefs, and norms. They like to feel closer and more connected regardless of the physical distance that separates them. The results show that during times of illness students feel homesick; therefore, they want to feel at home and contact family or friends, so that they might feel similar to the way they felt when treated at home. Effective medication information acquisition is important as it contributes to a sense of belonging. The results gave some indication as to the extent of the sense of belonging of the participants involved. Also,

they shed light on how social networks foster feeling of belonging and encourage information exchange.

RESEARCH QUESTION 4

Students need social support during both the good times and the bad. Generally, trust closely correlated with use, implying that the underlying construct is the same or highly correlated for most resources. Today, social networks are expected to provide accurate and unbiased information, giving people a sense that what they see is credible (Yan, 2008). The findings of this dissertation study indicated that graduate students knew there was a lot of "bad" information being received from social networks, but undergraduate students didn't know how to distinguish the 'good' from the 'bad.'

The results reveal that the most important criteria to judge the credibility of obtaining medication information for graduate students include ensuring the information is from a professional, checking that it is from reliable sources, and verifying that the information's provider has links to the information's original source. However, most undergraduate students reported that "information is easily understood" was the most common criteria for them. Graduate students were more likely to verify the credibility of information received via social networks. Iftikhar and Abaalkhail (2017) illustrated that educational status appears to have an influence on how people evaluate online health information, with people at lower levels of education showing poorer capacities to assess the authenticity of social media health information, as well as lower confidence in online health information, when compared with their more educated peers.

Based on quantitative findings, 135/187 (72.2%) of participants reported that "the information is from a professional" was the most common criteria to judge the trustworthiness and credibility of obtaining medication information from their personal social networks. Many of the students expressed concern regarding their ability to acquire quality medication information. Medication information includes facts about medications or drugs that would be used to make informed medical decisions. It may include things such as adverse effects, cost, or effectiveness (Kjos, 2009). Discussing potential medications with relatives or friends who are medical professionals in social networks is very important for the students. The participants reported sharing personal experiences, beliefs and attitudes, which they simply could not do with their USA health care providers.

The most common concerns stated regarded their ability to distinguish information as credible or not. Therefore, most of the students are utilizing social networks to get medical information from a professional. Most of them are relatives or friends who are medical professionals in their countries. They assist the students in learning how to search for already existing appropriate materials. They believe that the information will be accurate if it comes from people who work in the field; like health care providers.

Iftikhar and Abaalkhail (2017) stated that the credibility of the information was typically verified by conducting a Google search to authenticate messages received through social media. For example, they searched reliable websites for more facts. The findings show that the students were all aware of credibility issues with social network sources and that credibility of information is crucial. The majority of websites visited

were government sites (46.5%), non-profit organization (44.9%), and hospital (24.1%) sites. Other websites visited were social networking sites (34.8%), drug companies (45.8%), and newsgroups, chat rooms, and other commercial sites (29%).

The majority of graduate students like to visit government sites (e.g., healthfinder.gov, www.alsehha.gov.sa) (78.0%). However, undergraduate students are more likely to visit non-profit organizations (e.g., www.dailymedicalinfo.com, https://www.tbeeb.net) and social networking sites (e.g., WhatsApp, Facebook). This further supports the notion that an important factor is authoritative websites. This also reflects graduate students ' maturity.

Of the participants 86/187 (46.0%) reported that “the person has links and the information source” was “very important.” Social networks have become a primary source for public information. Credibility is the most important aspect of establishing trustworthiness. In many instances, students reported that the information they received from their social networks was coming from trusted sources such as up-to-date articles, reliable websites, and books, in order to provide accurate, current medical information.

Of the participants 86/187 (46.0%) reported that “the information is easily understood” was “very important.” The information they received from a social network is easily understood, being perceived as simple and clear. Perhaps, because many participants described how they have faced some difficulties in understanding medication information from American doctors or friends, the barrier of culture, and not only language, comes into play. Participants also described how they feel much more comfortable sharing medication information and issues with other social networks. The

students need information they can understand and use to make the best decisions regarding their medication (Kim, 2013).

RESEARCH QUESTION 5

How does health consciousness affect students when they're searching for medication information and seeking MRSS on social networks?

H1: Higher level of health consciousness is positively related to social network sources.

Based on Dutta-Bergman (2004b), students who have strong health beliefs and engage in active efforts to obtain medication information are more likely to be health conscious than students who do not have ready access to social networks. Also, the student's level of health consciousness is closely related to how the student seeks and responds to medication information from their social networks.

According to this study, another benefit of seeking social support is improved health consciousness, a significant factor influencing health outcomes (Oh et al., 2013). Health consciousness could be a determinant of healthy behaviors and attitudes, and might be a necessary condition for academic success. A good starting point is to see how international students are aware of their health in order to see what things students consider when they feel that they are health conscious (Ali et al., 2018). In this study, a health consciousness scale consisting of 11 items represents the unobserved health consciousness of the individual (Hong, 2009). It is commonly believed that a sound body carries a sound mind, so students are expected to take care of their health. Because of ever-increasing health issues, parents are more concerned about their students ' health

these days and expect universities to place a particular emphasis on their child's health. Parents believe universities can target students in a better and possibly more positive way (Ali et al., 2018).

The fact that a relationship exists between health consciousness and social network sources. This study statistically confirms that social network sources are a useful source of information. MRSS seeking on social networks will promote healthy lifestyles.

H2: Higher level of health consciousness is positively related to MRSS seeking on social networks.

Based on Dutta-Bergman (2004b), students with a higher level of health consciousness were more likely to seek MRSS, therefore, the students use social networks to get medication information from others. There has been evidence that social networks have great potential for students who seek support from others. For example, Chen et al. (2014) stated that information-seeking behavior regarding medication-related information on social networks (i.e., family member, friends, relatives) is slightly different from traditional mass media sources (i.e., TV, radio, magazines) and health care providers (i.e., doctor, nurse, pharmacist), and the information-seeking behavior is also slightly different from printed sources (i.e., leaflets, books). Information-seeking behavior from social networks involves emotions, companionship, social interaction, and commitment. Social networks can be a useful channel for sharing medication information and building a sense of community among people with similar medication experiences. For example, the findings of this study found that some students share medication experiences based on different topics through specific group chats active on WhatsApp.

The students have to ask for MRSS seeking on social networks in order to receive MRSS from others within their social network. The results show that MRSS was received via social networks based on how well the student's network was developed and how effectively the students sought information from their social networks. Furthermore, students actively communicating with others and perceiving MRSS are more likely to be health-conscious than students who do not typically interact with others. Ballantine and Stephenson (2011) examined social support on a Facebook weight loss page and found a relationship between perceived support and sought support, as those actively communicating with others perceived more information and emotional support than those simply browsing the page.

RESEARCH QUESTION 6

How do perceived barriers affect students when they're searching for medication information and seeking MRSS on social networks?

H3: International students who experience high levels of perceived barriers when searching for medication information are more likely to seek MRSS on social networks.

This hypothesis was developed from Chatman's Information Poverty Theory. Chatman predicts that people who experience high levels of perceived barriers when searching for medication information are more likely to look within their own community for information to solve their problem instead of outside their community.

The results show that seeking MRSS on social networks has a greater potential to support the information gathering and decision making process of the student. Based on students' medication-related information search challenges, 140 (74.9%) of the participants felt hesitant about the quality of the information they found. Of the participants, 114 (55.7%) said their search required a lot of effort and 99 (52.9%) felt the information was hard to understand. Finally, 67 (35.8%) of the participants were frustrated by the information. The result reveals strong inter-consistency with a Cronbach's Alpha of 0.96. There is a highly inter-correlated response to perceived barriers items. Medication information search challenges are led to poor information for international students.

Reviews and recommendations for information seeking can be easily found through social networks that international students used typically as the most important source of medical information and assistances (Balakrishnan and Gan, 2016; Raymond and Wang, 2015). The reasons for using social networks as information-seeking tools are diverse and include the search challenges students face. This is consistent with Information poverty in that International students do not have the same information-seeking tools in their host country that facilitate the search for medication information that they would have in their native countries. For this reason, it is understandable that students are likely to experience anxiety because they do not have the skills or the wealth of information they are accustomed to having. Indeed, the results found that seeking MRSS can have a positive impact on international students building bridges to home and helping them overcome their information search challenges.

RESEARCH QUESTION 7

How does MRSS seeking influence the perceived social support received on social networks?

H4a: Emotional support is positively related to MRSS seeking on social networks.

H4b: Esteem support is positively related to MRSS seeking on social networks.

H4c: Appraisal support is positively related to MRSS seeking on social networks.

H4d: Tangible support is positively related to MRSS seeking on social network.

Social support has dually been defined as everyday behaviors that communicate to an individual, whether directly or indirectly, that they are valued and taken care of by others; and social support is also a daily process of interaction or communication (Ko et al., 2013). The positive effects of social support on health outcomes has been highlighted by a number of studies (Ballantine and Stephenson, 2011; Ko et al., 2013; Oh et al., 2013; Chen et al., 2018; Raymond and Wang, 2015; Deng and Liu, 2017; Iftikhar and Abaalkhail, 2017).

In this study, the students received MRSS to exchange medication information with others through social ties. Also, this study examines the multi-dimensional nature of social support, which consists of various types of social support provided through social networks as well as the effects of receiving this support. The findings of this study agree with the Oh et al. study that stated that social networking sites (SNS) facilitates more personal communication because of one's peer-based network, which is more likely to

lead to an exchange of emotional support. Therefore, emotional support exchange on SNS have a significant role in improving health-related outcomes (Oh et al., 2013).

Among the four dimensions of social support, emotional and esteem support were statistically the most predominant among students. The results reveal that students received warmth, encouragement, empathy, trust, affection, and other positive facets from their social network that can reduce their stress and other negative emotions related to medication information. In addition, the students' behavior in social networks is influenced by their perceived self-esteem support. The esteem support that students received from their social networks assists the students in restoring their self-validation. Based on the findings, emotional support and esteem support help international students to reduce uncertainty, to cope with illness, and support the students in decision making regarding managing their medication.

RESEARCH QUESTION 8

What is the influence on the perceived social support on seeking medication information online?

H5a: Emotional support is positively related to seeking medication information online.

H5b: Esteem support is positively related to seeking medication information online.

H5c: Appraisal support is positively related to seeking medication information online.

H5d: Tangible support is positively related to seeking medication information online.

These hypotheses developed from Media complementarily theory indicated that the Internet is often used to supplement (complementarity) the information obtained through social networks (Dutta-Bergman, 2004a). The positive relationship between perceived social support and seeking medication information online was not surprising. There are many studies regarding medical decisions. When online health information seekers are solving medical problems, they may also use online health information to supplement their consultations with others to get accurate information, such as health care providers, family members, and friends (Chen et al., 2018).

The results show that (n=45, 24.12%) of the participants acquire medication information from their social networks 1-3 times a day and (n=96, 51.31%) 1-3 times a month. However, there is no relation between students who frequently access social networks and students seeking medication information online (p-value= 0.905). In addition, the results reveal that the students who seek MRSS in social networks are more likely to seek more medication information online (p-value= 0.031).

When students with health consciousness perceive additional social support from social networks because they receive tangible help, perceived love, or trust from others, stress and uncertainty is reduced, and then the students with the strategy of searching online for medication information tended to validate the information they received from others by searching online (Chen et al., 2018). One reason that students searched online for medication information was to verify the information already received from their social network.

This study examines complementarity in medication information on three different levels: (1) complementarity between social networks and the Internet, (2) complementarity between healthcare providers and social networks. Participants in the study most often described a two-step information-seeking process in their qualitative descriptions. The student would consult one source, then another. The first source consulted was most often not a highly trustworthy source of information. The most common path students chose was to use their social network first, and then the Internet. This again agrees with findings in the literature that stated that participants are most likely to use social networks as their primary sources (Kim, 2013; Kjos, 2009). Though participants expressed a desire for accurate medication information and therefore, reported reviewing various sources to confirm information.

The second most common path was to use their social network first followed by healthcare providers. The healthcare provider is the most trusted source for students. Some participants indicated that they asked their doctors for clarifying guidance when they heard conflicting medication information from other sources such as social networks. Students seeking information from their social networks, which are the primary sources consulted, indicating that students do not necessarily trust the first source of information they routinely reach.

Finally, there was path complementarity between healthcare providers, social networks, and the Internet. After discussing prescription medications with their doctor, students used their social network to seek online medication information. The results

found that 47 respondents (55.1%) had looked for online medication information for someone else. By making contact with social networks, healthcare providers, and the Internet, international students use medication information sources to complement one another (Dutta-Bergman, 2004b).

CHATMAN'S THEORY OF INFORMATION POVERTY

Based on the original theory of information poverty, the findings of this study also provide support for five of Chatman's six propositions (Chatman 1996: 197-198). Information about medication is involved in self-protective secrecy and deception behaviors to hide information needs from those who might be able to help. Students engaged in deception to maintain a sense of control about their health. Both secrecy and deception are mechanisms of self-protection due to mistrust about other people's interest or capacities to provide helpful information. Perceiving a lack of sources in their host country leads the students to their social networks as the most typical source of assistance. It was also obvious that there was a lack of trust in the ability of potential sources to provide helpful medication information. Finally, this research shows that social networks used as an extra source of assistance or an intermediate step linked to the selective introduction of new knowledge indicate the spectrum of information poverty and not an absolute state.

ONLINE SEEKING ACTIVITIES AND SEEKING MEDICATION INFORMATION ONLINE

Students (n=127, 67.9%) looked for medication for themselves and (n=103, 55.1%) looked for medication for someone else. Also, with regards to most preferable

online seeking activities, (n=143, 76.5%) of the participants searched online for information on drugs/medication, (n=120, 64.2%) learned about treatment options before or instead of consulting doctors, (n=139, 74.3%) clarified what a doctor said related to medication, and (n=87, 46.5%) looked for medication services (pharmacies). As seen in Table 5.1, there is a significant correlation between seeking medication information online and searching for information on drugs/medication (p-value= 0.011), as well as a significant correlation between seeking medication information online and participating in online support groups for people with a similar health or medical issue (p-value= 0.014).

International students who have more perceived MRSS on social networks may consider seeking medication information on the Internet because they may think they need more medication information from a variety of sources. Students behavior in social networks is influenced by their perceived warmth, encouragement that can reduce their stress and other negative emotions regard to medication management, which has a positive influence on different online medication seeking activities.

Table 5.1
Online medication seeking activities and seeking medication information online

Activities	Significance
Searched for information on drugs/medication	0.011
Participated in an on-line support group for people with a similar health or medical issue	0.014
Learned about treatment options before or instead of consulting doctors	0.273
Looked for information about diet or nutrition	0.628
Bought medicine or vitamins online	0.520
Clarified what a doctor said related to your medication	0.169
Looked for medication services (pharmacies)	0.092

CONCLUSION

The aim of this study to investigate whether social networking can serve as an effective channel for MRSS exchange among international students. In addition, this study investigated the factors affecting students' medication information-seeking behaviors in their social networks, including relationships between perceived social support, health consciousness, perceived barriers in searching for medication information, and seeking medication information online.

The results show that social networks can have a positive effect on bridge-building. Social networks serve as a valuable channel for information related to medication. International students prefer to discuss medication information with their social networks in order to obtain more personalized information or reactions. Although students trust professional sources, they used these sources less.

Medicines' side effects was the most-discussed topic for students within their social network. They always ask about the efficacy and side effects of the medication to decide whether they were feeling is medication side effects or not. Also, students like to share similar medical experiences and medication consultations with their social networks who have been exposed to the same issues. Taking advantage of others' experiences is important giving the students skills and techniques to deal with their illness. Also, in the information-seeking context, social networks are viewed as a useful channel for communicating medication information and building a sense of community among people with similar health issues. Hence, the information sought in social networks generally consists of the most recent and up-to-date information.

Furthermore, students stressed the importance of validating information related to medication by checking for consistency from multiple sources and resolving contradictory information. This study demonstrates how social support among social networks is crucial. The four types of social support can greatly affect the student's happiness and increase their health consciousness. International students become confident in handling medication information because they can perceive how different types of social support help them understand their own illness and medical treatment resources.

Finally, when a social network provides the student with medication information, as well as the perceptions of social support, improved medication information seeking can follow. Among the four types of social support, emotional support and esteem support significantly affect seeking MRSS and medication information. Tangible support and appraisal support lack significant effects.

WHAT ARE THE THEORETICAL IMPLICATIONS OF THIS FINDING?

The findings from this current study enhance the utility of Channel Complementarity Theory and Chatman's theory of Information Poverty. These two theories were applied for the first time in a study of Middle Eastern international students' medication information seeking behaviors. The results demonstrated how social networks function as important channels of medication information for the students to fill an information need while they are studying in a host country.

In addition to its theoretical implications for the study of international students, this study also advances medication information-seeking research more generally by offering insights about the role of social networks in the process of acquiring medication information. Among its findings is that medication information received from social networks was most commonly accompanied by online medication information. This supports channel complementarity theory: the idea that individuals who seek information about specific topic are likely to seek further information from multiple sources fulfilling individuals' information needs in complementary ways (Dutta-Bergman, 2004a). While research on channel complementarity is, to my knowledge, limited to secondary analysis of quantitative data (for example, Dutta-Bergman, 2004b; Ruppel and Rains, 2012), this study demonstrated that participants who discussed personal medication information in their social networks also discussed this topic with health care professionals, as well as reading about it online and in the media. The study found that participants use multiple information sources in their medication information-seeking process. These findings align with channel complementarity (DuttaBergman, 2004a, 2004c), which considers the broader process of information seeking and the use of multiple sources during this process, and broaden its application to medication information contexts.

The findings of the study, in identifying the complementary sources of medication information Middle Eastern international students seek, can be useful for healthcare providers in the host institution. Knowing how and why specific types of sources are used or not used enables better understand of the process of seeking medication-information, and such insight would be a valuable resource for practitioners trying to target messages from the health campaign.

In addition, this study advances the understanding of Chatman's theory of Information Poverty by extending it to other special populations that have not been previously studied—namely, Middle Eastern international students. Chatman's theory of Information Poverty was articulated before the advent of social networks and focused on understanding information behavior through the social factors that influence that behavior. The propositions from the theory clearly describe women entrepreneurs' information behavior. Chatman's theories were built around the poor and marginalized people of the society. This study, due to its corroboration of Chatman's findings about how social factors influence information seeking behavior, showed that Information Poverty theory could also be applicable to a set of people that may not be considered marginalized at least in an economic sense. Particularly, the study found that an information deficit is likely caused by other factors unrelated to economic ones, as in the case of these international students.

This study brought something new to Chatman's theory of Information Poverty by describing that international students are not necessarily poor in the traditional economic sense, but international students do not have information seeking tools in their host country to facilitate the search for medication information. It is understandable for this reason that students are likely to experience anxiety and information poverty because they perceived barriers when searching for medication information. The findings of this study present a unique perspective in the study of information seeking and the application of its theories to varying populations and settings.

The major theoretical implications of this study are in suggesting the utility of combining channel complementarity theory and Chatman's information poverty theory

and in providing insights into how and why the students who feel they have nowhere else to go used their social networks to seek medication information and support. These results ultimately can be useful to healthcare providers at the host institution to provide strategies of future communication to targeting better Middle Eastern students at their university.

WHAT ARE THE IMPLICATIONS OF THIS FINDING?

International students' increasing use of their social network to obtain medication information is likely to continue. In this study, we found high rates of social network use for finding medication information. The social network, therefore, is a critical tool for health promotion professionals to improve the health status of the college population. Health services in colleges and universities should strongly consider incorporating the use of social networks to increase access to medication information, education, and services to meet the needs of international students more effectively.

While the number of Middle Eastern international students is growing rapidly at the University of South Carolina, information about this population is still limited. The present study suggests the need for more research on international Middle Eastern students to explore additional factors related to the use of social networks for medication information. Furthermore, while online medication resources have increased dramatically and the use of the Internet for medication information by individual is still prevalent, research on Internet-based medication information is still very limited. The present study helps to advance our knowledge on this important topic to explore barriers to finding the

medication information students are looking for, the search terms and strategies they use, and the factors that make a website credible for students.

This study provides empirical evidence for pharmacists and other healthcare providers on the unique use of online medication information and social network members as sources of information. Pharmacists and healthcare providers support the safe and appropriate use of medicines by international students. Understanding their information needs, medication information seeking experiences, and the sources used by students to obtain their medication will also help pharmacists and other healthcare providers to provide culturally appropriate care and - effective channels for distributing important medication information.

The findings may also support insights into the expansion of special services and medication information resources, particularly for all international students. For example, universities should strive to formulate authenticated local languages by providing a list of websites for health literacy where students can check the credibility of any medication information they receive on social networks. In addition, University health centers should use their social media presence to broadcast their professional commitments and values to help combat non-scientific but amplified media voices and advertisements that can spread spurious and sometimes dangerously incorrect statements about health (Iftikhar and Abaalkhail, 2017).

FUTURE RESEARCH AND RESEARCH LIMITATIONS

This study has a few research limitations. First, the sample was purposive and was not randomly selected. Therefore, this study did not seek to generalize; the population of

this study was specific to international students from the Middle East who study at USC, Columbia campus. Thus, the findings of this study may not accurately reflect the experiences of all Middle East international students living and studying in the United States. Future research can be carried out to investigate the same research questions based on different nationalities and compare the results among these nationalities to get more valuable insights. Cultural differences between the Middle East and other countries may exist; thus, researchers should cautiously interpret and use the research results. Also, future studies should approach the supportive functions of social networks from different perspectives.

This study suggests that using social networks to seek MRSS may have real world health implications, which warrants further research on the role of social networks as to how a source of information affects international students' health. In addition, future research should focus on exploring social platforms that students trust most and how they prefer medication information to be communicated to them. In addition, qualitative studies should explore the reasons behind people's reluctance to discuss medication information and self-medication practices with a physician. Health care professionals must create educational content that can be shared across social media to help educate international students accurately. Other potential limitations common when using an online survey include participant time constraints and lack of understanding when answering questions.

Also, the CFA may lack power in detecting theoretical relationships and achieving a good fit due to the small sample size. Collecting more data in the dissertation

will likely improve fit, improve the precision of parameter estimates, and allow for the use of the more powerful maximum likelihood estimator.

Despite these limitations, it is important that this study attempted to investigate the ways Middle Eastern international students use their social networks as sources of medication information. Furthermore, that the study examined how social support and social networks affect medication-seeking behaviors among Middle Eastern international students and assessed the impact of MRSS on the way students deal with their medication information. Because we now have access to this information, we can assist this population of students in their efforts to attain healthy bodies and minds.

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APPENDIX A - SURVEY INSTRUMENT

University of South Carolina

Consent to be a Research Subject

- Hello XXX, I am Esra Abdoh, a Ph.D. Candidate studying Library and Information Science at the University of South Carolina. Thank you very much for agreeing to participate in this study. I truly appreciate your time and great help!
- Before we start, I would like to remind you a little bit about my dissertation topic and my goal in talking with you today. My dissertation focuses on exploring the roles of family and friends when you seek medication information while you are studying in the USA. The information you provide will help us learn about how people rely upon other people as a resource when learning about their medications.
- The goal of this study is to describe how Middle Eastern international students use family, friends, and acquaintances to obtain information about medicines.
- The information that you provide will help pharmaceutical care practitioners and other healthcare providers to provide culturally appropriate care as well as provide effective channels for distributing important medication information. They can also generate insights to improve strategies to extend special services, medication information resources, and information for all international students, generally, and Middle East international students in particular.
- This anonymous confidential survey takes about 30 minutes or less. This study has no risks involved, except for the potential stress of participants' past experiences regarding their health, illnesses, and medications. You will be encouraged to share both positive and negative experiences related to your health situations.
- The University of South Carolina Institutional Review Board (IRB) has determined that this study fulfills the human research subject protections obligations required by state and federal law and university policies. If you have any questions or concerns regarding your rights as a research participant, please contact the IRB at 803-777-6670 or lisaj@mailbox.sc.edu. Please contact Esra Abdoh at eabdoh@email.sc.edu if there is something not clear or if you need more information.

Statement of Consent

I have read the above information, and I consent to participate in the study. By clicking below, I agree to participate in this survey and acknowledge that I am at least 18 years of age.

- I agree to proceed.
- I do not wish to participate.

APPENDIX B: A SURVEY QUESIONNAIRE

Please tell me about yourself

Part 1: Demographic Information

1. What is your age?

2. What is your gender?

- Male
- Female

3. What is the degree you are working on now?

- Bachelor
- Master
- Ph.D.

4. What college is your major in?

- Arts and Sciences
- Business
- Education
- Engineering and Computing
- Hospitality, Retail and Sport Management
- Information and Communications
- Law
- Medicine
- Music
- Nursing
- Pharmacy
- Public Health
- Social Work
- EPI's intensive English program
- Not decided yet

6. What is your nationality?

- Oman
- Saudi Arabia
- Iraq
- Other

7. Regarding your health consciousness, how much do you agree or disagree with each of the following statements?

	Strongly Disagree	Somewhat Disagree	Somewhat agree	Strongly agree
I am very self-conscious about my health.				
I am generally attentive to my inner feelings about my health.				
I reflect about my health a lot.				
I am concerned about my health all the time.				
I notice how I feel physically as I go through the day.				
I take responsibility for the state of my health.				
Good health takes active participation on my part.				
I only worry about my health when I get sick.				
Living life without disease and illness is very important to me.				
My health depends on how well I take care of myself.				
Living life in the best possible health is very important to me.				

Part 2: Medication information seeking

In this section I will ask you whether you have ever used the Internet to search for medication information and advice about health.

1. Consider the most recent time you looked for information about medication topics. Where did you go first? Check all that apply.

Sources	1 (never)	2 (sometimes)	3 (often)	4 (all the time)
1. Traditional mass media				
TV, radio				
Newspapers, magazines				
Internet				
2. Health care providers				
Doctors				
Nurses				
Pharmacists				
3. Social network				
Family member				
Friends/coworkers				
Relatives				
Community Associations or Clubs (@saudiinusa, @omanis_usa, iraqis.in.us)				
4. Printed sources				
Leaflets that come with the medicines or printed by the pharmacy				
Books or pamphlets				
Other sources of health information (specify)				

2. Based on the results of your most recent search for information about medication topics, how much do you agree or disagree with each of the following statements?

	Strongly Disagree	Somewhat Disagree	Somewhat agree	Strongly agree
It took a lot of effort to get the information I needed				
I felt frustrated during my search for the information				
I was concerned about the quality of the information				
The information I found was hard to understand				

3. Have you 'surfed' websites that provide medication information in the past 12 months?
   - Yes
   - No
4. In the past 12 months, have you done the following while using the Internet?

	YES	NO
Searched for information on drugs/medication		
Looked for medication for yourself		
Looked for medication for someone else		
Participated in an on-line support group for people with a similar health or medical issue		
Learned about treatment options before or instead of consulting doctors		
Looked for information about diet or nutrition		
Bought medicine or vitamins online		
Clarified what a doctor said related to your medication		
Looked for medication services (pharmacies)		

5. Is there a specific Internet site you like to go to for medicine information?
   Yes ( ) No ( )
6. Specify which internet site you especially like as a source of medication information (choose all that apply)
   - Government (e.g. healthfinder.gov, www.alsehha.gov.sa)
   - Non-profit organization (e.g. www.dailymedicalinfo.com, https://www.tbeeb.net)
   - Hospital sites
   - University website
   - Social networking sites (e.g. WhatsApp, Facebook)
   - drug company
   - Others sites visited included newsgroups, chat rooms and other commercial sites.

7. How much do you trust each of the following sources for information about medication topics? Check all that apply.

Sources	1 (never)	2 (sometimes)	3 (often)	4 (all the time)
5. Traditional mass media				
TV, radio				
Newspapers, magazines				
Internet				
6. Health care providers				
Doctors				
Nurses				
Pharmacists				
7. Social network				
Family member				
Friends/coworkers				
Relatives				
Community Associations or Clubs (@saudiinusa, @omanis_usa, iraqis.in.us)				

8. Printed sources				
Leaflets that come with the medicines or Printed by the pharmacy				
Books or pamphlets				
Other sources of health information (specify)				

Part 3: Social support and social network

In this section I will ask you to describe how you use family, friends, professionals, acquaintances (e.g. Neighbors, Spouse's Friends, Extended Family, In Laws, In-Law Extended Family) to seek information about medicines.

1. How often do you acquire medication information from your personal contacts and support networks (e.g. family, friends, community groups, colleagues, etc.)?
□every day □ 1-3 times a day □1-3 times a month □ rarely.

2. Consider how you use this personal social support in obtaining medication information. For the following statement, please check the appropriate box.

	Strongly Disagree	Somewhat Disagree	Somewhat agree	Strongly agree
I have used social networks to get medication information from others				
I have used social networks to seek out people who have experienced similar health problems as I have				
If I have a medication question, I often go to social networks to seek out advice from others				
I have used social networks to update others on my health				
If you have a health problem, how do you believe your social support network can help you?				

5. Will give me encouragement				
6. Will show me sympathy				
7. Will make me feel relieved				
8. Drive me to the doctor if I ask for a ride				
9. Buy me medicine if I ask for it				
10. Provide a quick emergency loan if I need it for my health issue				
11.They show confidence in my ability to deal with my health concern				
12. They make me feel good about making health decisions.				
13. They make me feel able to solve my health problems				
14. They make me feel comfortable sharing my private worries and fears about health				
15. They provide objective feedback on how to solve the problem				
16. I am comfortable discussing sensitive medication topics with them				

3. Now I would like you to think about a time when you needed information about a medication. Maybe it was after something had been recommended for you, before you stopped taking a medication, or if you needed to change a medication. These times of starting, stopping, and changing are often when people seek information to help make a good decision. Even if you don't currently take medications, you can think about a time when medications were involved in your treatment. For example, what pain medication you desired for having your wisdom teeth removed, or during the birth of a child. Think about times when you asked for or were given information on medication options. e.g. family, friends, professionals, acquaintances (Neighbors, Spouse's Friends, Coworkers, Extended Family, In Laws, In-Law Extended Family)

   1.) Tell me about a time when you talked with someone about a medication.

   A. Who did you talk to and why do you choose to discuss things with these people?

   B. What things did you discuss? Was the medication something you take or were thinking about taking? Offer specific details.

C. Why did you think it was important for you to discuss these thing to someone?

D. What makes you think that the information you received is trustworthy?

4. For the following question, mark the frequency from the list below? What are the medication topics you discuss most often with your personal networks?

	1 (never)	2 (sometimes)	3 (often)	4 (all the time)
Medicines (general)				
Medicines' side effects				
How current medicines interact with other medicines you are taking.				
How to take medicines (with meals, with water, in the morning)				
The financial costs of your medicines				
How effective medicines are in treating your symptoms.				
Alternative/holistic medicines or therapies (e.g. herbal medicines)				
Over-counter drugs				
Preventive care (e.g. vaccines)				

5. Think about a time when you talked with someone about a medication. What are the most important criteria for judging the trustworthiness and credibility of medication information:

	Not important	Somewhat important	Very important
The information is from a professional			
The information is personally relevant to me			
The information is current and up to date			
The information is easy to understand			
The information agrees with most healthcare professionals			
The person has links and source of information			
The person is accredited with a reputable organization			

6. As an international student in the U.S., why is personal social support important to access relevant health and medication information? Because social support provides:

	Strongly Disagree	Somewhat Disagree	Somewhat agree	Strongly agree
Shared experiences				
Comfort with language				
Sense of belonging and personal comfort				
Shared understanding of healthcare systems and practices				
Shared same-cultured beliefs about medication, health, and alternative health practices				
Other reasons				

7. Why do you think international students may seek medication information through social networks instead of seeking a doctor's advice?

	Strongly Disagree	Somewhat Disagree	Somewhat agree	Strongly agree
Financial constraints				
Previous experience of using a particular drugs				
Lack of a trustful medical doctor				
The long waiting time to visit a physician				
Diseases considered not serious for consultation				
Lack of time				

Thank you very much for your support of this survey. I wish you good health and happiness for yourself and your family! Comments and suggestions?