Original Research

Barriers to healthcare access for Arabic-speaking population in an English-speaking country

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Abstract

Objective: To identify barriers to healthcare access, to assess the health literacy levels of the foreign-born Arabic speaking population in Iowa, USA and to measure their prevalence of seeking preventive healthcare services.
Methods: A cross-sectional study of native Arabic speaking adults involved a focus group and an anonymous paper-based survey. The focus group and the Andersen Model were used to develop the survey questionnaire. The survey participants were customers at Arabic grocery stores, worshippers at the city mosque and patients at free University Clinic. Chi-square test was used to measure the relationship between the characteristics of survey participants and preventive healthcare services. Thematic analysis was used to analyze the focus group transcript.
Results: We received 196 completed surveys. Only half of the participants were considered to have good health literacy. More than one-third of the participants had no health insurance and less than half of them visit clinics regularly for preventive measures. Two participant enabling factors (health insurance and residency years) and one need factor (having chronic disease(s)) were found to significantly influence preventive physician visits.
Conclusions: This theory-based study provides a tool that can be used in different Western countries where Arabic minority lives. Both the survey and the focus group agreed that lacking health insurance is the main barrier facing their access to healthcare services. The availability of an interpreter in the hospital is essential to help those with inadequate health literacy, particularly new arriving individuals. More free healthcare settings are needed in the county to take care of the increasing number of uninsured Arabic speaking patients.

Keywords

Health Services Accessibility; Preventive Health Services; Medically Uninsured; Health Literacy; Communication Barriers; Cultural Competency; Surveys and Questionnaires; Focus Groups; United States

INTRODUCTION

The Arabic community is a growing minority in the United States. In 2017, there were approximately 3.7 million Arab Americans living in the United States.[1] Arab Americans live in all 50 states with about half of them residing in California, Florida, Michigan, New Jersey, and New York.[2] In the state of Iowa in the Midwest, Arabs constitute about 0.15% of the total state population.[2] Health data on Arab Americans are lacking mainly due to the lack of an Arab identifier in healthcare records and surveys.[3] Like other minorities, the healthcare needs of Arab Americans and their access to healthcare needs more focus.

Lack of insurance subjects individuals to the economic burden of needed medical care expenses and pertains to infrequent or no regular checkups and screenings for major health problems like diabetes mellitus (DM), cardiovascular diseases, and cancer.[4,5] Minorities have been reported to largely contribute to the uninsured population in the U.S. and this was attributed to low income or new arrival.[6] Lack of health insurance was one of the main barriers to accessing healthcare for Latinos in South Carolina.[7] and was found to correlate positively with having a regular healthcare provider and completing diagnostic tests for African Americans.[8] Similarly, unaffordable healthcare

services were reported as a barrier to healthcare services by Arab Americans in Brooklyn as well as other minorities.[7,9]

Language is another barrier that has been reported to impact the access and quality of healthcare.[7] For non-English speaking individuals, language barriers can affect the frequency of visits, willingness to get healthcare and knowledge about available healthcare services. It was found that the self-rated health of Arabic-speaking immigrants was lower than that of both English-speaking Arab immigrants and U.S. born Arab Americans, suggesting language as a contributing factor to differences in health status and healthcare access.[10] Several approaches have been reported to successfully bridge the gap in healthcare services for non-English speakers in the U.S. including professional translators, employment of bilingual physicians, and provision of non-English health educational materials.[11-13] Several studies have demonstrated that the presence of professional interpreters or bilingual providers during physician visits for individuals with limited English proficiency had a positive impact on patient satisfaction and the outcomes of the healthcare services provided.[14-17]

Healthcare access was mostly studied in the term of enablers and barriers to required intervention as in the case of sickness.[18] Fewer studies have explored preventive healthcare use among Arab Americans (for the purpose of this study, the term preventive healthcare includes physician visits for non-urgent needs, regular checkups/physician visit for existing health conditions, clinic visits for vaccination, and clinic visits for screening).

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Individuals usually seek healthcare services in urgent illnesses regardless of the ease of access, while non-urgent healthcare needs (such as vaccination, screening and regular check-up) can be overlooked according to the ease of access. Hence, in this study we focused on the barriers and enabling factors influencing the access to preventive healthcare services. Access to healthcare for minorities has been the focus of many studies.[7,17,19,20] However, limited data is available on Arabic minority communities in given geographic parts of the U.S. including the Midwest region. This study has not only focused on barriers and enabling factors to preventive health care access, but also assessed the pattern of access to preventive healthcare among this minority in this understudied region of the United States. To the best of our knowledge, this is the first study to use survey to examine the healthcare needs of the Arabic speaking minority in the Midwest region of the United States.

The objectives of this study were to identify barriers to healthcare access, to assess health literacy level of the Arabic speaking (foreign-born) population in Johnson County, Iowa, USA and to measure their prevalence of seeking preventive healthcare services.

METHODS

This cross-sectional study involved two methods: A focus group and an anonymous survey of Arabic speaking individuals in Johnson County in the state of Iowa, USA. The interview guide of the focus group was developed in collaboration with Johnson County Public Health (JCPH) to assess the difficulties, concerns, and suggestions regarding healthcare access for the Arabic speaking community (Online appendix). The JCPH has experience to conduct need assessment interviews among minority communities every five years. The focus group took place at the Iowa City Mosque, and the focus group team included a note taker, a translator/assistant moderator, and the group leader. It was recorded using two tape recorders.

To analyze the verbatim transcript of the focus group, we followed the six phases of thematic analysis described by Braun and Clarke which include familiarizing oneself with the focus group verbatim, generating initial codes, searching for themes, reviewing themes, defining and naming themes and producing the report.[21] The coding process was conducted by three researchers and the final themes agreed on by all or at least two of three team members. To enhance the credibility and trustworthiness of the findings, peer debriefing / member checking was conducted to validate the qualitative analysis. The process of member checking to test the findings and interpretations was conducted with five of the participants.

After conducting the focus group, the authors created a survey in English based on the Andersen Model for healthcare service utilization (Figure 1) and employing the findings of the focus group.[22] Andersen model can help to measure predisposing, enabling and need factors that influence the use of healthcare services (preventive physician visits).

The survey contained 20 questions covering predisposing items (age, gender, ethnicity, education), enabling items (health insurance, residency and health literacy), need items (presence of chronic diseases) and healthcare utilization item (frequency of physician visits), which represent the outcome variable (Online appendix). Health literacy was assessed using the Arabic version of Single Item Literacy Screener (SILS).[23] The SILS has one question: "How often do you ask someone for help to read the instructions and leaflets from a doctor or pharmacy?".[24] The participants were asked to choose one of the followings (5-point Likert scale): 1-never, 2-rarely, 3-sometimes, 4-often, or 5-always.[25]

To eliminate the language barrier, the survey was translated to formal Arabic by the authors and the translation was validated by two different native Arabic scholars living in the county. The survey was pretested in pilot study with few native-Arabic speakers before administering to all participants. Two questions were revised according to the pilot study feedback. We added other answer choices. First change was conducted to question "Do you have a family member who is fluent in English helping you during physician/pharmacy visits? "when we added 4th choice of "No need". The second revision included adding "visitor" to demographic section when we ask about the resident status. The inclusion criteria of the survey participants were being first generation Arabic immigrants, adult (>18 years) and living in Johnson County. A bilingual English/Arabic researcher (AA) screened participants for eligibility. Visitors and students were also surveyed as they constitute an important component of the community due to the presence of the University of Iowa that attracts a considerable number of international students and visiting scholars and their dependents (4011 international students and scholars out of 86,769 total residents).[26,27] A bilingual English/Arabic researcher (AA) approached customers at Arabic grocery stores in Coralville, worshippers at the Iowa City Mosque and patients at the free University Mobile Clinic and asked if they were willing to complete the survey. Subsequently, people who gave verbal consent were provided a 2-page paper survey, which the authors collected in-person. The research team distributed the paper-survey in-person and waited till participants filled it out. Only people who agreed to participate received the

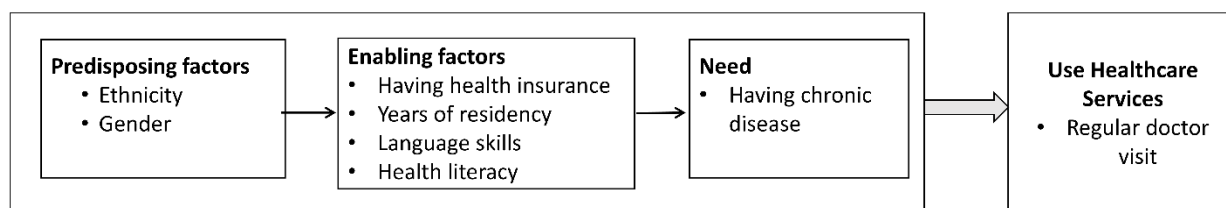| Predisposing factors	Enabling factors	Need	Use Healthcare Services
• Ethnicity • Gender	• Having health insurance • Years of residency • Language skills • Health literacy	• Having chronic disease	• Regular doctor visit

Figure 1. The Andersen model of preventive health care utilization

survey (convenience sample). We did not measure the response rate because we were unable to count all people available at the three included settings. In general, most eligible people were cooperative and agreed to participate.

The study proposal was exempted by the University of Iowa Human Subject Office/ Institutional Review Board (IRB).

Quantitative Statistical Analyses

Means, frequencies and percentages of participant characteristics were calculated. The data analyses were performed utilizing the IBM SPSS Program for Windows, version 22.0. The chi-square test was used to measure the relationship between the categorical participant factors (no health insurance, language barrier, health literacy, no barrier, chronic disease, gender, ethnicity, and residency years in the U.S.) and the outcome variable (preventive / regular physician visits). The chi-square analysis was also conducted to measure the relationships between health literacy level and both language barrier and interpreter need. The statistically significant value was p-value<0.05.

RESULTS

Qualitative findings

The focus group included seven native Arabic speaking residents who were married with children, and all had at least a college degree. The main theme of the qualitative findings of the focus group was barriers facing Arabic speaking population regarding access to healthcare services. Lack of health coverage/insurance or instability of insurance status was noted as the major barrier to healthcare access in this community and can be put into the following three subthemes. First, lack of coverage due to eligibility issues. For example, a participant (P3) in the focus group stated "concerning my family, we are six including my kids and wife. We have insurance from Medicaid for the kids, but for me and my wife, we do not have insurance". The adult parents were not eligible to be covered according to Iowa Medicaid rules at the time focus group conducted. The second subtheme was lack of health insurance due to affordability. For instance, P2 mentioned "through my employment I can't afford it [health insurance], it's too high!" The third subtheme was the limited availability and accessibility of medical services for residents without health insurance. For example, P4 stated, "Regarding the free clinic, before I got my insurance, I was getting the services from there; it's a good clinic but it's a very small clinic, and the most [/biggest/] problem with that is that you can't just walk in and get services". Regardless of the cause of having no access to healthcare services, individuals might find themselves forced to use the emergency room (ER), which sends them home with overwhelming bills: "After that, we kept going to the ER and they kept sending us the bill, right now I have more than USD 250,000 [debt]" (P6).

Quantitative results

We received 196 surveys from adult native Arabic speakers who lived in Johnson County, Iowa, USA during fall 2017. Participants gender and ethnicity are detailed in Table 1. The participants were all native Arabic speakers who have

been residing in the U.S. for varying durations ranging from less than a year to more than 15 years (Table 1).

Regarding immigration status, survey participants were initially grouped into two main groups: citizens/residents and international students/visitors. Approximately 80% of the participants were citizens/permanent residents while

Table 1. The demographics and health literacy of native Arabic speaking participants		
Characteristics	**Number of participants (N)**	**%**
Residency status (N=196)		
Citizen	68	34.7
Permanent resident	92	46.9
Student	23	11.7
Visitor	13	6.6
Gender (N=196)		
Male	119	60.7
Female	75	38.3
Age (years) (N=193)		
18-29	33	16.8
30-39	67	34.2
40-49	51	26
50 +	42	21.4
Education degree (N=194)		
Elementary school	7	3.6
Middle school	13	6.6
High school	28	14.3
College degree	103	52.6
Graduate degree	43	21.9
Current or former student at a US college (N=194)		
Yes	114	58.2
No	80	40.8
Ethnicity (country of origin) (N=195)		
Sudanese	131	66.8
Middle East	37	18.9
North Africa	20	10.2
Arabic-Gulf country	7	3.6
Residency years in the U.S. (N=196)		
Less than 1 years	26	13.3
1-5 years	91	46.4
6-10 years	28	14.3
11-15 years	19	9.7
More than 15 years	32	16.3
Single Item (SILS) health literacy Screener: Need help to read physician/pharmacist instructions (N=196)		
Always	24	12.2
Often	24	12.2
Sometimes	45	23
Rarely	21	10.7
Never	82	41.8
Need an interpreter during hospital/clinic visits (N=196)		
Always	46	23.5
Sometimes	57	29.1
Never	93	47.4
Citizens/permanent residents=160 and students/visitors=36. Participants of Sudan ethnicity were separated from North Africa as Sudanese represent the largest component of the Arabic speaking minority in the study area. 131 are Sudanese, 23 from Middle East and 17 of them are Iraqis and 6 from Levant. All the 14 students from Middle East are Iraqis. North African Arabic countries include Egypt, Libya, Algeria, Tunisia & Morocco; Middle Eastern Arabic countries include Iraq, Jordan, Syria and Lebanon; Gulf-Arabic countries include Saudi Arabia and United Arab Emirates.		

Table 2. The frequency and barriers of healthcare access of native Arabic speaking participants		
Characteristics	Num.	%
Having Health insurance (N=196)		
No	74	37.7
High Co-payment (N=196)		
Yes	25	12.8
Having language barrier (N=196)		
Yes	31	15.8
Having barrier(s) to healthcare access (N=196)		
Yes	84	42.9
Have a family member helps in interpretation during physician/ pharmacy visits (N=196)		
No	76	38.8
Sometimes	25	12.8
Yes	48	24.5
No need	47	24
*Health Insurance type (N=122): Choose all that apply		
Medicaid	52	26.5
Employer/University	47	24
Private	15	7.7
Medicare	8	4.1
Visit doctor/clinic (N=196)		
At Regular basis/For Preventive measures	93	47.4
When very ill/ To get prescription	103	52.6
**Having chronic disease(s)		
DM	22	11.2
Hypertension	30	15.3
Heart Disease(s)	7	3.6
Asthma	11	5.6
Arthritis	19	9.7
No chronic disease	132	67.3
* One resident was dual Medicaid and Medicare insured, while other participant did not specify his type of health insurance. ** N=122 because several participants had multiple chronic diseases.		

Table 3. Factors influencing visiting doctor/clinic regularly		
Factors (total num.)	Regular visit n (%)	Chi-square p-value
No health insurance		0.0001
No (122)	79 (64.8)	
Yes (74)	14 (18.9)	
Language barrier		0.781
No (165)	79 (47.9)	
Yes (31)	14 (45.2)	
Gender		0.473
Male (119)	54 (45.4)	
Female (75)	38 (50.7)	
*Residency Years		0.0001
≤ 5 (117)	42 (35.9)	
5 < (79)	51 (64.6)	
Ethnicity		0.735
**Others (63)	31 (49.2)	
Sudanese (133)	62 (46.6)	
Chronic disease		0.003
With (64)	40 (62.5)	
Without (132)	53 (40.2)	
***SILS (health literacy)		0.542
Inadequate (93)	42 (45.2)	
Adequate (103)	51 (49.5)	
*Years of residency in the US: 1=5 years or less, 2=more than 5 years. **Others: North African Arabic, Middle-Eastern Arabic, Yemeni and Gulf-Arabic participants. ***Adequate health literacy=those answered "never or rarely" to the SILS question, while inadequate health literacy=those answered "always, often or sometimes" to the SILS question.		

the remaining 20% were students and visitors temporarily residing in the United States (Table 1). Upon initial chi-square analysis, no significant differences were found in terms of barriers to healthcare service use reported by participants in the two groups (citizens/residents and international students/visitors). Hence, for subsequent chi-square tests, all participants were grouped together.

Looking at the pattern of physicians visits, about 70% of participants reported visiting the physician to seek treatment when they are very ill or to request a prescribed medication from their physician, while preventive and regular physician visits were reported by only half (52.6%) the participants (Table 2). Chi-square analyses showed that having any barrier significantly influenced regular physician visits by participants. Barriers surveyed and reported in this study were lack of health insurance, co-payment, and language (Table 2). Approximately 43% of all participants reported having one or more barriers (no health insurance, language barrier and/or high co-payment) to using healthcare services (Table 2). There was a significant (p<0.05) association between the presence of barrier(s) to healthcare and the use of preventive healthcare (Table 3) such that participants experiencing any barriers had fewer regular physician clinic visits than those without barriers. Looking more specifically at select barriers/factors, three participant factors significantly influenced the regular visit

of physician clinic and these were having health insurance (enabling factor), having chronic disease(s) (need factor), and the number of residency years (5 years or less vs more than 5 years) in the U.S. (enabling factor) (Table 3).

Regarding health insurance, which is an enabling factor in the Anderson model, more than one-third (38%) of the participants had no health insurance (Table 2). All the 23 participating international students had health insurance. The majority of participating permanent residents (61.5%) had no health insurance while a small percentage (15.3%) of the citizens was without health insurance. Most of the insured participants had health insurance provided through an employer or the university or through Medicaid and Medicare while only less than 10% of the insured participants had to pay for private health insurance (Table 2). There was significant positive association between seeking preventive/regular healthcare services and having health insurance. The majority (64.8%) of participants with health insurance visit the physician clinic seeking regular/preventive healthcare services, while most participants without health insurance (81.1%) do not visit the physician clinic for regular/preventive measures (Table 2).

The second factor with a significant positive association with preventive physician clinic visit was experiencing one or more chronic disease(s). About one-third (32.7%) of the participants had one or more chronic disease(s) such as diabetes mellitus (DM), hypertension, heart disease, asthma, or arthritis with the most common diseases being hypertension (15.3%) and DM (11.2%) (Table 2). Approximately two-thirds of participants with chronic diseases reported regularly/preventively visiting the physician clinic compared to only one-third of those

without chronic disease performing such regular/preventive visits (Table 3). The third and last factor significantly affecting the use of regular/preventive physician visits was participant's residency period. Participants less than five years of residency had significantly less regular physician clinic visits than those with more than five years of residency in the States.

Other barriers/factors examined in this study did not have significant association with preventive physician visits. For example, high co-payment of healthcare services for insured individuals was reported as a barrier by only about 15% of insured participants.

We measured three related factors: Language barrier, interpreter need, and health literacy level. Additionally, the survey asked about the availability of the hospital interpreter and preferences of using Arabic speaking providers. Regarding the provider preference, about 80% of participants had no preference for Arabic speaking providers. While around 35% of participants reported the constant availability of interpreters at the hospital/clinic, approximately half of total participants reported not needing/using the service. Approximately 16% of participants perceived having a language barrier and the remaining 84% did not report language as a barrier to healthcare (Table 2). Additionally, the perception of language as a barrier to healthcare was found to associate positively with the level of education of the participant such that those with college education and higher have no issues with comfortably communicating in English (Table 1). On the other hand, the Single Item health Literacy Screener (SILS) test revealed that only half of the participants were considered having good health literacy (52.6% reported never/rarely needing help read physician/pharmacist instructions) (Table 1). Finally, neither health literacy level nor language barrier had significant relationship with the outcome variable (regular/preventive physician visits) (Table 3).

The chi-square analysis showed that there were significant (p< 0.05) relationships between health literacy level and both language barrier and interpreter need (Table 4). To elaborate, almost all participants with limited English proficiency (30/31) were also specified as having inadequate health literacy. On the other hand, more than one-third (63/165) of the participants who reported having no language barrier were designated as having inadequate health literacy according to SILS results (answered sometimes, often or always need help in understanding health-related materials). Considering the association between using an interpreter service and health literacy, we found that 81.6% (84/103) of those reported needing an interpreter were considered to have low health literacy and the remaining 18.4% (19/103) of those who needed an interpreter were considered to have good health literacy (Table 4).

To further explore the association of health literacy level (SILS) with the health insurance status, we did Chi-square test which showed that percentage of people having adequate health literacy was significantly higher among people with health insurance compared to people without health insurance. We also conducted Chi-square test to measure association between the residency years (<5 vs 5+

Table 4. Relationship between health literacy level and hospital interpreter need, language barrier and health insurance

Variable (total num.)	Adequate SILS n (%)	Chi-square p-value
Interpreter need		0.0001*
Never (93)	84 (90.3)	
Sometimes/Always (103)	19 (18.4)	
Language barrier		0.0001*
No (165)	102 (61.8)	
Yes (31)	1 (3.2)	
Health insurance		0.0001*
Yes (123)	45 (36.6)	
No (73)	48 (65.8)	
Years in the US		0.017*
<5 (164)	84 (51.2)	
5≤ (32)	9 (28.1)	
* Significant relationship (p<0.05) SILS=Single Item Literacy Screener.		

years) and the health literacy level (SILS). We found a significant association which means people who lived for five years or more in the U.S., had significantly higher level of health literacy.

Focusing only on Sudanese participants, being the largest Arabic speaking population in the study areas (67.9%), around 70% reported having one or more barriers to health care access with 51% of those reporting health insurance as the barrier to healthcare access. Moreover, there was a significant difference between Sudanese participants compared to other Arabic ethnicities grouped in term of lack of health insurance and having a language barrier. However, the ethnicity (Sudanese vs others) had no significant relationship with seeking preventive healthcare.

In summary, these findings denote the significance of health insurance and years of residency as enabling factors and existence of chronic disease as a need factor for seeking preventive/regular physician visits. However, health literacy, language barriers, gender and ethnicity had no significant association with performing preventive physician visits (Table 3).

DISCUSSION

In this study, we investigated barriers to receive preventive healthcare services and assessed health literacy level of the Arabic speaking community in select parts of Johnson County in the state of Iowa. The study area was chosen to focus on the overlooked Arabic speaking minority living in the Midwest. This is because most studies examining Arabic speaking minority were conducted in states where the majority of the Arabic speaking minority is residing.[9,10] Additionally, our unique approach in this study involved using a focus group and conducting a short paper survey. The Arabic version of the survey can be used as a tool for future studies conducted in any country containing Arabic minority.

Access to healthcare services is governed by many factors, mainly having health insurance.[8,18] In cases of regular physician visits, lack of health insurance and subsequent service costs can lead to patients abandoning required visits normally scheduled for treatment follow-up, annual

checkups, screening for certain diseases and simply follow-up on an existing condition.

The focus group in our study pointed out lack of health insurance as the main barrier to healthcare access. The focus group also noted that years of residency are important to receive governmental health insurance (Medicaid) and subsequently seeking preventive care. These conclusions were confirmed quantitatively and specifically in the context of preventive healthcare where chi-square analyses of the survey results showed three factors significantly influencing the outcome of the Anderson Model (preventive/ regular physician visit): Two enabling factors (health insurance, and residency years in the U.S.) and one need factor (having chronic disease(s))(Table 3). Because of these factors, only 52.6% of the participants visit clinic regularly and for preventive measures. According to the chi-square analysis of the survey answers, lack of health insurance had significant negative association with regular physician visits. There were 64.8% participants from those who had health insurance were visiting physician clinic regularly/for preventive measures, while only 18.9% of those who did not have health insurance were visiting physician regularly/ for preventive measures (about 3.5 to 1 ratio) (Table 3). These findings agree with previous reports on health insurance being the main barrier to general healthcare access regardless of citizenship, immigration status and ethnicity in the United States.[4,28]

First generation minorities might be facing more barriers to healthcare services than later generations possibly due to difficulties in communications and short residence time in the U.S. for newly arriving immigrants. Indeed, statistical analysis showed that participants with residency of five years or less had significantly fewer regular visits to clinics than those with more than five years residency in the U.S. which comes in agreement with focus group findings. These finding might be explained by the fact that new immigrants will have to wait for five years to be U.S. citizens before they are eligible for Medicaid according to the Iowa Department of Human Services (DHS). During this period, individuals would mostly stay without insurance as they cannot afford private insurance. Even though children and pregnant women can receive free basic health needs (vaccination, dental, healthy foods and nutrition) from the County Public Health Department through the Women, Infants & Children (WIC) program these services do not eliminate the need for health insurance to seek preventive healthcare.[29]

While in our survey sample, Sudan ethnicity was the main component (about two thirds), both predisposing factors (ethnicity and gender) had no significant relationship with the outcome variable (regular physician visit). This is worth mentioning as Sudanese were the main contributors to the uninsured participants with 51% of Sudanese uninsured compared to only 9.5% of all other participants being uninsured. This difference in the insurance status based on ethnicity might be due to differences in residency status where the majority of Sudanese were permanent residents/citizens while international students were mainly from all other ethnicities and they had to have health insurance as per university regulations.

The other modulating factor for preventive healthcare seeking is the need factor represented in this study by existence of chronic disease(s). Experiencing chronic disease(s) had a significant positive association with preventive clinic visits. This is an expected finding since those patients need regular follow-up visits to treat complications, conduct tests and receive prescribed medications. These results come in agreement with previously reported positive association between the existence of chronic disease and receiving recommended regular healthcare services.[30,31]

Another commonly reported barrier to healthcare access for non-English speaking minorities in the U.S. is language.[19] Notably, language barrier did not have any significant relationship with preventive physician visits in this study (Table 3). It is important to note that English proficiency does not reflect health literacy where individuals can communicate efficiently and still need help reading medical materials. This is well seen in our study where more than one-third of participants who reported having no language barrier were designated as having inadequate health literacy according to SILS results. However, almost all participants with limited English proficiency were designated as having inadequate health literacy (Table 4). These results agree with previously reported findings of inadequate health literacy among limited English proficiency individuals.[32,33]

In our study, neither language nor health literacy had significant impact on acquiring preventive care (Table 3). This is possibly due to the elimination of language gap through the availability of professional interpreter service at the healthcare centers. Our study showed that hospital interpreter service is highly used especially by participants with inadequate health literacy (90%) and even by some participants with adequate health literacy (18.4%). These findings highlight the importance of implementing professional interpreter services and comes in agreement with previously reported findings of a significant increase in patient satisfaction and healthcare delivery for both preventive and clinical services after the implementation of a professional interpreter service compared to a control group for Portuguese and Spanish speaking population.[14,15] Additionally, health literacy level was significantly associated with the status of being insured and being residents for five years or more. These findings might be explained because people having health insurance were residents for longer time in the U.S. and this longer period of residency contributed to their improved health literacy level.

We also conducted chi-square test to measure association between the residency years (<5 vs 5≤ years) and the health literacy level (SILS). We found a significant association which means people who lived for five years or more in the U.S., they have significantly higher percentage of those having adequate health literacy

This study had some limitations. Mainly, it was conducted in one county which may limit the generalizability of our findings. However, this county has different cities which contain a good number of Arabic speaking residents. One focus group with a limited number of participants was the other limitation. However, we used the verbatim of the

focus group to generate the survey items and generalize the healthcare barrier findings among this minority. Lastly, some surveys had missing answers.

CONCLUSIONS

This theory-based study provides a tool that can be used in different Western countries where Arabic minority lives. Andersen model helped us to identify factors associated with preventive/regular physician visits among native Arabic speaking population in Johnson County. Two enabling factors (health insurance, and residency years in the U.S.) and one need factor (having chronic disease(s)) significantly influence preventive/regular physician visits. Both the survey and the focus group results agreed that lacking health insurance is the main barrier to accessing healthcare services. The availability of an interpreter in the hospital is essential to help those with inadequate health literacy, particularly new arriving individuals.

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