



The Assessment of COVID-19 Knowledge and Attitudes Among a Middle Eastern North African Community in Dearborn, Michigan

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Abstract

In 2020, COVID-19 was the third leading cause of death among individuals between the ages of 45–84 years (Woolf 325:123–124, 2021). However, systemic inequities and disparities exacerbated the pandemic's effect on racial and ethnic groups (Tai 72:703–706, 2021). The exact impact of the pandemic within the Middle Eastern North African (MENA) community is not well documented or understood due to the lack of federal recognition of MENAs as an ethnic group. Given the lack of COVID-19 research among this community, this study was created to address COVID-19 needs, perceptions, and health-seeking behaviors regarding COVID-19 precautions, mask wearing, and routine healthcare appointments. Between June and July 2020, an anonymous survey was distributed in English and Arabic using a Community Participatory Based Research design in Dearborn, Michigan. Overall, 298 individuals were surveyed and their misconceptions regarding COVID-19 infections, spread, and precautions were identified. It is important to note that about 75% of survey respondents identified as female, while only 24% of survey participants identified as male. Survey participants slightly underestimated the distance in which COVID-19 can be transmitted as 5.5 ± 3.5 . Participants severely underestimated COVID-19 deaths in the US, with 23% estimating that under 250,000 individuals would die from COVID-19. Overall, 60% of participants reported that they did not have any difficulty adhering to COVID-19 precautions and self-quarantine rules during Ramadan, while this number dropped to only 36% (87/238) after Ramadan. The goal of this study was to serve as a tool to better understand the misconceptions, difficulties, and needs regarding COVID-19 among this understudied population. The MENA community may be particularly vulnerable to the economic, medical, and social changes brought about by the COVID-19 pandemic.

Keywords COVID-19 · Survey · Pandemic · Middle Eastern · Michigan

Introduction

The novel coronavirus, COVID-19, has created a global health crisis leaving healthcare providers and public health professionals under-prepared and communities under-resourced.

After the first confirmed case of COVID-19 was reported in the state of Michigan, on March 10, 2020, cases have increased rapidly [1, 2]. In particular, Wayne County has reported the highest number of confirmed cases within Michigan since the start of the pandemic and continues to increase into the fourth wave [3]. The city of Dearborn has been home to the highest concentration of Arabs outside of the Middle East for decades and has created a thriving cultural community [4]. The MENA American community is considered to be both an understudied and underreported population that lacks state level epidemiological data due to its lack of recognition as a formal federal racial category [5]. With the scarce literature on this community's health status, health needs, and health behaviors significant disparities persist, and health outcomes continue to deteriorate [6]. The combination of long withstanding health inequities and the current pandemic has left communities of color's health outcomes and health seeking behaviors dramatically altered [7, 8]. The importance of sharing accurate

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information related to COVID-19 with communities can limit the spread of COVID-19, enhance public awareness, and improve the efficacy of future interventions within this community [9].

There is limited information available about community knowledge and attitudes toward COVID-19 and how health needs and health-seeking behaviors have changed. The MENA American community represent a niche population for assessing these variables due to their lack of existing organizational data, scarce medical literature assessing health-seeking behaviors, and diverse sociocultural background. This study is the first of its kind in assessing the impact of COVID-19 on health knowledge, needs, attitudes, and health-seeking behaviors within the MENA American community using a Community Based Participatory Research approach (CBPR).

Theoretical Framework

To optimize the relevance and translatability of our findings, the study was approached using a Community Based Participatory Research design (CBPR). To expand the scientific knowledge and literature on this community, the study actively worked with community members to collaboratively agree on decisions throughout every step of the research process [10]. The co-investigator and research assistants all identified as MENA Americans, spoke Arabic and are residents of the city of Dearborn. Our research team is comprised of community members of our target population that are able to understand the intricacies of MENA Americans. Since the study's inception, our team was able to collaborate with predominantly MENA American non-profit organizations, local schools, medical clinics, and businesses to study our own community.

In addition to CBPR, the study also applied cultural congruence to ensure that our study materials were culturally relevant and congruent with the community surveyed. It has been shown that cultural congruence of a research team allows for greater communication, predictability and trust among respondents [11, 12]. This study did not test these constructs; however, cultural congruence conceptually allowed the research team to ask questions that may have been sensitive or personal in nature in relation to the impacts of COVID-19 has had physically, emotionally, and economically on respondents. The study team's cultural congruence encouraged participants to take part in the survey once research aims and community partners were presented.

Methods

After the study was determined to be exempt by the Institutional Review Board (IRBMED) at the University of Michigan Medical School, an anonymous, digital bilingual (English and Arabic) survey was created using a generalized survey service known as Qualtrics. The survey included 41 questions on demographics, COVID-19, and health-seeking behaviors. The demographics of respondents was determined through 15 questions asking about age, gender, race/ethnicity, Arab country of origin, county location, immigration status, education and income levels. Afterwards, (n=9) questions were adapted from Geldsetzer to rapidly assess community perceptions of infectious disease outbreaks [13]. To assess knowledge and attitudes a multi-scale item question was adapted from Zhong et al. to evaluate mask-wearing habits [14]. Through Goodman-Casanova et al. (n=4) questions were used from to assess comorbidities and care engagement to determine changes in healthcare services due to the shift to telehealth [15]. To understand the psychological needs and impact of COVID-19 on this community, (n=4) questions were adapted from Wang et al.'s study to assess factors associated with the immediate psychological response [16]. The remaining questions (n=8) were created based on published health belief studies assessing the Arab American community [12].

The survey was distributed to individuals between the ages of 18–65 years, with a focus on MENA American identifying individuals within Wayne County, Michigan. Participants were recruited online through groups affiliated with University of Michigan, Wayne State University, and University of Michigan Dearborn. Research assistants also recruited participants using influential social media pages based on popularity and following from MENA American identifying individuals.

Data Analysis

Statistical analysis was conducted using descriptive statistics, ANOVA, Two Samples Independent T-Tests and Chi Squared.

Results

Data was collected from June 14 to July 24, 2020, with a total number of surveys collected as 298. Table 1 characterizes the demographics of the respondents. The average age of respondents was 25.81 ± 8 years old. An overwhelming majority of participants, 75% (N = 224/298) identified as female. Most, 80% (N = 247/298) participants identified

Table 1 Participant demographics

Characteristic	Distribution
Total Number of Participants	N = 298
Participant Gender	N = 298
Male	72 (24.16%)
Female	224 (75.17%)
Other	2 (0.67%)
Participant Average Age	N = 273 25.81 ± 8.03
Participant Sexual Orientation	N = 294
Heterosexual	257 (87.41%)
Bisexual	13 (4.42%)
Other	15 (5.10%)
Prefer not to say	6 (2.04%)
Gay	2 (0.68%)
Lesbian	1 (0.34%)
Participant Race & Ethnicity	N = 298
Middle Eastern North African	247 (82.89%)
Caucasian/White	20 (6.71%)
Asian American	14 (4.69%)
African American/Black	2 (0.67%)
Multiracial	11 (3.69%)
Other	4 (1.34%)
Participant Country of Origin	N = 265
Lebanon	149 (56.23%)
Iraq	37 (13.96%)
Palestine	23 (8.68%)
Yemen	19 (7.17%)
Syria	16 (6.04%)
Egypt	8 (3.02%)
Jordan	5 (1.89%)
Other	5 (1.89%)
Kuwait	2 (0.75%)
Morocco	1 (0.38%)
Participant Religious Background	N = 295
Islam	249 (84.41%)
Christianity	18 (6.10%)
Agnostic	5 (1.69%)
Atheism	6 (2.03%)
Other	10 (3.39%)
Prefer not to say	7 (2.37%)
Participant Religiosity	N = 292
Very religious	56 (19.18%)
Moderately religious	143 (48.97%)
Somewhat religious	56 (19.18%)
Not Religious	28 (9.59%)
I prefer not to answer	9 (3.08%)
Participant Residence	N = 281
Wayne County, MI	231 (82.21%)
Oakland County, MI	35 (4.81%)
Washtenaw County, MI	26 (3.58%)
Macomb County, MI	7 (0.96%)

Table 1 (continued)

Characteristic	Distribution
Other	156 (20.77%)
Participant Immigrant Status	N = 298
Born in the US	221 (74.16%)
Immigrant	48 (16.11%)
Refugee	11 (3.69%)
Other	13 (4.36%)
Prefer not to say	2 (0.67%)
Lives in the Middle East	2 (0.67%)
Lives in North Africa	1 (0.34%)
Participant Education Status	N = 280
Less than high school degree	3 (1.07%)
High school graduate	43 (15.36%)
Some college but no degree	86 (30.71%)
Associate degree in college (2-year)	31 (11.07%)
Bachelor's degree in college (4-year)	74 (26.43%)
Master's degree	21 (7.50%)
Doctorate degree	3 (1.07%)
Professional degree (JD, MD)	13 (4.64%)
Other	6 (2.14%)
Participant Household Income	N = 277
Less than \$20,000	31 (11.19%)
Between \$20,000-\$49,000	60 (21.66%)
Between \$50,000 to \$74,000	47 (16.97%)
Between \$75,000 to \$99,000	28 (10.11%)
Between \$100,000 to \$149,000	45 (16.25%)
Over \$150,000	36 (13.00%)
I prefer not to say	30 (10.83%)
Employment Status	N = 279
Employed	101 (36.20%)
Employed Reduced Hours	20 (7.17%)
Furloughed	9 (3.23%)
Unemployed	61 (21.86%)
Student	78 (27.96%)
Other	10 (3.59%)

as Middle Eastern/North African and a significant portion, 56% (N = 149/265) identified as Lebanese. Additionally, 84% (N = 249/295) identified as Muslim and about 49% (N = 143/292) reported being moderately religious. The vast majority of participants, 82% (N = 231/281) resided in Wayne County, MI. Most respondents, 74% (N = 221/298) identified as being born in the US, however, about 20% (59/298) identified as being foreign-born. Additionally, 50% (N = 142/280) participants identified as being completing at least an Associate's Degree. Overall, 56% (N = 156/277) of participants reported their household income as greater than \$50,000 annually. In terms of employment, 36% (N = 101/279) reported being employed while about 10%

(29/279) of respondents reported COVID related changes to their employment hours.

Table 2 characterizes the participants' attitudes towards COVID-19 and social distancing practices. Overall, 76% (N = 181/238) of participants felt that their community had taken **some** precautions and was adhering to most self-quarantine rules, as opposed to the 16% (39/238) that expressed their community has taken all precautions and adhered to all guidelines. Additionally, this survey was distributed 1 week after the month of Ramadan that is observed by many Muslims within the MENA community. Overall, 60% (N = 145/239) of participants reported that they did not have any difficulty adhering to COVID-19 precautions and self-quarantine rules during Ramadan, while only 36% (87/238) of participants reported not having difficulties in maintaining COVID-19 precautions and self-quarantine rules **after** Ramadan. When prompting participants to select the places in which they wear masks, participants primarily selected grocery stores 38%, work 24%, and parks 12%. Overall, a majority of participants, 83% (N = 178/214) reported that

at the time of the State of Michigan Stay-at Home order in June-July that they would remain practicing social distancing.

Table 3 characterizes participants' COVID-19 related knowledge and perceptions. Participants estimated that on average the Coronavirus could be transmitted around 5.5 ± 3.5 feet away. When prompted to select what primary sources of COVID-19 information respondents primarily rely on to remain updated about the pandemic the social media accounts of healthcare professionals 23.93% (134/560) and the Center for Disease Control 23.04% (129/560) were the most frequently selected and were a close tie. Additionally, around 8% (44/560) of respondents opted to not be updated about the pandemic. About 27% (N = 69/255) of participants estimated that by the end of 2020 there would be around 251,000 to 500,000 COVID-19 related deaths. When prompted, 35% (N = 89/254) of participants estimated the portion of the US population to be infected with COVID-19 at the time of the survey as 20–49%. Additionally, when asked to estimate the same

Table 2 Attitudes and social distancing

Characteristic	Distribution
Community Response to COVID-19 Precautions	N = 238
My community has taken all precautions and is adhering to all self-quarantine rules	39 (16.39%)
My community has taken some precautions and is adhering to most self-quarantine rules	181 (76.05%)
My community has taken no precautions and is not adhering to self-quarantine rules	18 (7.56%)
Difficulty adhering to COVID-19 precautions during Ramadan	N = 239
No it has not been difficult. I have taken all precautions and I am adhering to all self-quarantine rules	145 (60.67%)
It has been slightly difficult . I have taken some precautions and I am adhering to most self-quarantine rules	66 (27.62%)
It has been very difficult . I have taken no precautions and I am not adhering to self-quarantine rules	3 (1.26%)
Participants do not participate in Ramadan	25 (10.46%)
Difficulty adhering to COVID-19 precautions after Ramadan	N = 238
No it has not been difficult. I have taken all precautions and I am adhering to all self-quarantine rules	87 (36.55%)
It has been slightly difficult . I have taken some precautions and I am adhering to most self-quarantine rules	120 (50.42%)
It has been very difficult . I have taken no precautions and I am not adhering to self-quarantine rules	6 (2.52%)
Participants do not participate in Ramadan	25 (10.46%)
Mask wearing in the following places (select all that apply)	Count = 602
Grocery stores	230 (38.21%)
Parks	74 (12.29%)
Running/Walking outdoors	37 (6.15%)
Work	145 (24.09%)
Protests	61 (10.13%)
Other	32 (5.32%)
I only wear my mask in large gatherings	23 (3.82%)
After the state Stay-at Home order is lifted will you continue to practice social distancing	N = 214
Definitely yes	113 (52.80%)
Probably yes	65 (30.37%)
Might or might not	26 (12.15%)
Probably not	9 (4.21%)
Definitely not	1 (0.47%)

Table 3 COVID-19 knowledge & perceptions

Characteristic	Distribution
COVID-19 Information Source	Count = 560
Center for Disease Control	129 (23.04%)
World Health Organization	98 (17.50%)
News Stations	78 (13.93%)
University/Educational Institution	77 (13.75%)
Social media accounts of Healthcare professionals	134 (23.93%)
Prefer not to be updated	44 (7.86%)
Participant estimation of COVID-19 related deaths	N = 255
1,001–10,000	16 (6.27%)
10,001–100,000	29 (11.37%)
100,001–250,000	60 (23.53%)
251,000–500,000	69 (27.06%)
500,001–1 million	47 (18.43%)
Between 1 and 10 million	29 (11.37%)
Between 10 and 100 million	4 (1.57%)
Participant estimation of COVID-19 infections in US	N = 254
Under 10%	54 (21.26%)
11–19%	51 (20.08%)
20–49%	89 (35.04%)
50–64%	35 (13.78%)
65–75%	17 (6.69%)
76–89%	7 (2.76%)
90–95%	1 (0.39%)
Participant estimation of COVID-19 infections among MENA Americans	N = 246
Under 5%	58 (23.58%)
6–10%	56 (22.76%)
11–19%	45 (18.29%)
20–49%	58 (23.58%)
50–64%	15 (6.10%)
65–75%	7 (2.85%)
76–89%	5 (2.03%)
90–95%	2 (0.81%)
Participant Estimation of COVID transmission in feet	Avg 5.5 ± 3.5

for MENA Americans, there was an exact tie with 23.58% (N = 54/254) estimating under 10% and the other 23.58% of respondents estimating around 20–49% of the MENA American population.

Table 4 characterizes participants' current health status and changes in health behaviors. Most participants, 58% (N = 138/238), reported that they did not to receive COVID-19 testing, 19% (N = 45/238) of participants reported that they received testing and tested negative, while 8% (N = 20/238) reported that they had not been able to receive testing. Overall, 67% (N = 160/239) of participants reported that they knew someone who tested positive for COVID-19 and on average participants knew about 5 (5.26 ± 4.68) individuals who tested positive for COVID-19.

In terms of primary healthcare provider appointments, 41% (N = 89/214) participants reported that they themselves canceled their appointment out of fear or their physician canceled the appointment out of precaution. Additionally, 34% (74/214) of participants had their appointments with physician specialists were canceled or postponed for similar reasons. Among respondents or members in their household, the primary medications that are currently being taken are for blood pressure (17.16%), diabetes (13.94%), and general pain medication (11.53%). Finally, about 27% of participants felt that social isolation was negatively affecting their mental health.

Discussion

This study, which used a community-based participatory research (CBPR) approach, is a crucial first step in understanding MENA Americans' health needs, attitudes, and perceptions of COVID-19 during the COVID-19 pandemic. While the sampling design of the study relied on convenience sampling, the respondents, however, capture a niche MENA community in southeast Michigan. As presented in Table 1, this convenience sample was composed of a majority of young female adults that identified as MENA individuals which may have had an unintended influence in the survey results. Although this cohort does not represent all MENA Americans in the US, it does allow for a better understanding of COVID-19 within the MENA community in Wayne County, Michigan. The study collected data one-week post-Ramadan, in which Muslims fast from sun-up to sun-down daily for 30 days. Participants reported a slight increase (Table 2) in difficulty adhering to self-quarantine rules and safety precautions **after** Ramadan.

In regard to COVID-19 beliefs and perceptions, Table 3 highlighted that respondents understood the general transmission of COVID-19, mask wearing, and COVID symptoms. Interestingly, participants selected both the social media accounts of healthcare professionals and the Center for Disease Control as the primary sources of COVID-19 related news and information. With the increase of false information during the pandemic, it is important that communities of color, including the MENA community, are represented in healthcare as representation and inclusion in medicine can allow for culturally relevant communication. It is also necessary to better understand this vulnerable community's health needs and address any misconceptions. Although our survey was not validated, participants were provided a range of questions about COVID-19 beliefs and social distancing practices and can help better understand trends among MENA Americans. As this community is largely understudied, understanding their health behaviors and COVID-19 perceptions can assist in addressing

Table 4 Health status and health behaviors

Characteristic	Distribution
Have you been tested for COVID-19	N = 238
Yes and tested negative	45 (18.91%)
Yes and tested positive	7 (2.94%)
Minor symptoms but did not get tested	12 (5.04%)
Have not been able to receive testing	20 (8.40%)
Afraid to get tested because of pain	8 (3.36%)
Do not want to be tested	8 (3.36%)
Do not need to be tested	138 (57.98%)
Number of individuals participants know tested positive for COVID-19	N = 239
Yes	160 (66.95%)
No	79 (33.05%)
Average number of individuals participants know tested positive	5.26 ± 4.68
Postponed primary healthcare provider appointments	N = 214
Yes, feared COVID-19 infection	48 (22.43%)
Yes, physician canceled out of precaution	41 (19.16%)
No	65 (30.37%)
Not Applicable	55 (25.70%)
Postponed specialty physician appointments	N = 214
Yes, feared COVID-19 infection	35 (16.36%)
Yes, physician canceled out of precaution	39 (18.22%)
No	70 (32.71%)
Not Applicable	70 (32.71%)
Current medications participant or other household members are currently taking for	Count 373
Blood thinners	27 (7.24%)
Blood pressure	64 (17.16%)
Diabetes	52 (13.94%)
Heart disease	24 (6.43%)
Mental Health (anti-depressants)	27 (7.24%)
Cancer therapies	8 (2.14%)
Pain medication	43 (11.53%)
Oxygen	4 (1.07%)
Inhalers	33 (8.85%)
Other	13 (3.49%)
None/Does not apply	78 (20.91%)
Social isolation having a negative effect on mental health	N = 214 Count 448
Myself	120 (26.79%)
My spouse/significant other	19 (4.24%)
My children	18 (4.02%)
My parents	63 (14.06%)
My extended networks	31 (6.92%)
My friends	94 (20.98%)
My family	103 (22.99%)

misconceptions and false information regarding COVID-19. Additionally, Table 4 reflects participants' changes to their physical and mental health status and care. Overall, a majority of individuals knew someone who tested positive, while a vast majority of participants did not feel the need to be

tested. This stark comparison could be a concern in limiting the spread of COVID-19.

Although the study achieved many of its objectives, there are a few limitations that should be considered. The MENA American community is widely under researched; thus, our study adapted an exploratory research design. Survey

responses capture a niche community in Dearborn, Michigan, however it is important to note that this study is limited due to convenience sampling. Moreover, the majority of participant respondents identified as female, resulting in our data not being fully representative of the MENA community. This should be taken into consideration as the full depth of understanding about COVID-19 among young men may be less clear and remains an issue that needs to be addressed. Also, because participants were recruited via social media, this data may not be representative of those without a computer or internet access.

Further research is needed to better understand the unique effect of the COVID-19 pandemic on MENA individuals within Wayne County and throughout the US. With an increase in the cancellation of routine healthcare appointments and lack of COVID-19 testing within this community it is important healthcare providers and professionals work to mitigate these factors and address the MENA American community's needs.

Future Directions

Future studies will assess the preventative health behaviors of this community, current health status, and perceptions towards the COVID-19 vaccine.

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Declarations

Conflict of interest All authors on this manuscript have no conflicts of interest or financial disclosures to report.

Ethical Approval This research involves human participants and was deemed exempt by the University of Michigan Medical School Institutional Review Board.

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