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# "*If It's My Time*": A Qualitative Study of COVID-19 Vaccine Intention Among a Sample of Arab Americans

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**ABSTRACT**
*Little is known about vaccine willingness in Arab Americans. It stands to reason that factors such as increased risks of experiencing xenophobia and discrimination and limited social support, particularly among new immigrants, may influence COVID-19 vaccine willingness among Arab Americans. We qualitatively investigate the psychological, social, and physical impacts of the COVID-19 pandemic on Arab Americans and explore how these experiences may have influenced COVID-19 vaccine perceptions and behaviors. We conducted a qualitative study following an interpretivist, inductive paradigm among a subset of Arab Americans (N=23) living in the US between April and July 2021. We identified four broad categories of themes: individual factors contributing to COVID-19 vaccine willingness, perceptions of the US government and the public health response, the impact of media on the COVID-19 pandemic and perceptions about the COVID-19 vaccine, and perceived COVID-19 severity. COVID-19 vaccine willingness was based*

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*on participants' perception of the severity of the COVID-19 pandemic, protecting their health and that of others in their social circle, a work or school requirement, or fulfilling a greater social responsibility. Though our study disproportionately represented those who were vaccine-willing, participants referenced stories about people in their immediate and distal networks who were unwilling to be vaccinated. There are complex connections between individual well-being, community identity and belonging, and health for Arab Americans that deserve additional attention.*

**KEYWORDS:** Arab American, COVID-19, Pandemic, Vaccine Willingness, Public Health, Qualitative Health Research

Although the World Health Organization may have ended the public health emergency of international concern declaration in May 2023 for the COVID-19 pandemic, it continues to cause sweeping devastation and changes to individual and community life (Sarker et al., 2023). An estimated 6.9 million people died directly from COVID-19-related causes, and the short- and long-term impacts to population health, mental well-being, and social life are still being reckoned with years later (Wong et al., 2023). Studies from earlier stages of the pandemic highlight the global psychological impact of COVID-19, demonstrating increased levels of stress, depression, anxiety, and PTSD risks (Passavanti et al., 2021). It has been broadly accepted that COVID-19 has exacerbated existing ethnic health inequities, with a recent large-scale, global meta-analysis demonstrating marked differences in exposure and mortality risk between white majority populations and individuals from Black, Hispanic, South Asian, Mixed, and other ethnic groups (Irizar et al., 2023). Within the United States (US), ethnic communities were differentially impacted by the COVID-19 pandemic, as Arab American, Black, and Hispanic communities were shown to have the highest likelihood of testing positive for COVID-19 (Abraham et al., 2021; Dallo et al., 2023; King, 2020; Yearby & Mohapatra, 2020). One study based in Southern California found that Arab Americans had greater odds of testing positive for COVID-19 when compared to non-Hispanic White and Black patients (Abuelezam, Greenwood, Al-Ani, Galea, & Al-Naser, 2022). These results indicate that COVID-19-related health disparities must be understood in the context of a long history of structural racism.

Through the application of socio-ecological and integrated behavioral models in public health, it is clear that structural racism shapes COVID-19 health disparities at the levels of policy, community, organization, and interpersonal factors. For instance, residential racial segregation proves to be a crucial component of this connection, as insulated communities have limited access to healthcare resources and lower socioeconomic status (Tan et al., 2022). By adopting a multilevel framework that emphasizes structural mistreatments and disparities, the patterns and root causes of health behaviors, such as vaccine uptake, can be better understood (Jindal et al., 2023).

Although 81% of the US population has received at least one dose of the COVID-19 vaccine since the first dose was administered outside of a clinical trial in December 2020, vaccine hesitancy remains a major public health concern (*Ten Health Issues WHO Will Tackle This Year*, n.d.). Numerous studies have focused on the impacts of the pandemic on Black, Indigenous, and Hispanic communities and subsequent vaccine behavior. Relatively less attention has been paid to "invisible minorities" such as Arab Americans (Abuelezam, 2020). Arab Americans are a growing ethnic minority, with the US Census Bureau reporting a 47% increase in population from 2000-2011, accounting for nearly 3.7 million individuals living in the US (Arab American Institute, 2023). The aggregation of Arab Americans with non-Hispanic White individuals due to the lack

of a discrete ethnic identifier in the US Census has precluded effective and accurate health data collection (Awad, Abuelezam, Ajrouch, & Stiffler, 2022). Arab Americans are uniquely positioned such that they are racialized as both white and non-white and often referred to under the umbrella identity of "Arab," thus collapsing their multiethnic and multilingual identities across countries of origin into a single racial identifier (Abboud, 2019; Abuelezam, El-Sayed, & Galea, 2018; Naber, 2000). This racial misclassification has posed difficulties in extracting and extrapolating data from national datasets: This has promoted gaps in understanding how the pandemic differentially impacted Arab Americans and subsequent vaccine willingness.

Data for vaccine willingness among Arab Americans are limited, yet essential to understanding broader health disparities. A mixed-methods study among immigrant participants in Chicago (n =35) revealed heterogeneity in vaccine hesitancy, with Middle Eastern (e.g., Arab, Palestinian) participants commonly citing religious reasons for their reluctance to be vaccinated (Sharp et al. 2024). These findings parallel other ethnic communities where cultural and religious beliefs significantly influence health behaviors, underscoring the need for exploration of these factors within the Arab American community and in comparison to other population groups.

Similarly, a qualitative study among Arab American and Chaldean participants in Michigan reported ambivalence towards both *Human papillomavirus* (HPV) and COVID-19 vaccination (Khoja et al. 2024). Alternatively, one study found there were no differences between Arab Americans and non-Hispanic Whites for self-reported receipt of the influenza vaccine (Jungquist & Abuelezam, 2021), suggesting that vaccine willingness can vary depending on the specific vaccine. Another study among Arab American mothers found low vaccination for HPV but a high willingness to vaccinate their children (Ayash, Raad, Finik, Attia et al., 2022), pointing to a potential gap between both intention and action, influenced by cultural and generational factors. Additionally, a study centered on a specific Arab American sub-population, Somali Americans, revealed that girls were accepting of the HPV vaccine series; however, they were less likely to complete the full series when compared to their non-Hispanic White counterparts (Pruitt et al., 2013). Provider-reported barriers to HPV vaccine uptake in this population include cultural/religious practices and difficulties with insurance coverage (Ayash, Raad, Finik, Taoube et al., 2024). These results emphasize the importance of addressing these barriers to reduce loss of follow-up among patients engaging in recommended preventive health practices.

Moreover, differences in health behaviors between Arab American populations themselves have been preliminarily demonstrated, with foreign-born Arab American women having higher estimates of not receiving recommended influenza and pneumonia vaccinations and cancer screening compared with both US-born Arab American women and non-Hispanic White women (Dallo & Kindratt, 2015). These results highlight the heterogeneity of vaccine willingness and uptake among Arab Americans and suggest that within-group differences, such as nativity, length of residence, and socioeconomic status may play a crucial role in influencing vaccine willingness.

Health literacy related to COVID-19 may also play an underlying role in explaining disparate preventive health behaviors. A survey conducted in 2020 in Arab American ethnic enclave revealed that while Arab Americans did not cite difficulty adhering to COVID-19-specific precautions, they greatly underestimated the virus' severity and transmissibility (Ismail et al., 2022). Despite limited exploration into these factors, it stands to reason that increased risks of experiencing xenophobia and discrimination and limited social support, particularly among new immigrants, may influence COVID-19 vaccine willingness among Arab Americans (Awad, Kia-Keating, & Amer, 2019).

Our team previously examined vaccine willingness among a national subset of Arab Americans who participated in a novel online quantitative survey in 2020 (Abouhala et al., 2021). Among 638 participants, we found that over half of the participants had intended to get the COVID-19 vaccine, about one-third were hesitant, and 7.5% did not intend to get vaccinated. Moreover, Arab American women and those with more religiosity were more likely to be vaccine-hesitant. Later studies have built upon these results and offered a more updated look at this relationship, demonstrating a considerably high rate of vaccine acceptance among Arab Americans residing in Houston, Texas (77.60%), with health status, education level, financial stability, and religious affiliation serving as driving factors (Atrooz et al., 2023). However, these findings are strictly quantitative in nature, and qualitative assessment of pandemic experiences and vaccine willingness is an important research priority that has yet to be adequately explored. Considering that Arab American health disparity research is in the detection phase, as disparities are still being identified and their relevance still being understood, qualitative assessments of critical issues such as vaccine hesitancy are necessary to advance knowledge to the understanding and reduction/elimination phases (Fleischer & Sadek, 2024; Kilbourn et al., 2006).

We reflexively inquire: What were the unique experiences of Arab Americans throughout the COVID-19 pandemic? By employing both a socioecological and integrative behavioral health framework in our investigation, how have these experiences informed the vaccine perceptions and behaviors of Arab Americans? Why did some Arab Americans choose to take or not take the COVID-19 vaccine when it became widely available in 2021? Did their perception of the severity of the pandemic and other social factors influence their decisions? In addition, given the potentially complex relationship between histories of immigration, exclusion, and integration into US society, what were salient connections between individual well-being, community identity, and health for Arab Americans?

The aim of this study was to (1) qualitatively investigate the psychological, social, and physical impacts of the COVID-19 pandemic on Arab Americans and (2) to explore how these experiences may have influenced COVID-19 vaccine perceptions and behaviors. We follow up our national survey to better understand how the COVID-19 pandemic shaped mental and physical well-being among Arab Americans, perceptions of government and social responses to COVID-19, and how these factors collectively shape their vaccine willingness.

## Methods

We conducted a qualitative study following an interpretivist, inductive paradigm (Willis, 2007) among a subset of Arab Americans living in the US. We aimed to elucidate beliefs about COVID-19 vaccine willingness and to better understand the impacts of the COVID-19 pandemic on generalized well-being. Our reports here follow the Standards for Reporting Qualitative Research (O'Brien et al., 2014). We interviewed 23 Arab Americans from April 2021 through July 2021, in the months following the novel COVID-19 vaccine rollout in December 2020. We conducted a thematic analysis of the interviews following transcription, translation (2 transcripts), and codebook development in 2021-22.

## Theoretical Framework

We utilized the biopsychosocial model as our underlying theoretical framework informing our approach to data collection and interpretation of results (Engel, 1977). The biopsychosocial model helped us illuminate the various social and psychological components that contributed to the physical manifestation of a participant's experience with COVID-19 – both the pandemic as a whole and the individual disease if they were infected – as well as their decision to protect themselves (or not) through the COVID-19 vaccine. In addition to the various sociological factors that have driven COVID-19 disparities and beliefs, as previously highlighted, the psychological impacts of the pandemic such as social isolation and fear of the disease's potential disastrous biological impacts were key factors to explore in this study as it pertains to COVID-19 vaccine willingness. This became particularly salient after our online quantitative survey on vaccine willingness (Abouhala et al., 2021) elucidated the various psychosocial factors that were playing into participants' decisions. Thereby, the biopsychosocial model underpinned our qualitative interview guide and drove our analysis of the data.

## Sampling and Recruitment

We defined Arab Americans as individuals who currently reside in the US and were either born in or have a parent or grandparent who was born in one of 22 Arab League countries. We excluded any individuals who were under 18, did not self-identify as Arab American, were not currently residing in the US, had insufficient internet access, or were affiliated or employed by Boston College. Arab American adults were recruited to participate in our study in April 2021. Using online purposive and snowball sampling, we aimed to recruit individuals who self-identified as Arab American, were at least 18 years of age, and had access to technology for an interview on Zoom.

We additionally recruited participants who had previously participated in the Survey of Arab Health in America (SAHA) and who explicitly consented to being contacted for future research studies. Many of those who participated in SAHA had high socioeconomic status and/or educational achievement (Abouhala et al., 2021). To avoid oversampling from this population and to highlight heterogeneity among Arab Americans, we diversified through purposive sampling using social media outreach on Twitter and Facebook, as well as snowball sampling with interview participants. We attempted to target individuals who had not taken the COVID-19 vaccine or were vaccine hesitant through snowball sampling. Using these methods, we aimed to detect variability across sociodemographic measures (e.g., tenure in the US, gender, age, socioeconomic status, educational attainment). We used flyers in English and Arabic (see appendix) on social media platforms and snowball recruitment was used at the end of completed interviews with other participants.

## Data Tools

Interview Guides were developed iteratively from January to April 2021 between authors (NZ, DG, and MT). We identified potential topic areas for the interview guide from our prior quantitative epidemiological analyses with SAHA participants (Abouhala et al., 2021). Interview guides included a short oral demographic survey followed by open-ended questions related to COVID-19 infection and vaccination status, vaccine decision-making, perceptions of the COVID-

19 pandemic (e.g., government policies, public health measures, level of risk), perceptions of the COVID-19 vaccine (e.g., efficacy, views on safety in children and adolescents), social impacts of the pandemic, and comparative views of COVID-19 vaccination in relation to influenza vaccination (see appendix). The interview guides were first tested with a subset of individuals (n=3) in English and Arabic among different interviewers then used in the remaining interviews (n=20). Arabic translations of the interview guide were quality checked by authors to ensure they were comfortable hearing and responding to Modern Standard Arabic.

**In-Depth Interviews**

Once participants were recruited, they were scheduled for an interview via Zoom, a virtual videoconferencing platform, with an interviewer from the research team. Interviews were conducted primarily in English (n=21) and two were conducted in Arabic. At each interview, there was a qualitative interviewer from the research team present and an observer who took notes. Informed consent was obtained verbally from all participants before the start of the interview. Interviews were recorded and participants chose or had the research team choose a pseudonym used at all stages of the research process to protect participant identity. Interviews lasted on average, about 35 minutes. Upon completion of the interview, participants were sent a $20 gift card.

**Analysis**

All interviews were transcribed in English. Cultural phrases specific to Arabic were transliterated (translated word-for-word rather than contextualizing an idiom or regional saying) as participants may have used them as linguistic touchpoints and ties to their identities. If the interview was conducted in English, recorded interviews were transcribed in English using Descript (version 3.4). If they were conducted in Arabic, recorded interviews were translated and transcribed by a private, paid Arabic translator. All transcripts were quality-checked and stored under pseudonyms. After completion of the analysis, all original recorded audio files were deleted. All analysis was conducted in Dedoose (version 9.0.62) in 2022. We analyzed the interview transcripts thematically. The codebook was developed iteratively by DG, NZ, and MT using the interview guide to define *a priori* codes and nascent codes through initial readings of transcripts. The codebook was then applied independently by DG, NZ, and MT to two transcripts to ensure inter-coder reliability, which was achieved through numerous discussions. Using the finalized codebook, all transcripts were double-coded with intermittent meetings between NA and other co-authors to discuss preliminary findings from coding. DG, NZ, and MT generated preliminary themes from the coding findings and team discussions to complete thematic analysis. DG, NZ, and MT iteratively discussed and finalized themes.

**Researcher Reflexivity**

The research team for this project is a geographically and professionally diverse group of individuals broadly interested in the health of Arab Americans that came together under the mentorship of author NA. As members of the Arab American community, we observed a great deal of distress in our larger networks around the decision to vaccinate during the COVID-19 pandemic and we wanted to address this issue rigorously and systematically. It is our intention and

hope that the work completed here will go on to influence interventions and outreach to Arab American patients requiring vaccination. The research personnel for this study included a biological anthropologist and epidemiology MPH with expertise in mixed methods (DG), a qualitative health researcher and medical student (NZ), a medical student with a background in human biology (MT), epidemiologist, Associate Professor, and leader in Arab American health research (NA), and three undergraduate students trained broadly in community and public health (FH, SA, SZ). All members of the research except (DG), are Arab American. (DG and NZ) trained other members of the team on qualitative health methods, specifically the use of qualitative interviewing, codebook development, coding, and thematic analysis. (DG, NZ, MT and NA) wrote the interview guide in English and DG translated the interview guide into Modern Standard Arabic. DG, NZ, MT, FH, SA, SZ all contributed to interviewing participants and quality-checking transcriptions, MT, NZ, SZ, FH, and DG quality-checked transcriptions, and NA supervised the team throughout. DG, NZ, and MT conducted all qualitative coding and thematic analysis and writing of the manuscript. All authors contributed to revisions and approved the final manuscript.

## Ethics

The Institutional Review Board at Boston College approved this study (IRB 21.265.01e). Participants were given the option to be given a copy of their interview transcript as well as summaries of the research findings after the study was completed.

## Results

### Participant Characteristics

The results of our demographic questions administered at the beginning of the interview are demonstrated in Table 1. More than half (65%) of study participants were in the age range of 18-30, all had health insurance, all participants perceived their health insurance to be adequate, and 77% regularly see a physician. Most participants expressed that they did not experience socioeconomic difficulties at the time of the interview, and most participants were women and held at least a bachelor's level of education.

**Table 1**
*Demographic Survey Results*

| Characteristic | N (%) (Overall, N= 23) |
|---|---|
| Age (years) | |
| 18 - 30 years | 15 (65%) |
| 31- 49 years | 6 (26%) |
| 50+ years | 2 (9%) |
| Health Insurance | |
| Yes | 23 (100%) |
| No | 0 (0%) |
| Adequate Health Insurance | |
| Yes | 23 (100%) |
| No | (0%) |
| Regularly Seeing a Physician | |
| Yes | 16 (77%) |
| No | 7 (23%) |
| Financial Insecurity Proxy* | |
| Yes | 1 (4%) |
| No | 18 (78%) |
| Maybe | 4 (17%) |
| Educational Level | |
| High School | 4 (17%) |
| Bachelor's Degree | 12 (52%) |
| Graduate Degree | 7 (30%) |
| Gender | |
| Men | 5 (22%) |
| Women | 18 (78%) |

*Note.* *See our supplemental documentation for a full copy of the interview guide

At the time of the interviews, all participants except one had received at least one dose of the COVID-19 vaccine. The timeline of vaccine uptake varied based on statewide eligibility criteria and willingness. The following themes demonstrate study participants' experiences with the COVID-19 pandemic and COVID-19 vaccine. In the following discussion, all participants will be referred to by their self-selected pseudonyms.

## Thematic Analysis

### *COVID-19 Vaccine Willingness: Individual factors*

**Perceptions of Social Responsibility and Health Influence COVID-19 Vaccine Willingness.** Participants had a variety of reasons for choosing to receive the COVID-19 vaccine. Some factors stated by participants included protecting their health if they were immunocompromised or had health concerns, protecting others in their social circles who were

more susceptible to severe impacts of COVID-19, a requirement by work or school, and a desire to return to normalcy. For example, Zayn noted:

> I think it's also good to take it for the benefit of those that can't for one reason or another, if they're immunocompromised. So, I guess that's another reason I felt it was like part of my duty on that front.

Beyond a sense of social responsibility, study participants detailed numerous impacts that the COVID-19 pandemic had on the lives of those in their social circle and, subsequently, their own lives and decision-making as it related to the COVID-19 vaccine. For several participants, their social relationships motivated them to take the COVID-19 vaccine. A participant named Sarah reported having a pregnant daughter-in-law, therefore limiting her interactions with people to stay protected and choosing to take the COVID-19 vaccine. Abu Nadir wanted his children to be able to visit him and, therefore, was prompted to take the COVID-19 vaccine to be able to see them. Participants who had young children who were not eligible to take the COVID-19 vaccine at the time of interviews were also prompted to receive the COVID-19 vaccine, with the idea that they would be protecting their young children.

Most study participants were highly educated and were exposed to various avenues of information—both on the COVID-19 pandemic and the COVID-19 vaccine—and may have utilized that information to make their own assessments to receive the vaccine. Study participants who were in a healthcare or scientific occupation—or who had individuals in their social circles in those occupations—reported in their interviews that this likely influenced their understanding of and willingness to take the COVID-19 vaccine. However, there were still some participants who were reluctant to or did not receive the COVID-19 vaccine despite being highly educated and working in science-adjacent occupations. Their reasons for not taking the COVID-19 vaccine included perceptions that the COVID-19 vaccine would cause infertility or influence menstrual cycles, that the severity of the pandemic was over-emphasized, or that there was too short of a duration of vaccine testing prior to roll-out. Mary expressed that she did not believe the SARS-CoV-2 virus would impact her:

> I felt like I don't necessarily need to…because.. my health and I haven't, you know, been impacted. I do have concerns just because of not having children yet. I just don't know if it's gonna impact like my menstrual cycle or, any of what my current health is like, you know, it's good. I don't want it to like, be impacted negatively from the vaccine.

**Participants' perception of COVID-19 vaccine hesitancy.** Some participants attributed vaccine unwillingness to the individual disposition of those in their social circles. These participants detailed how some relatives or family members—in the US and in Arab countries of origin—refused to take the COVID-19 vaccine, they believed, due to exposure to misinformation through various platforms. For example, Yusra said: "Even my sister in Qatar used to believe in such false stuff (e.g., mind control), but I convinced her otherwise and she welcomed it."

These study participants viewed refusal to take the vaccine as an individual failure of those in their social circle to critically evaluate the misinformation presented to them. Other study participants stated that they understood why their relatives or family members may be unwilling to take the COVID-19 vaccine, attributing it to many situational factors that drove their decision to not take the COVID-19 vaccine. The aforementioned concept of fate was used flexibly in participants' references to their communities and others, not only as an explanation that may have helped to cope with the changes of the pandemic but also as a way of understanding vaccine

hesitancy within their own families. For example, Reggie expanded on why his mom was not vaccinated against COVID:

> She has a bit of a more morbid mentality with the, if it's my time to go, it's my time to go. But that's, that's really her only reason. She's okay waiting until it's, uh, until it's fully fleshed out and doesn't cause anybody pain or misery.

Study participants stated that unwilling relatives or family members are often impacted by previous difficult life experiences that they believe were more challenging than COVID-19, having a distrust in medical institutions due to former negative experiences, and lack of access to correct and easy-to-understand information about the COVID-19 vaccine. For example, Narnoura noted the following about their father:

> I just think there's two things going on: there's a belief that enough other people will get it, that they don't have to be the ones to contribute to herd immunity. And then two, I just think coming from the background that they do, medicine is so different in the Middle East. My dad has a belief that if he survived the Lebanese civil war and all the conflict, that he's somehow invincible, that he's immune to everything.

Layla detailed that COVID-19 vaccine unwillingness in their local Arab community is impacted by the availability of vaccine distribution centers as well as general healthcare resources that provide accessible health literacy, focusing more on structural drivers than interpersonal attributes:

> Data has shown that even though Arab Americans disproportionately have…been infected with COVID-19 more so than other communities, we are still being vaccinated at a much lower rate and in part due to just like, I think, a lack of trust on our part.

**Prioritization of the SARS-CoV-2 versus the influenza vaccine.** In their assessment of the importance of taking the SARS-CoV-2 vaccine versus the influenza vaccine, participants' insights varied. Most participants did not view influenza as a potentially serious disease either because they had no personal experience of severe symptoms of the influenza virus or they may not have known someone who experienced severe symptoms of the flu virus and/or had to be hospitalized or passed away due to the influenza virus. Those participants usually did not take the influenza vaccine and viewed it as extraneous or ineffective. Other participants who reflected that the influenza virus can cause a potentially serious and/or fatal reaction in individuals, have either worked in healthcare and have witnessed the severity of the influenza virus, have themselves experienced a serious bout of the influenza virus, or have seen a loved one experience a serious bout. These individuals generally viewed the influenza vaccine as necessary and effective and took it yearly. Most participants generally prioritized receiving the vaccine for COVID-19 over the influenza vaccine, even amongst those who usually take the influenza vaccine. The main reason for this is that the severity of the SARS-CoV-2- virus is seen as a more imminent danger to society than the influenza virus. Participants concluded this based on their perception of the severity in illness and high fatalities of the COVID-19 virus. For example, Annie shared how she felt that:

> The COVID vaccine is more important than the flu vaccine. Um just because like um um because of the severity of COVID. People die from the flu but it's not like the percentage is not as high as COVID. So if you're going to take one of them I think it should be COVID.

***Perceptions on the US government and the public health response***

**Perceived importance of public health measures.** Participants' views on the US government's general response to the COVID-19 pandemic were variable. Several participants found that the government's response was inadequate and mired by political strife that prevented meaningful work from happening to curb the COVID-19 pandemic. Some participants compared the US government's response to the COVID-19 pandemic to that of other international governments and detailed how the COVID-19 pandemic was better handled in those countries with uniform policies (e.g., China, Cuba, Vietnam) and provided more aid to people in their countries. As stated before, many participants expressed their dismay about the lack of consistent and trustworthy information provided by the government to inform the public about COVID-19, particularly with the concerns about the CDC. For example, Hussein states:

> I'm just speaking about my experience... Um, a lot of people are confused between state recommendations and guidelines, CDC guidelines, and then what they hear from their doctor and then what they hear from their community… So it's been interesting to kind of observe, you know, whether or not people actually follow the guidelines or will they just go with what they feel feels appropriate to them.

Nearly all study participants viewed that most measures to reduce the spread of the COVID-19 virus, such as social distancing and limiting social gatherings, were important. Several, in fact, expressed that they wanted to see more stringent approaches to enforcing public health measures and not to solely rely on individual behavior to reduce the spread, even after individuals had been vaccinated. Participants also detailed the confusion that many experienced at the variable policies across the country, even within states and counties, that were caused by a lack of central government power. For example, Susan remarked: "There was really no centralized policy on how states should roll out their policies."

**Government support to the public.** Nearly all study participants viewed that the support that the US government provided to the public was inadequate, especially compared to how other countries supported their populations. Sarah drew a comparison to the government response in Saudi Arabia, particularly regarding PPE distribution, where she noted:

> People there never experienced a reduction in sterilizers; masks were provided to them abundantly they'd change masks per outing. As for here, I had five masks that I'd kept since the Avian Flu H1N1 days.

Participants mentioned that, while the stimulus checks helped, they were not enough to sustain those who needed further support such as housing and food security. Fadi commented on the temporary nature of the stimulus checks:

> I think instead of getting, uh, like, monthly stimulus checks to make sure that people can stay home and have the ability to take care of themselves when there are mass layoffs and obviously rent, like being not able to be paid. And a lot of, I think half the country being food insecure, it was really frustrating that we didn't have a recurring sort of support.

No study participant solely relied on support from the government, and some received support from family. In fact, some participants expressed that stimulus checks should have not been given to them when they did not need it and instead should have been given to those in need of more support. Other forms of governmental support were also viewed as inadequate. While the pause on student loan interest was viewed as helpful, some participants expressed that cancellation

of student loans was needed. Others expressed that the unemployment benefits took too long to provide support to those in need. Meanwhile, some businesses received loans that they did not need but were able to circumvent the system.

**Trust in vaccine developers.** Study participants more often expressed that they trusted the biomedical researchers who created the COVID-19 vaccine because of the scientists' expertise and rigorous scientific methods and testing. One participant detailed that vaccine development on coronaviruses had already been occurring for several years before the COVID-19 pandemic and that the COVID-19 vaccine built upon years of existing research and vaccine development. However, participants expressed distrust in the larger corporate entities that funded and patented the COVID-19 vaccine development such as Pfizer and Johnson & Johnson. For example, Boba discussed:

> I just don't trust them just based on the lethal adverse reactions, like blood clots, false claims, medical equipment, safety violations. I don't know, different corrupt things that it's hard for me... Bribery. It's hard for me to trust these companies, of course, no, one's perfect… but until I get more information and more longer testing of people having this vaccine, I'm not ready to take it.

One participant expressed their frustration at the refusal of larger corporate entities to share the patent with and/or sell the COVID-19 vaccine at a lower price point to low-and-middle-income countries struggling to attain the vaccine for their populations. They believed that this is a major contributor to the difficulty in curbing the COVID-19 pandemic on an international level and stop the rapid evolution of the COVID-19 virus.

**COVID-19 vaccine roll-out.** Views on the US government's vaccine roll-out policies also varied amongst study participants. Some expressed that the US government's ability to secure vaccines was good and that the roll-out to the US public had been done relatively well such as the distribution to healthcare workers and the elderly first. However, other participants felt that the staged roll-out of the vaccine did not do well in providing it to other vulnerable populations or those on the front-line in other industries such as grocery workers, those without homes, and incarcerated individuals. Additionally, participants expressed that there was a clear socioeconomic and racialized divide in vaccine roll-out where individuals in wealthier and more White neighborhoods had more places and opportunities to receive the vaccine versus individuals in low-income and ethnically diverse neighborhoods did not have as many resources to receive the vaccine. A few participants expressed that they had noticed this in predominantly Arab American neighborhoods in cities such as San Diego. Layla says:

> We [Arab Americans] are still being vaccinated at a much lower rate and in part due to… a lack of trust on our part…also the [vaccine] not being readily available in our areas… for example, there's (sic) more hospitals in white neighborhoods or areas that are like clustered… [with] rec centers and libraries where they're like giving out vaccines.

### *Impact of media on the COVID-19 pandemic and perceptions about the COVID-19 vaccine*

**Impact of the media on understanding the COVID-19 pandemic and vaccine.** Overall, individuals who participated in this study reported that they utilized many forms of media to stay informed about the pandemic and vaccination. Study participants generally received their information about the COVID-19 pandemic and SARS-CoV-2 vaccine from various outlets,

including major news outlets, social media, scientific journals, scientific agencies, governmental entities, and those in their social circle. Few participants noted that their source of news and media may have been related to their decision to take the vaccine, both in favor of it and in an expression of skepticism towards it. Moreover, participants expressed concern about others in their social circles (particularly older Arab Americans) who had not taken the vaccine, and the role media might have played in their decision-making. For example, several participants noted that they viewed one scientific agency – the Centers for Disease Control and Prevention (CDC) –as being a biased agency that was largely influenced by political forces and was inconsistent in the information that they presented to the public, potentially causing distrust that affected peoples' perceptions about the COVID-19 pandemic and vaccine. For example:

> …things that kept changing, which I understand when more information comes more, more things need to be done. I get it. Like, this is new for everyone…It's hard to trust when information changes so much. And just when I've heard from other people and how they felt when they had it, some felt it was really bad. And some didn't even know they had it… it feels like it's affecting people differently…social media definitely made an impact. Just seeing what was happening in the hospitals, who knows if it was a real video or a real picture, everything can be altered.

**Misinformation about the COVID-19 pandemic and vaccine.** Study participants detailed their perceptions about the existence of misinformation about the COVID-19 pandemic and its impact on their social circles and the public. Participants highlighted two factors that contributed to the creation and distribution of misinformation. The first factor was that technical scientific jargon from reliable and evidence-based sources made it more difficult to digest information about the COVID-19 pandemic and vaccines among individuals with lower education. Layana articulates this by sharing how:

> There can be so much jargon that people don't even understand what they're listening to still. So they seek out all these simplified definitions… [my mother] might get overwhelmed with the amount of jargon that she hears. So she will like listen or read like a WhatsApp forward from like a coworker. Rather than listen to a public health expert because she doesn't feel like it's speaking to her because it's just so overwhelming.

This was of particular concern to older Arab Americans who do not speak English fluently or who struggle with scientific jargon and may not have someone to help them process it. Participants explained how older Arab Americans would then turn to receive information from other sources such as social media and their social circles through platforms such as WhatsApp to learn more about the COVID-19 pandemic and vaccine. The second factor that participants believed led to the creation and distribution of misinformation was the lack of consistent and accurate educational efforts by the US government to the public for all educational levels and cultural backgrounds. Some participants detailed that they attempted to combat misinformation by disseminating verified information on social media platforms, speaking extensively with their family members, and asking questions to skeptical individuals rather than attacking and/or directly aiming to refute false claims or opinions.

### *The COVID-19 Pandemic: Severity and Well-being*

**Perceived severity of the COVID-19 pandemic.** Participants' perceptions of the severity of the COVID-19 pandemic were impacted by their occupations, personal health status, and social networks. Participants who worked in the healthcare or the biological sciences sphere detailed their stories of witnessing the severity of the pandemic firsthand through providing healthcare to afflicted individuals or through their involvement in basic science research. Several participants recounted a high level of COVID-19-related deaths in their surrounding communities and social networks on national and international levels, and they also expressed caution about the long-term influences of COVID. For example, Fadi commented:

> And then on top of that, something that I think people don't really talk about is we're seeing the post effects of having COVID on a lot of people, even young people, right? Like some serious anxiety issues that have been developing, some heart issues, and like a lot of things that even people who do survive COVID we don't know what's going to happen long-term…

One participant discussed the severity of the pandemic in relation to their experiences with illness, specifically experiencing the concept of shame while ill. For example, Musa described the experience of his father having COVID-19 and the shame he felt from people in his community: "...definitely none of [the rest of us] were sick. So it made it seem like a really sensitive, --3aib (taboo)--like shameful things have COVID. I couldn't tell you why. I couldn't tell you where it came from…"

**Physical and mental well-being impacted by the pandemic.** For some participants, the COVID-19 pandemic negatively impacted their physical and mental well-being. Some participants stated that with restrictions in movement, their physical activity decreased and they noted negative changes in their physical health. Other participants expressed that increased social isolation and the abrupt change in their daily activities affected their mental well-being and led to depressive symptoms in some participants. Several participants also expressed that their social lives changed drastically as they were not able to see individuals in their social circle regularly; for some, this included members of their immediate family. At the same time, one participant struggled with the ways her social and family dynamics were affected by the pandemic, for example:

> I'm living at home [now] and then living by myself in New York, you would imagine that…as a Muslim Arab woman, it would be a huge, huge change. It felt like I was living in two different worlds: me being at school and me at home. Being at school, especially in the city, like New York I was being outspoken, being outgoing, doing what I want, making decisions for myself and not really thinking about or not having to report back to anyone and not having to think about what other people particularly like what my family thought was morally right or wrong.

Yet, other participants expressed that the COVID-19 pandemic had the opposite impact on their lives. They expressed that the restrictions, such as working from home and limiting social interaction, prompted them to "slow down," and be more present in their lives. Some participants expressed that they had more time to pay attention to their well-being and used the opportunity to exercise and engage in other activities they enjoyed. This may have been reflected by the fact that most of the participants in our study were highly educated and of higher socioeconomic status.

**Coping strategies for the COVID-19 pandemic.** Participants employed a variety of coping strategies to deal with the impact of the COVID-19 pandemic. Some participants expressed that they relied on their social circles – immediate and otherwise – to help them process the changes ushered in by the pandemic. They utilized video technologies to connect with family and friends regularly or had social distanced meetings in a public location such as a park. Others expressed that due to the nature of spending more time in physical proximity, they began to spend more time and grow closer with family members such as spouses and children. Several participants explained how they decided to start a new hobby to help them pass time such as exercising and baking.

A few participants discussed leaning into their religious values as Muslims and Christians to find community, support, and understanding during the COVID-19 pandemic. For example, Husna noted that people in her community refer to "غضب العارف\ Ghadab al'Araf" the Wrath of God, as an explanation for the pandemic and an implication that people should accept their fate. However, Husna did not ascribe to this value in particular. Regardless of participants' perspectives on the notion of fate in the pandemic, still others relied on religious communities during the pandemic. For example, Mary said: "…I mainly appreciate church more and I guess we, as a family thought that Jesus would keep us protected and safe and get us through COVID-19."

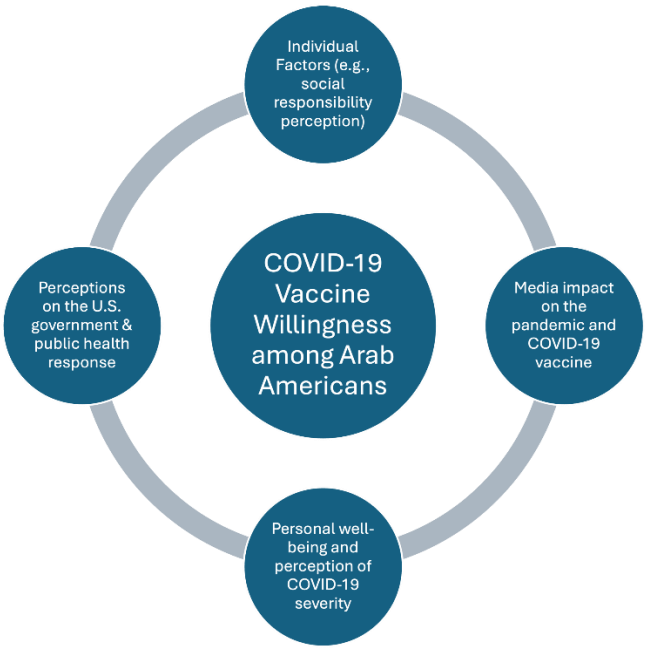
## Discussion

Our study explored Arab Americans' willingness to take the COVID-19 vaccine and their experiences of the COVID-19 pandemic. We aimed to qualitatively investigate the psychological, social, and physical impacts of the COVID-19 pandemic on Arab Americans and to explore how these experiences may have influenced COVID-19 vaccine perceptions and behaviors. Our analysis was grounded in the biopsychosocial model and a qualitative interpretivist approach. We found that a majority of participants perceived the COVID-19 pandemic to be severe and were willing to obtain the COVID-19 vaccine because of their beliefs in its efficacy. COVID-19 vaccine willingness was based on participants' perception of the severity of the COVID-19 pandemic, protecting their own health and that of others in their social circle, a work or school requirement, or fulfilling a greater social responsibility. In particular, we developed four major themes to understand participants' responses: individual factors, perceptions of the US government, media influence, and COVID-19 severity. Additionally, many sub-themes were developed to allow us to explore nuances across participant responses. Figure 1 demonstrates the interconnectedness of the four major themes that informed COVID-19 vaccine willingness in our participants.

Our study disproportionately represented those who were vaccine-willing. On the one hand, the fact that most participants in this study were vaccine-willing counters assumptions about Arab Americans as being necessarily similar to other minoritized groups in their willingness to take vaccines. However, we interpret this with caution given that we also acknowledge some bias in our sample as being highly educated and relatively higher socioeconomic status. Many participants referenced stories about people in their immediate and distal networks who were unwilling to be vaccinated, thus informing what is known about vaccine hesitancy for a subset of Arab Americans via experiences participants conveyed about others. Study participants themselves viewed hesitancy as either a factor of individual ignorance or a consequence of societal factors that cause individuals to be vaccine hesitant, such as older Arab Americans having distrust in US-based medical institutions or extensive misinformation, they are exposed to through the network of Arab communities domestically and internationally. At the same time, participants also emphasized their willingness to talk with their relatives and friends about the COVID-19 vaccine,

with some participants suggesting that they changed their relative's mind from being hesitant to willing. This suggests that vaccination may reflect social-relational processes wherein strengths can be leveraged within Arab American communities to fortify communication, engagement, and understanding about vaccination and agency.

**Figure 1** –
*Thematic Map of Factors that Impact COVID-19 Vaccine Willingness among Arab Americans*




For participants in our study who were hesitant, their reasoning aligns with broader motivating factors for hesitancy, such as questioning the efficacy or safety of new vaccines. However, in a study examining the COVID-19 vaccine hesitancy amongst Arab Americans through a national survey distributed through Arab American service organizations, COVID-19 vaccine hesitancy was associated with being wary about vaccinations generally or not believing in the efficacy of the COVID-19 vaccine in preventing infection (Kheil, 2022). In another study exploring the insights on the COVID-19 vaccine amongst Arab American health professionals, COVID-19 vaccine hesitancy was associated with individuals who did not receive the influenza vaccine in the last five years, those in allied health professions (i.e., scribes, pharmacists, etc.), and were in a lower-income bracket (<$150,000) (Shallal, 2021). Furthermore, this study revealed that the three highest reported reasons for vaccine deferral were worries related to both short-term and long-term adverse effects and concerns about the timeline of vaccine development (Shallal, 2021). In our study, participants believed in the efficacy of the COVID-19 vaccine, but contrary to prior work, most did not believe in the efficacy of the influenza vaccine. While influenza vaccination was not the main focus of our study, the differences in opinions towards the influenza versus the COVID-19 vaccine were informative.

Lastly, in a study assessing COVID-19 vaccine hesitancy amongst Arabs living in various countries, Arabs living in North America were more willing to receive the COVID-19 vaccine than those in all other countries assessed (Qunaibi et al., 2021). This is important because our study has implications for vaccination behaviors more broadly. In particular, the ways in which acculturation

and immigration impact vaccine hesitancy are relatively understudied. Our findings indicate that there may be shifts in vaccination behavior related to increased knowledge or interactions with the healthcare system in the U.S. that may not be reflected in Arab populations in other parts of the world.

Our study, by virtue of the sample distribution, offers insight into the complexity of vaccine *willingness* which may support future strengths-based interventions for COVID-19 vaccine uptake and understanding other vaccine campaigns in the future beyond COVID-19. For example, our study highlights health and vaccines more broadly as a social-relational process (Glass et al. 2023). Vaccine education and public health outreach in a peer-to-peer manner and within-families may be a potential path forward for lessening ethnic health disparities regarding vaccination. A social-relational approach underscores that health disparities and responses to disparities cannot focus solely on individual behavioral intervention but on communities and the social processes foundational to health perception and behavior. At the same time, we offer insights into the nuances of COVID-19 vaccine willingness and hesitancy in the larger Arab American population and how the participants in our study perceived others' decision to take or not take the COVID-19 vaccine.

To further understand the impact of the COVID-19 pandemic and vaccine willingness among Arab Americans, future studies that prioritize more varied demographic strata within Arab American sub-groups (e.g., educational status, age, immigration experiences) should be explored. Qualitative studies exploring general vaccine hesitancy amongst Arab Americans as it relates to distrust of medical institutions, misinformation, and community dynamics should be conducted, especially for influenza childhood vaccinations. Our study offers insight into how the Arab American population was impacted by the early years of the COVID-19 pandemic and can be utilized to inform policy and community initiatives to provide timely, evidence-based, and accessible scientific information and vital resources tailored to the Arab American population during the continuing public health emergency.

To our knowledge, our study is one of the first to qualitatively examine the impact of the COVID-19 pandemic on overall well-being and COVID-19 vaccine willingness among a subset of Arab Americans. Study participants were variably impacted by the COVID-19 pandemic; some experienced negative impacts on their physical and mental well-being, and unexpectedly, others deemed it as an opportunity to better their physical and mental well-being. Participants also variably coped with the effects of the COVID-19 pandemic, including relying on community and religious values. Our findings are consistent with those previously published, which demonstrate that the negative effects of the pandemic on well-being include increased interpersonal loss and anxiety, physical disconnection from loved ones and support systems due to restrictions (Sayed et al., 2023), while the positive impacts include increased time with family and strengthening of faith (Atari-Khan et al., 2024). Our study offers insight into the complex connections between individual well-being, community identity and belonging, and health for Arab Americans while assessing the reasons behind COVID-19 vaccine willingness in individuals. This study builds upon former quantitative research on COVID-19 vaccine willingness amongst Arab Americans.

While our study offered a deep exploration into Arab American experiences with the COVID-19 pandemic and vaccine, there were limitations. Our participant pool was biased toward younger individuals with a higher educational status. We could not further explore the insights of older Arab Americans who are primarily Arabic-speaking beyond two participants. Additionally, all participants but one were willing to receive the COVID-19 vaccine and had received it. Therefore, we could not further explore COVID-19 vaccine hesitancy amongst Arab Americans

beyond one participant's data and through the stories participants told about people they knew who were vaccine-hesitant. Finally, there is potential bias associated with the qualitative interpretivist approach we undertook. Results may not be generalizable to other samples, given our influence on the interpretation of the data. While we have taken great care to ensure that our positionalities and intentions are clear, they most certainly influence our interpretations and, thus, the presented findings, as they do in any qualitative study utilizing this approach. It should be noted, though, that during our study period (April-Jul 2021), the pandemic was ongoing, states were implementing a stepwise approach to vaccine distribution stratified by risk (i.e., essential workers, elderly population), and the vaccine was in high demand and limited supply. This allowed for rich perspectives on urgency and vulnerability that could be applied to any time of crisis or resource shortage.

In particular, our study results make clear that targeted interventions to improve vaccine uptake are needed in Arab American populations. Our results indicate that these interventions need to be responsive to the misinformation present in the community and directly address concerns about vaccine hesitancy. Interventions should relay knowledge rooted in the historical systems that have influenced Arab Americans' lived experiences, including their fears of surveillance and distrust in government responses. Additionally, these interventions should build upon the cultural strengths of Arab American populations, focusing on the social responsibility and health promotion tendencies we observed in our interviews.

Overall, our study characterizes how Arab Americans in this study experienced the COVID-19 pandemic, with detailed accounts of the decision-making process for taking the COVID-19 vaccine, the ways the pandemic influenced their multi-faceted well-being, as well as unique challenges facing Arab Americans in the COVID-19 pandemic. Future research should expand upon specific dimensions of social experience, with special attention on regional variation in vaccine willingness and attention to specific socioeconomic and sociodemographic stratification.

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## Ethical Statement

The Institutional Review Board at Boston College approved this study (IRB 21.265.01e). All participants provided written informed consent prior to enrollment in the study.

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**Conflict of Interest Statements**

The authors have no conflicts of interest to declare.

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**Notes on Contributors**

NZ and DG trained other members of the team on qualitative health methods, specifically the use of qualitative interviewing, codebook development, coding, and thematic analysis. DG, NZ, and MT wrote the interview guide in English and DG translated the interview guide into Modern Standard Arabic. NZ, DG, MT, FH, and SA all contributed to interviewing participants and quality-checking transcriptions, SZ quality-checked transcriptions, and NA supervised the team throughout. NZ, DG, and MT conducted all qualitative coding and thematic analysis and writing of the manuscript. All authors contributed to revisions and approved the final manuscript.

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