



RESEARCH ARTICLE

Open Access

Changing AAPI Knowledge, Attitude, and Practice (KAP) Toward COVID-19 Pandemic in Pima County

Howard J. Eng, MS, DrPH*

Department of Community, Environment & Policy, Mel and Enid Zuckerman College of Public Health, The University of Arizona, Tucson, Arizona.

ABSTRACT

Background: COVID-19 had significantly impacted on the Asian American and Pacific Islander (AAPI) populations in Pima County. The *Arizona and COVID-19 Update Articles* (ACUA) were established to provide the latest COVID-19 information, to encourage preventive health behaviors, and to reduce the anxiety levels associated with the virus. The ACUA used the Health Belief Model as its framework. The articles addressed two of three World Health Organization dimensions of health (physical and mental). There had been 24 issues published. After two-year, an assessment was conducted to determine whether there was still a need for the articles and their impacts.

Methods: This was a cross-sectional study. A KAP survey was used to collect information on knowledge gain, information usefulness, attitude/belief changes, behavior changes, and anxiety reduction. A convenience sample of AAPI leaders, community members, and health professionals was used.

Results: The ACUA increased knowledge in all five areas examined. Of the five areas, more than 75 percent of the respondents indicated the knowledge gained were useful in four areas. Of the respondents, 96 percent practice preventive COVID health behaviors regularly and 80 percent were fully vaccinated for COVID and gotten their boosters.

Conclusion: Three-quarter of the respondents indicated that the articles are still useful and needed. The Health Belief Model was an effective framework used in the ACUA to accomplish its health promotional goals. This health educational approach could be used in minority and underserved communities during the COVID-19 pandemic.

ARTICLE HISTORY

Received 03 Aug, 2022

Accepted 11 Aug, 2022

Published 16 Aug, 2022

KEYWORDS

COVID-19, Health Belief Model, health promotion, KAP survey, Pima County, Asian American and Pacific Islanders.

Introduction

This is the third year of COVID-19 (Coronavirus) pandemic. The virus is also known as severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). It is a respiratory disease (attacks primarily the lungs) that spreads by person to person through respiratory droplets (coughs, sneezes, and talks), and contaminated surfaces and objects. COVID-19 has passed the half billion cases in the world. On July 27, 2022 Johns Hopkins University [1] reports that there were 573,811,593 total confirmed cases and 6,393,435 deaths associated with the virus in the world. The United States (U.S.) has the highest total cases (90,973,418) and deaths (1,028,819) in the world [1]. During the COVID-19 Pandemic, many Asian Americans and Pacific Islanders (AAPIs) are not included in the coronavirus health education and promotion endeavors due to language, cultural, and health belief barriers and limited available public health resources and funding.

During December 2019, there were many Chinese Americans who closely monitored the outbreak of the COVID-19 in China.

They were concern about the health and well-being of their relatives and friends in China and the virus coming to the United States. The coronavirus had a significant impact on the Chinese communities before most Americans were aware of its existence. During January and February 2020, several Chinatowns were becoming ghost towns – the restaurants were nearly empty, and the streets had very little foot traffic. Well known politicians encouraged the public to visit the Chinatown shops and restaurants, and to attend the Chinese Luna New Year events. Many of these events were cancelled.

Even in Pima County, Arizona where there is a small Chinese community (8,119 in 2020) [2] was affected, parents would not let their children attend Chinese school or participate in school related community activities. Several planned Chinese Luna New Year community events were cancelled. One could see the rising anxiety level in the Chinese population about the virus; even though, there was no reported coronavirus cases in Pima County. There was a need to reduce the anxiety level and to increase the community ability to tackle the virus.

Contact: Howard J. Eng, MS, DrPH; E-mail: hjeng@email.arizona.edu. Associate Professor Emeritus, Department of Community, Environment & Policy, Mel and Enid Zuckerman College of Public Health, the University of Arizona.

© 2022 The Authors. This is an open access article under the terms of the Creative Commons Attribution NonCommercial ShareAlike 4.0 (<https://creativecommons.org/licenses/by-nc-sa/4.0/>).

To reduce the anxiety level and to increase the Chinese community capability to tackle the virus, the *Arizona and COVID-19 Update Article* (ACUA) was established to disseminate the latest COVID-19 information, to encourage preventive health behaviors, and to reduce the anxiety level associated with the virus. The ACUA were shared with the Chinese community, Asian American and Pacific Islander (AAPI) community leaders and members in the county, AAPI Pre-Health students at the University of Arizona, health leaders and experts, and interested persons. The first issue of the ACUA was published on April 8, 2020 (*The Corona Virus*). Since then, there had been 24 issues published. The latest issue: *Arizona and COVID-19: Summer Surge 2022* was published on July 6, 2022.

Pima County is the second most populated county in Arizona (1,052,030 in 2021) [3]. The county is in the southern part of the state. It covers 9,184 square miles [4] which is larger than the state of New Jersey (8,723 square miles) [5]. The Arizona Department of Health Services reports there were 279,033 county COVID-19 cases and 3,924 deaths on July 27, 2022 [6]. In 2021, 3.5 percent of the county residents were Asian Americans and Pacific Islanders (race *alone*) [3]. In 2020, the top six Asian American ethnic populations (race alone) in Pima County were: (1) Chinese – 8,119, (2) Filipino – 5,697, (3) Asian Indian – 4,066, (4) Vietnamese – 3,862, (5) Korean – 2,735, and (6) Japanese – 1,427 [2]. The top three Pacific Islander populations (race alone) were (1) Native Hawaiian – 489, (2) Chamorro – 269, and (3) Samoan – 220 [2].

The *Arizona and COVID-19 Article* uses the Health Belief Model as its framework to increase COVID-19 knowledge, to establish a positive attitude/belief about coping with the virus, and to practice preventive behaviors to reduce the risks of getting the coronavirus and improve health outcome (e.g., reduce the coronavirus anxiety). The ACUA also addresses two of three World Health Organization dimensions of health: the physical – being infected by the virus and the mental – uncertainty, lack knowledge and control of the situation that leads to anxiety. The ACUA does not address the social – being isolated from people, except for the first three issues.

Each of the *Arizona and COVID-19 Update Articles* has a theme (e.g., COVID-19 and CDC guidelines, Arizona Reopening, Arizona and the COVID-19 rising cases, and Arizona’s vaccine phase). The two-page ACUA is published as needed. There are six major topic areas: (1) COVID-19 definition, etiology, and case classifications, (2) COVID-19 statistics, (3) CDC, Arizona, Pima County, City of Tucson guidelines/regulations, (4) preventive health practices, (5) tips on anxiety/depression/stress reduction, and (6) other relevant information. The ACUA contents evolve as more is known about the virus, as new treatment and vaccines becomes available, and as new data become available.

After two-years, an assessment survey is conducted to determine if ACUA is still needed and its impact on the AAPI population. Most of the Pima County AAPI population have determined how to live with the coronavirus (e.g., when to wear a mask, what preventive health behaviors to practice, and what activities to participate in). There are many COVID-19

information sources used by the AAPI to keep up with the virus. It is expected that the ACUA is no longer needed.

Methods

This was a cross-sectional study. A KAP survey was used to collect information on knowledge gain, information usefulness, attitude/belief changes, behavior changes, and anxiety reduction. The survey comprised of 10 questions that was sent to 38 AAPI ACUA users (21 leaders, 8 community members, and 9 health professionals). A convenience sample was used. Only those, who had an email address received a survey. There were two email follow up sent to increase the response rate.

There were several limitations to the assessment. The survey was not sent to those who did not understand English and did not have access to email. The responses were either “yes” or “no.” There was no attempt to determine the amount of change.

Results

The topics included in each of the *Arizona and COVID-19 Update Articles* are summarized below in Table 1. There are 13 topics listed. An “X” indicates at least one item listed within the topic was included in the article.

Table 1: Arizona and COVID-19 Update Articles: Topic Summary.

Issue and Date	a	b	c	d	e	f	g	h	i	j	k	l	m
1 04-08-20	x	x				x			x	x	x	x	x
2 04-29-20	x	x				x	x		x	x	x	x	x
3 05-13-20	x	x				x	x		x	x	x	x	x
4 06-29-20	x	x	x				x	x	x	x		x	x
5 08-08-20	x	x	x				x	x	x	x		x	x
6 09-12-20	x	x	x						x				x
7 10-31-20	x	x	x						x	x			x
8 11-28-20	x	x	x	x				x	x	x			x
9 01-02-21	x	x	x	x				x	x	x			x
10 01-30-21	x	x	x	x	x				x	x			x
11 03-06-21	x	x	x	x	x		x		x	x			x
12 04-03-21	x	x	x	x	x		x		x	x			x
13 05-01-21	x	x	x	x	x		x		x	x			x
14 06-05-21	x	x	x	x	x				x	x			x
15 07-03-21	x	x	x	x	x				x	x			x
16 07-31-21	x	x	x	x	x				x	x			x
17 09-04-21	x	x	x	x	x				x	x			x
18 11-06-21	x	x	x	x	x				x	x			x
19 12-11-21	x	x	x	x	x				x	x			x
20 01-29-22	x	x	x		x				x	x			
21 02-26-22	x	x	x		x				x	x			
22 03-23-22	x	x	x		x				x	x			
23 06-08-22	x	x	x		x				x	x			
24 07-06-22	x	x	x		x				x	x			

- a. COVID-19 definition, etiology, and case classifications
- b. World, United States, Arizona, and Pima County COVID-19 case, hospitalization, and death numbers and trends
- c. United States and Arizona COVID-19 total testing numbers and positive percentages
- d. United States total cases numbers, and active infection, recovery, and death percentages
- e. United States, Arizona, and Pima County COVID-19 vaccine numbers and trends

- f. Centers for Disease Control and Prevention (CDC) COVID-19 guidelines
- g. Arizona Governor’s COVID-19 Executive Orders
- h. Pima County and City of Tucson COVID-19 ordinances
- i. COVID-19 preventive health practices
- j. Treatment and vaccine information
- k. Social health information – tips that increases personal interactions through technology
- l. Tips on reducing anxiety/depression/stress associated with the virus
- m. Other useful recommendations

Of the 38 AAPI users who were sent a survey, 25 completed and returned their surveys (65.8% total response rate). The initial email response percentage was 31.6% (12). The two follow up emails doubled the response rate (first – 13.2% - 5 and second – 21.0% - 8). The responses were to be answered as “Yes” or “No,” but there were unexpected blank responses.

Table 2 summarizes the knowledge gains. Of the five major areas in the articles examined, the largest gain in knowledge was the Centers for Disease Control and Prevention (CDC), Arizona, Pima County, and Tucson COVID-19 guidelines/regulations (92% of the respondents). This was followed by the coronavirus related statistics (88%).

Table 2: Arizona and COVID-19 Update Article Knowledge Gain.

The <i>Articles</i> increased my knowledge about:	Yes %	No %	DNA %
a. COVID case, hospitalization, death, and vaccination statistics.	88	4	8
b. CDC, Arizona, Pima County, and Tucson COVID guidelines/regulations.	92	4	4
c. Preventive COVID health behaviors.	80	12	8
d. Tips on anxiety/depression/stress reduction related to COVID.	76	16	8
e. COVID vaccines and drug treatments.	84	4	12

DNA: Did Not Answer

The most useful article information provided were COVID-19 related statistics and coronavirus guideline/regulation updates (88%). The lowest percentage of useful information provided was tips on how to reduce anxiety/depression/stress related to the virus (60%). The usefulness of the knowledge gain is summarized in Table 3.

Table 3: Usefulness of *Arizona and COVID-19 Update Article* Knowledge Gained.

Which of the <i>Article</i> provided information below have been useful to me?	Yes %	No %	DNA %
a. COVID case, hospitalization, death, and vaccination statistics.	88	4	8
b. CDC, Arizona, Pima County, and Tucson COVID guidelines/regulations.	88	4	8
c. Preventive COVID health behaviors.	80	16	4
d. Tips on anxiety/depression/stress reduction related to COVID.	60	24	16
e. COVID vaccines and drug treatments.	76	8	16

DNA: Did Not Answer

Table 4 summarizes the impact on the ACUA users. Ninety-six percent of the respondents indicated that the articles kept them inform of the COVID-19 trends. The articles encouraged 88 percent of the respondents to practice preventive health

behavior. Of the respondents, 96 percent practice preventive COVID-19 health behaviors regularly and 80 percent were fully vaccinated for the virus and gotten their boosters. The articles had less of an impact on maintaining a positive attitude about coronavirus (76%) and reduce their anxiety level associated with the virus (64%). Three-quarter of the respondents indicated that the articles are still useful and needed.

Table 4: *Arizona and COVID-19 Update Article* Impact.

Question	Yes %	No %	DNA %
The <i>Articles</i> keep me inform of the COVID trends.	96	4	0
The <i>Articles</i> help me to maintain a positive attitude about COVID.	76	16	8
The <i>Articles</i> encourage me to practice preventive health behaviors.	88	8	4
The <i>Articles</i> help to reduce my anxiety level associated with COVID.	64	20	16
I practice preventive COVID health behaviors regularly.	96	0	4
I am fully vaccinated for COVID and gotten my booster(s).	80	16	4
The <i>Article</i> is still useful and needed.	76	16	8

DNA: Did Not Answer

The last survey question was opened ended for comments. Fourteen respondents answered the question. These were the comments provided (in parentheses indicates the number of similar answers): information appeared in other sources (4); information helpful (3); helpful in assessing local conditions (3); a lot of COVID mis-/dis-information (2); publish quarterly (2); publish as needed; helpful in providing COVID guidelines; article informative; article useful to combat disinformation; the articles so clearly provide the data; do increased my knowledge about COVID; your issues are too detailed for me. I prefer a summary document highlighting the succent points. Others may prefer the details you provide; did not take the booster shot due to severe reaction to the second shot; articles provide objective information regarding COVID; articles on the status of COVID and projections of its spread would be useful information; and if you stop doing the articles, where should we look for the information that is most reliable without having to go thru a lot of fake news.

The many thank you and appreciative comments were not included above.

Discussion

In 2020, the U.S. Census reports the Pima County AAPI population is 47,944 (for race alone and combination) [2]. There are many challenges working with AAPI populations in the county. They are small in numbers, reside throughout the county, and difficult to outreach. There is language, cultural, and health belief and practice barriers. These populations do not easily open-up to outsiders. Outreaching to these groups require innovative health education and promotion approaches. Since the author has good working relationship with many of the community leaders, they have been willing to receive and use the *Arizona and COVID-19 Update Articles*, and share the ACUA with their community members.

During the pandemic, the Health Belief Model has been used by many communities health promotional projects in the world [7-12]. In this project, the Model is also used. The articles provide timely, consistent, dependable, and understandable information, encourage preventive health behaviors, and identify ways to reduce the anxiety.

The project accomplished its health promotional goals. There were knowledge gains in all five areas examined. In four areas, more than 75 percent of the respondents indicated the knowledge gained were useful in four areas. The areas receiving the most attention in the articles were (1) provide latest COVID-19 statistics, vaccine/therapeutic information, and guidelines/regulations, (2) encourage preventive health behaviors, and (3) maintain positive attitude and reduce anxiety. Ninety-six percent of the respondents indicated that the articles kept them inform of the COVID-19 trends. During the first 13 months of the pandemic, there were many significant guideline/regulations enacted and these were reported in the articles. Eighty-eight percent of the respondents indicated this information was useful. Of the respondents, 96 percent practiced preventive COVID health behaviors regularly and 80 percent were fully vaccinated for COVID and gotten their boosters.

There were many challenges in maintaining a positive attitude and reducing anxiety levels. Few of these were the uncertainty of the virus, periodic COVID-19 case surges, constant emergent of new variants, vaccine limitations (e.g., waning coverage and not as effective against later variants), and no end to the virus. The articles had less of an impact on maintaining a positive attitude about coronavirus (76%) and reduce their anxiety level associated with the virus (64%).

Conclusion

The Health Belief Model was an effective framework used in the ACUA to accomplish its health promotional goals. This

health educational approach could be used in minority and underserved communities during COVID-19 pandemic. Three-quarter of the respondents indicated that the articles are still useful and needed.

References

1. <https://coronavirus.jhu.edu/>.
2. <https://data.census.gov/cedsci/table?g=0500000US04019>.
3. <https://www.census.gov/quickfacts/fact/table/pimacountyarizona,US>.
4. <https://www.azcommerce.com/a/profiles/ViewProfile/12/Pima+County/>.
5. <https://www.usnews.com/news/best-states/new-jersey>.
6. <https://www.azdhs.gov/covid19/data/index.php>.
7. Zewdie A, Mose A, Sahie T, Bedewi J, Gashu M, et al. The health belief model's ability to predict COVID-19 prevention behavior: A systematic review. *SAGE Open Medicine*. 2022; 10: 1-10.
8. Park S, Oh S. Factors associated with preventive behaviors for COVID-19 among adolescents in South Korea. *Journal of Pediatric Nursing*. 2022; 62: e69-e76.
9. Small E, Schneider KE, DeLong SM, Willis K, Renata Arrington-Sanders, et al. Health Beliefs and Preventive Behaviors Among Adults During the Early COVID-19 Pandemic in the United States: a Latent Class Analysis. *Preventive Science*. 2021; 22: 1013-1022.
10. Alagili DE, Bamashmous M. The Health Belief Model as an explanation framework for COVID-19 prevention practices. *Journal of Infection and Public Health*. 2021; 14: 1398-1403.
11. Karimy M, Bastami F, Sharifat R, Babaei A, Naser Hatamzadeh, et al. Factors related to preventive COVID-19 behaviors using health belief model among general population: a cross-sectional study in Iran. *BMC Public Health*. 2021; 21: 1934-1942.
12. Mahindaratne PP. Assessing COVID-19 preventive behaviours using the health belief model: A Sri Lankan study. *Journal of Taibah University Medical Sciences*. 2021; 16(6): 914-919.