

**Preference of Health-related Learning Modalities Among  
Asian Americans in Maricopa County**

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## Abstract

Asian Americans are the fastest growing racial/ethnic group in the United States, with more than 60% of its members being foreign born, and 30% of limited English proficiency. Often perceived as the healthy and wealthy “Model Minority,” Asian Americans in fact suffer disproportionately in a number of areas of health, such as liver cancer and diabetes. There is a paucity of evidence-based interventions specifically adapted for and tested among Asian American to address these health disparities. We therefore aimed to investigate the preferred learning modalities in this population. We utilized a brief questionnaire to investigate how Asian Americans residing in Maricopa County prefer to learn and build skills related to health improvement. The results suggest that there is no dominant preference for learning modalities among Asian Americans; therefore, modalities in both individual and group learning should be offered. The only group that shows a statistically significant preference for individual learning is the respondents with postsecondary education. Consequently, in addition to group interventions such as the Diabetes Prevention Program, researchers should consider developing self-guided training on-line and through printed materials. This initial

research will help guide future efforts to educate the Asian American populations on diabetes prevention and other health conditions.

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## **Introduction**

### Background

The Diabetes Prevention Program (DPP), funded by the National Institute of Diabetes and Digestive and Kidney Diseases from 1996 to 2003, has shown that intensive lifestyle intervention can prevent or slow down the progression to type 2 diabetes in prediabetic individuals<sup>1, 2</sup>; however, the program was developed for the English- and Spanish-speaking population and has not been specifically tested among populations speaking other languages and culturally diverse groups such as Asian Americans. The initial purpose of the present study was to adapt the existing DPP to a culturally-appropriate delivery method in order to benefit the Asian American and Pacific Islander (AAPI) communities. A one-hour dietary education program/workshop was developed, and participants were recruited at free preventive screening clinics hosted by Asian Pacific Community in Action (APCA), a non-profit organization serving AAPIs in Maricopa County.

Unfortunately, screening clinic participants were unwilling or unable to attend educational workshops; therefore, it was decided that the study objective would be better directed towards understanding the

preferred mode of health-related learning (i.e., health information and related skills) among Asian Americans. A literature search was performed in an effort to identify how Asian Americans prefer to learn about health. The search was performed on PubMed with MeSH headings of “Asian Continental Ancestry Group” and “Health Education” and keyword of “learning”. The search failed to reveal any studies on this subject in the English scientific literature. In fact, the one study that had recruited Southeast Asian female participants eventually excluded them from the focus-group analysis because “the needs and interests of this population of first-generation immigrants were dramatically different from those of the other EFNEP clients”<sup>3</sup>. There is one study published in the Chinese literature showing that a majority of 64.3% of the subjects prefer to learn about nutrition health knowledge from “popular science propaganda”, which is not a modality that can be replicated here in the United States<sup>4</sup>.

For comparison, a literature search was performed on PubMed with MeSH headings “Hispanic Americans” or “European Continental Ancestry Group” and “Health Education” and keyword of “learning”. There is one study of breast cancer patients and online learning that shows the participants benefit more from using a variety of learning

tools (audiovisual and text) than from text-only information<sup>5</sup>. It also demonstrates that African Americans use and benefit more from online learning than do Caucasians<sup>5</sup>. Another study of Hispanic adults with type 2 diabetes and low literacy compares the preference for four learning styles, namely visual (seeing), kinesthetic (doing), affective (feeling/sensing), and cognitive (thinking). The results suggest that kinesthetic task to be the easiest to be understood by the subjects while cognitive tasks to be the most difficult<sup>6</sup>. There are quite a few studies evaluating the efficacy of different modalities in the Hispanic communities, e.g., education classes/workshops with Spanish-speaking instructors, promotores-led self-management programs, and printed materials<sup>7-10</sup>. However, these studies did not compare the popularity or efficacy of the different learning modalities.

### Significance

According to the 2010 US Census, Asian Americans are the fastest growing racial/ethnic group in the United States and also in Maricopa County (table 1). While still laboring under the monolithic label of the “model minority,” the Asian American population is in fact highly diverse in terms of socioeconomic status, educational

attainment, and other social determinants of health. For instance, poverty rates approach 30% for some Asian American subgroups. In addition, more than 60% of Asian Americans are foreign born, and more than 30% lack proficiency in the English language.

Health status data for Asian Americans in aggregate suggest a healthy population. However, there are some areas of health disparity. For instance, it is estimated that Asian Americans constitute close to 50% of the 1.4 million Americans chronically infected with the hepatitis B virus, even though they constitute only 4% of the nation's population<sup>11</sup>. Asian Americans also have the highest race-specific rate of tuberculosis incidence<sup>12</sup> and underutilize preventive services such as colorectal, breast, and cervical cancer screening when compared to non-Hispanic whites<sup>13-15</sup>. Furthermore, selected subgroups of Asian Americans have high rates of tobacco use<sup>16-18</sup>.

As Asian Americans continue to grow in population size (they are estimated to become 10% of the total US population by 2040), it is imperative that prevention-focused public health efforts to address the aforementioned health disparities. However, there is a paucity of evidence-based interventions specifically adapted for and tested among Asian American subgroups. Indeed, a review of MEDLINE found that

only 0.01% of studies referenced Asian Americans (and Pacific Islanders) as a studied group<sup>19</sup>.

Some very basic information relating to health education and awareness efforts among Asian Americans is still lacking. For instance, do Asian Americans prefer to access new health information on an individual basis or in a group setting? Is on-line education preferred to classroom based teaching? Answers to these and other questions relating to how Asian Americans best access and utilize health information is a key consideration in developing effective health programs for this rapidly growing racial/ethnic group.

#### Aims/Goals/Hypothesis

To identify preferred learning modalities related to health information and skills among Asian American residents of Maricopa County and to determine whether the preference varies with different demographics, namely ethnicity, gender, age and education level.

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**Table 1.** Asian American/Pacific  
Islander Population in Maricopa  
County<sup>20, 21</sup>

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| Year | Total<br>population | AAPI<br>population |
|------|---------------------|--------------------|
| 1990 | 2,122,101           | 36,294 (1.7%)      |
| 2000 | 3,072,149           | 70,851 (2.3%)      |
| 2006 | 3,768,123           | 115,422 (3.1%)     |

## **Research Materials and Methods**

This study was exempted from IRB review. A short questionnaire was developed to investigate how Asian Americans prefer to receive health education/skill building information, i.e., independent learning versus group learning (see appendix for a copy of the survey instrument). Questions were translated into Traditional Chinese, Vietnamese and Korean. Demographics of the respondents, e.g., age, U.S vs. foreign-born, ethnicity, education level, language spoken at home, were collected as well (table 2). The questionnaires were distributed at events hosted by a non-profit health promotion agency known as the Asian Pacific Community in Action, from September to December of 2011. Respondents completed the questionnaire on their own; a total of 129 surveys were collected. The results were tabulated by age, gender, ethnicity, and education level. Statistical significance was determined by chi-square test.

**Table 2.** Demographics of questionnaire respondents (n = 129)

| Ethnicity  | N  | %     | Age                     | n  | %     |
|------------|----|-------|-------------------------|----|-------|
| Chinese    | 84 | 65.1% | ≤ 53 years              | 62 | 48.1% |
| Korean     | 14 | 10.9% | > 53 years              | 56 | 43.4% |
| Vietnamese | 24 | 18.6% | No answer               | 11 | 8.5%  |
| Caucasian  | 2  | 1.6%  |                         |    |       |
| Mixed race | 3  | 2.3%  |                         |    |       |
| No answer  | 2  | 1.6%  |                         |    |       |
| Gender     | N  | %     | Education level         | n  | %     |
| Male       | 45 | 34.9% | High school or less     | 51 | 39.5% |
| Female     | 69 | 53.5% | Postsecondary education | 75 | 58.1% |
| No answer  | 15 | 11.6% | No answer               | 3  | 2.3%  |

## Results

A total of 129 questionnaires were collected from the various distribution locations, of which 31 were excluded from analysis due to incorrect completion. The mean and median age of the respondents were 50 and 53 years old respectively.

Of the 98 questionnaires analyzed, 57 respondents (58%) claimed a preference for learning on their own, and 41 respondents (42%) stated a preference to learn in a group setting. The difference between the two groups is determined by chi-square test to be not statistically significant ( $p$ -value = 0.09). Subgroup analysis by demographics is shown in Tables 2a through 2d. The only category that shows significant preference for individual learning is respondents with postsecondary education ( $p$ -value = 0.01\*).

The most popular modality is on-line self-guided instruction ( $n$  = 30, 52.6%), followed by self-guided instruction through a workbook ( $n$  = 17, 29.8%) and then personalized counseling by phone ( $n$  = 6, 10.8%). The same trend is observed in subgroup analysis by gender, age, and individuals who are Chinese and respondents with postsecondary education (see tables 3a through 3d). However, for Vietnamese respondents, they prefer the use of workbook ( $n$  = 5) to online

instruction (n = 3) or phone counseling (n = 1). For Korean respondents, online instruction is the preferred modality, while individuals who have a high school education or less prefer to learn from workbook.

Question 3 addresses the different modalities for group learning. Due to mistakes in the Korean translation of the questionnaire, 3 respondents were excluded from this portion of the analysis. The most popular modality is hand-on activities (n = 17, 41.5%), followed by seminar/lecture (n = 12, 29.3%) and then group discussion/dialogue (n = 7, 17.1%). The same trend is observed in subgroup analysis by ethnicity (Chinese and Vietnamese), individuals over 53 years old, and individuals with postsecondary education (see tables 4a through 4d). For the group 53 years old or younger, they prefer hands-on activities, followed by group discussion/dialogue (n = 3). For individuals with a high school education or less, and female respondents, the preferred modality is hands-on activities. For male respondents, they prefer seminar/lecture (n = 7) to hands-on activities (n = 6) or group discussion/dialogue (n = 2).

**Table 3a.** Preference for learning individually versus in a group setting by ethnicity

| Ethnicity  | On your own | In a group setting | X <sup>2</sup> | p-value |
|------------|-------------|--------------------|----------------|---------|
|            | (n = 57)    | (n = 41)           |                |         |
| Chinese    | 37          | 28                 | 1.25           | 0.26    |
| Korean     | 8           | 4                  | 1.33           | 0.25    |
| Vietnamese | 10          | 5                  | 1.67           | 0.20    |
| Caucasian  | 0           | 2                  |                |         |
| Mixed race | 1           | 2                  |                |         |
| No answer  | 1           | 0                  |                |         |

**Table 3b.** Preference for learning individually versus in a group setting by gender

| Gender    | On your own | In a group setting | X <sup>2</sup> | p-value |
|-----------|-------------|--------------------|----------------|---------|
|           | (n = 57)    | (n = 41)           |                |         |
| Male      | 22          | 15                 | 1.32           | 0.25    |
| Female    | 29          | 22                 | 0.96           | 0.33    |
| No answer | 6           | 4                  |                |         |

**Table 3c.** Preference for learning individually versus in a group setting by median age

| Age        | On your own | In a group setting | X <sup>2</sup> | p-value |
|------------|-------------|--------------------|----------------|---------|
|            | (n = 57)    | (n = 41)           |                |         |
| ≤ 53 years | 30          | 19                 | 2.47           | 0.12    |
| > 53 years | 23          | 21                 | 0.09           | 0.76    |
| No answer  | 4           | 1                  |                |         |

**Table 3d.** Preference for learning individually versus in a group setting by education level

| Education level         | On your own | In a group setting | X <sup>2</sup> | p-value |
|-------------------------|-------------|--------------------|----------------|---------|
|                         | (n = 57)    | (n = 41)           |                |         |
| High school or less     | 16          | 18                 | 0.12           | 0.73    |
| Postsecondary education | 40          | 21                 | 5.92           | 0.01*   |
| No answer               | 1           | 2                  |                |         |

\*Statistically significant

**Table 4a.** Individual learning modalities by ethnicity

| Ethnicity  | Online<br>(n = 30) | Phone<br>(n = 6) | Workbook<br>(n = 17) | Other<br>(n = 4) |
|------------|--------------------|------------------|----------------------|------------------|
| Chinese    | 23                 | 4                | 9                    | 1                |
| Korean     | 4                  | 1                | 1                    | 1                |
| Vietnamese | 3                  | 1                | 5                    | 2                |
| Caucasian  | 0                  | 0                | 0                    | 0                |
| Mixed      | 0                  | 0                | 1                    | 0                |
| No answer  | 0                  | 0                | 1                    | 0                |

**Table 4b.** Individual learning modalities by gender

| Gender    | Online<br>(n = 30) | Phone<br>(n = 6) | Workbook<br>(n = 17) | Other<br>(n = 4) |
|-----------|--------------------|------------------|----------------------|------------------|
| Male      | 12                 | 1                | 9                    | 1                |
| Female    | 15                 | 4                | 7                    | 3                |
| No answer | 3                  | 1                | 1                    | 0                |

**Table 4c.** Individual learning modalities by median age

| Age        | Online<br>(n = 30) | Phone<br>(n = 6) | Workbook<br>(n = 17) | Other<br>(n = 4) |
|------------|--------------------|------------------|----------------------|------------------|
| ≤ 53 years | 14                 | 5                | 8                    | 3                |
| > 53 years | 13                 | 1                | 8                    | 1                |
| No answer  | 3                  | 0                | 1                    | 0                |

**Table 4d.** Individual learning modalities by education level

| Education level         | Online<br>(n = 30) | Phone<br>(n = 6) | Workbook<br>(n = 17) | Other<br>(n = 4) |
|-------------------------|--------------------|------------------|----------------------|------------------|
| High school or less     | 4                  | 4                | 7                    | 3                |
| Postsecondary education | 26                 | 2                | 9                    | 1                |
| No answer               | 0                  | 0                | 1                    | 0                |

**Table 5a.** Group learning modalities by ethnicity

| Ethnicity  | Seminar<br>(n = 12) | Discussion<br>(n = 7) | Hands-on<br>(n = 17) | Other<br>(n = 2) |
|------------|---------------------|-----------------------|----------------------|------------------|
| Chinese    | 10                  | 6                     | 11                   | 1                |
| Korean     | 0                   | 0                     | 0                    | 0                |
| Vietnamese | 1                   | 0                     | 4                    | 1                |
| Caucasian  | 0                   | 0                     | 2                    | 0                |
| Mixed      | 1                   | 1                     | 0                    | 0                |
| No answer  | 0                   | 0                     | 0                    | 0                |

**Table 5b.** Individual learning modalities by gender

| Gender    | Seminar<br>(n = 12) | Discussion<br>(n = 7) | Hands-on<br>(n = 17) | Other<br>(n = 2) |
|-----------|---------------------|-----------------------|----------------------|------------------|
| Male      | 7                   | 2                     | 6                    | 1                |
| Female    | 5                   | 5                     | 11                   | 1                |
| No answer | 0                   | 0                     | 0                    | 0                |

**Table 5c.** Group learning modalities by median age

| Age        | Seminar<br>(n = 12) | Discussion<br>(n = 7) | Hands-on<br>(n = 17) | Other<br>(n = 2) |
|------------|---------------------|-----------------------|----------------------|------------------|
| ≤ 53 years | 0                   | 3                     | 8                    | 0                |
| > 53 years | 6                   | 4                     | 8                    | 2                |
| No answer  | 6                   | 0                     | 1                    | 0                |

**Table 5d.** Group learning modalities by education level

| Education level         | Seminar<br>(n = 12) | Discussion<br>(n = 7) | Hands-on<br>(n = 17) | Other<br>(n = 2) |
|-------------------------|---------------------|-----------------------|----------------------|------------------|
| High school or less     | 5                   | 5                     | 6                    | 2                |
| Postsecondary education | 6                   | 1                     | 11                   | 0                |
| No answer               | 2                   | 1                     | 0                    | 0                |

## **Discussion**

The results from the survey seem to suggest that there is no dominant preference for learning modalities among Asian Americans; therefore, modalities in both individual and group learning should be offered. The only group that shows a statistically significant preference for individual learning is the respondents with postsecondary education ( $p$ -value = 0.01). The most popular individual learning modality is online self-guided instruction. The multilingual materials in lifestyle intervention available on the Internet can be the basis for developing an interactive website for self-guided instruction. For group learning modalities, seminar/lecture is the second most popular, and it may be worthwhile to offer the one-hour dietary education program again to the Chinese community when a larger number of prediabetic patients are identified at a screening clinic.

There are several limitations to this study. First, the sample size is relatively small ( $n = 129$ ). Second, the survey was distributed at events hosted by APCA, so it is not a randomized sample. Third, the majority of respondents are Chinese ( $n = 84$ , 65.1%). Since the Asian American populations are a heterogeneous group, the results in this study may not be generalizable to other ethnicity groups in the Asian

American communities. Lastly, there was confusion in completion of the study questionnaire, leading to the exclusion of a large number of completed questionnaires or to interpretation by the study investigators of some submitted responses. More thorough pilot testing of the survey instrument would have helped to prevent the confusion related to the questionnaire's instructions.

## **Future Directions**

Asian Americans are the fastest growing racial/ethnic group in the United States. The evidence base related to effective health promotion interventions among these groups is growing, though currently weak. More culturally adapted intervention research is needed. Our research is a first step in better understanding the preference among Asian Americans for the modality of delivery of health education and promotion information and skills development. Additional research in this area may provide foundational information in the development of effective, culturally adapted health interventions. One example of further research will be to expand the survey to include whether learning preferences differ for different health topics.

## **Conclusions**

The results presented above suggest that there is no dominant preference for learning modalities among Asian Americans.

Consequently, in addition to culturally and linguistically adapting proven group interventions such as the DPP, researchers should consider developing self-guided training on-line and through printed materials. This type of training can help extend the value of DPP results to diverse groups such as Asian Americans. This initial research will help guide future efforts to educate the Asian American populations on diabetes prevention and other health conditions.

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## Appendix A: Survey

The Asian Pacific Community in Action has a mission to improve the health of Asian Americans and Pacific Islanders in Maricopa County. The following questions are intended to help us develop educational programs that are best suited to the local Asian American and Pacific Islander communities. We would like to understand how people learn to manage healthy lifestyles and/or chronic diseases. For the purposes of this survey, please assume that all educational services would be provided in the language in which you are most comfortable. The survey is completely anonymous. Please take a few minutes to share your opinions with us.

1. For a health-related skill such as quitting smoking or managing high blood pressure, would you prefer to learn on your own or in a group setting? (Please choose ONLY one answer)

On my own  Go to question 2

In a group setting  Go to question 3

2. Which of the following formats for learning on your own would you most prefer? (Please choose ONLY one answer)

On-line self-guided instruction

Personalized counseling by phone

Self-guided instruction through a workbook

Other (Please specify) \_\_\_\_\_

3. Which of the following formats for group learning would you most prefer? (Please choose ONLY one answer)

Seminar/lecture

Group discussion/dialogue

Hands-on activities

Other (Please specify) \_\_\_\_\_

### Demographics

Age: \_\_\_\_\_

Were you born in the U.S.? Yes  No

If you were born outside of the U.S., how long have you been in the U.S.? \_\_\_\_\_ years

### Race/Ethnicity:

Chinese

Native Hawaiian

Filipino

Other Pacific Islanders

Japanese

Vietnamese

Korean

Other, please specify: \_\_\_\_\_

Language spoken at home: \_\_\_\_\_

Gender: Male  Female

### Education level:

Some elementary school

Some college

Elementary school graduate

College graduate

High school graduate

Professional/Graduate degree