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A Call to Action: Community Health Screening Data Highlight the Need to Address Hypertension among Filipino Americans in the United States

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Abstract

Background: Since the early 2000s, there has been research evidence indicating the high prevalence of hypertension among Filipinos in the United States. Recent data from Philadelphia, New York, and New Jersey show rates of hypertension as high as 63%. Rates of hypertension in South Texas and Eastern Virginia are not known.

Objective: This study describes the community health screening data of Filipinos in South Texas and Eastern Virginia. Community data can help determine health issues in a population for potential intervention.

Methods: Demographics and health screening data (blood pressure, blood glucose, hemoglobin A1c, and blood cholesterol) were collected from Filipinos who attended community health screenings in South Texas ($N = 282$) and Eastern Virginia ($N = 35$) and extracted for analysis, where available. Descriptive statistics mean or median (interquartile), min, max, standard deviation, or frequency were utilized to summarize the data.

Results: For the participants in South Texas, the median health scores were BMI = 26 kg/m^2, blood glucose = 105 mg/dL, total blood cholesterol = 173 mg/dL, systolic blood pressure = 128 mmHg and diastolic blood pressure = 78 mmHg. Approximately 70% of the South Texas participants ($N = 195$) had abnormal (> 120/80 mmHg) blood pressure readings. For participants in Eastern Virginia, the median health scores were BMI = 24 kg/m^2, blood glucose = 127 mg/dL, hemoglobin A1c = 5.65, systolic blood pressure-134 mmHg, and diastolic blood pressure = 82 mmHg. About 73% ($N = 22$) of the Eastern Virginia participants had abnormal blood pressure.

Conclusions: This study is first to report the high prevalence (≥ 70%) of hypertension among Filipinos in South Texas and Easter Virginia, which were comparable to published rates in Philadelphia and New Jersey. The alarming pattern of increase in hypertension rates among Filipinos in the US calls for an urgent need to address hypertension disparities. Culturally tailored community and evidence-based intervention to reduce hypertension in this minority population should be initiated.

Keywords: *Filipinos in the US, Filipino American, hypertension, South Texas, Eastern Virginia, health disparities, blood pressure, community health screening*

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Background

Filipino migration to the United States (US) began in the late 19th century and has been largely driven by long-standing political, military, and educational ties between the two countries (Gallardo & Batalova, 2020). Now, the US is home to the largest number of Filipino immigrants. Estimated to be about 4.2 million, Filipinos in the US is the third largest Asian origin group, after Chinese and South Asians (Mendiola, 2021). According to the American Community Survey (ACS) data, 43% of the US Filipino community professions are in management, business, science, and arts (Abad, 2020). Filipinos have filled US labor shortages in agriculture, the military, and nursing (McNamara & Batalova, 2017). Filipinos represent 28% of registered nurses among all immigrants in the US (Abad, 2020). By virtue of these jobs, these Filipinos and their families need to be healthy. To the contrary, the prevalence of chronic diseases in Filipino American population is alarming.

Due to the limited research on the health of Filipinos in the US, much information about the chronic diseases in this minority population are gleaned from aggregated studies among Asian subgroups. Disaggregated data highlight the risks of Filipinos to lifestyle modifiable chronic conditions. Since the early 2000s, studies have highlighted the risk of Filipinos Americans for chronic lifestyle modifiable disease conditions such as diabetes, hypertension, and other cardiovascular diseases. Risk factors among FAs include high blood pressure, low HDL cholesterol levels, high rates of smoking and physical inactivity, and increased body mass index (BMI) (Barnes et al., 2008; Nguyen et al., 2020 and Lapiz-Bluhm & Nguyen, 2020). Other risk factors for FA include older age, family history, stress, alcohol consumption, and chronic conditions such as high LDL cholesterol and diabetes. Traditional Filipino diets are also high in sodium and cholesterol. These studies were consistent with epidemiological reports of higher rates of cardiovascular disease (CVD) and diabetes in FAs compared to Whites, Blacks, and other Asian groups (Hastings et al., 2015).

There have been limited studies addressing hypertension among Filipinos in the US despite the risks and high hypertension rates (Nguyen et al., 2020; Lapiz & Nguyen, 2020). A review of literature on hypertension among Filipinos shows a highly disturbing pattern of increased incidence. According to the 2004-2006 National Health Interview Surveys (NHIS), 27% of Filipino American (FA) adults self-reported a diagnosis of hypertension, the highest rate among Asian subgroups, higher than Hispanics (24.1%), and almost at par with American Indians or Alaska Natives (32%) and Blacks (36%) (Barnes et al., 2008, 2010). Subsequent NHIS reports (2010-2016 and 2010-2018) highlight the high prevalence of hypertension (29%) among South Asians (Commodore-Mensah, 2018) and Southeast Asians (Koirala et al., 2021), which included FAs, although the data was aggregated. In 2013, based on health screening data among Filipino immigrants in New York City area (N = 1028), 53% of participants as hypertensive, a prevalence substantially higher than estimates obtained for Blacks (37%) and Hispanics (32%) (Ursua et al., 2013). Older age, male gender, living in the US for over 5 years, a BMI greater than 23.0 kg/m2, an elevated glucose reading, a family history of hypertension, and fair or poor self-reported health status were predictors of hypertension (Ursua et al., 2013). Ma and colleagues reported 67% of 200 self-identifying Filipinos aged 18 years or older residing in the Pennsylvania and New Jersey regions were hypertensive (Ma et al., 2018). This increasing trend in hypertension among FAs calls for an urgent need to further assess vulnerable populations in other areas of the US.

To the best of our knowledge, the rates of hypertension among FAs in South Texas (STX) and Eastern Virginia (EVA) are not known. Knowing these rates is important because these two regions are in the top ten states with the greatest number of Filipinos. Texas has the third largest population of Filipinos while Virginia ranks 10th (Pew Research Center, 2021). Filipinos living in these states are especially vulnerable due to statewide policies influencing their health profiles and access. Texas has the highest uninsured rate in the US, with nearly one-third of the state's residents not having access to health insurance (Blumenthal and Radley, 2021). Healthcare access is also an issue in Virginia. In 2019, 55% (N = 1,100) of Virginian adults experienced healthcare affordability burdens in the past year and 78% expressed worry about affording healthcare in the future (Altarum, 2021).

This study aims to describe hypertension rates among Filipinos in STX and EVA from community health screenings conducted by Filipino professional organizations in collaboration with the community. Collaborative grassroots initiatives have the potential to uncover and address health and healthcare issues relevant to the community.

Methods

Participants and Setting

South Texas. Data of Filipino participants (N = 280) from community health screenings conducted in STX between 2009 - 2020 were extracted for analysis. The health screenings were organized by the International Nursing Students Association (INSA) of the University of Texas Health Science Center at San Antonio in collaboration with local entities such as the Philippine Nurses Association of San Antonio (PNASA), the Institute of Texas Cultures which organizes the annual Asian Festival to celebrate the Chinese Lunar New Year, the Santo Nino Catholic Church which hosts the annual feast for Santo Niño de Cebu, and the Aguman Capampangan of San Antonio (ACOSA) which hosts the annual Fiesta La Naval in October.

The health screenings were open to all event attendees irrespective of race or ethnicity. The process of the health screening is as follows: at check-in, all participants signed a consent about the health screening; then completed a short health history form that included basic demographics (age, marital status, race/ethnicity), insurance status, preventive services (vaccination), and lifestyle questions (smoking, alcohol drinking, and exercise); and participants provided their weight and height, which was used for the body mass index (BMI) determination. Subsequently, health screening measures for blood pressure (BP) and blood glucose were conducted. BP measurement was done once using an automated BP machine as the noise of the activity often makes manual BP reading difficult. The BP reading was then shared with the participant and confirmed if it falls within the individual's BP range. If the reading falls outside the individual's range or was abnormally high or low, the BP was re-measured manually at least twice with a five-minute gap between each trial. Health education was provided to all participants based on their health history and screening scores and referrals to available services were provided as needed.

Eastern Virginia. On February 16, 2020, the Filipino Health Alliance (FHA) of Eastern VA conducted a community health fair in collaboration with Living Well with Diabetes, which is a 4-hour program led by two FA certified diabetes educators. The FHA organizes community health fairs across the region and in the Philippine Cultural Center. The original FHA convened the Philippine Medical Association of Southeastern Virginia, Inc. (PMA SEV), the Philippine Nurses Association of Virginia (PNAVA), and the Philippine American Medical Technicians of Virginia (PAMET) to collaboratively conduct health fairs for the Filipino health fairs for the Filipino community. The current Filipino Health Alliance includes Filipinos in health-related fields including dentistry, podiatry, physical therapy, and optometry, as well as other community organizations and home health agencies.

Community health fair participants were required to register for the Live Well with Diabetes educational session, which included a visit to the health screening booths that provided a variety of services. Demographic information (i.e., age, race/ethnicity, gender), blood pressure, pulse, height, weight, and BMI were obtained by South University nursing students (many of whom were FA) and nurse volunteers from the PNAVA. Blood glucose and HbA1C were obtained by a nurse volunteer from Eastern Virginia Medical School (EVMS) Strelitz Diabetes Center. FA Physician volunteers (i.e., family medicine, internal medicine, endocrinology) answered questions and provided education.

Ethical Approval

Use of the health screening data was approved for publication use as non-regulated research as determined by the Institutional Review Board of the University of Texas Health Science Center at San Antonio.

Data Analysis

All statistical analyses were performed in collaboration with the EVMS Healthcare Analytics and Delivery Science Institute (HADSI) using SAS version 9.4 (SAS Institute, Cary, NC). The South Texas (STX) data used for analysis included gender (male/female), age (years), marital status (single, married, divorced, widowed, unknown), exercise frequency (irregular, more than three times per week, once per week, no exercise, unknown), BMI (kg/m2), blood glucose (mg/dL), cholesterol (mg/dL), systolic and diastolic blood pressure (mmHg). The EVA data included in this analysis were gender (male/female), age (years), blood glucose (mg/dL), HbA1c (%), and systolic and diastolic blood pressure (mmHg). Descriptive statistics such as minimum, maximum, mean, median (interquartile or IQR), standard deviation and frequency were utilized to summarize the data. T-test was utilized to compare the mean of two groups. For skewed data, Wilcoxon rank-sum test has been utilized for the comparison. For multiple comparisons, Kruskal-Wallis methods have been employed. A chi-squared test or Fisher exact test has been utilized for testing the associations between categorical variables. To control the false positive rate, Benjamini-Hochberg method has been utilized for the adjustment of multiple comparisons. All hypothesis testing was carried out at the 95% significance level with a p-value of < 0.05 accepted as statistically significant.

Results

South Texas

Table 1 shows the summary of demographic data and health scores from FA health screening participants (N = 282) in STX. Most of the participants were adults (18 years and above), female (55%), and married (44%). The median BMI was 26 kg/m^2, with the BMI range of 18-48 kg/m^2, the maximum score being in the morbidly obese category. The median blood glucose reading was 105 mg/dL, with the range of 35-367 mg/dL. The median total blood cholesterol reading was 173 mg/dL (range = 100-310 mg/dL). The median systolic blood pressure was 128 mmHg (range = 100-200 mmHg), and median diastolic blood pressure was 78 mmHg (range = 45-121 mmHg). When the participants were classified into normal (100-120/60-80 mmHg) vs abnormal (> 120/80 mmHg) categories, 70% of the participants (N = 195) had abnormal blood pressure readings.

Table 2 shows the comparison health screening data between female and male health screening participants in STX. Female participants were significantly older than males (p = 0.0203) but had lower BMI (p = 0.0061), systolic (p = 0.0034) and diastolic ($p < 0.001$) blood pressure compared

Table 1

Demographics and Health Scores of Health Screening Participants in South Texas

Variable	*N (%)*
Gender	
Female	156 (55.31%)
Male	110 (39.01%)
Unknown	16 (5.68%)
Age (Years)	
Min-Max	12-90
Mean (±SD)	47.29±18.42
Median (IQR)	49 (29)
Marital Status	
Married	124 (43.97%)
Single	103 (36.52%)
Divorced	20 (7.1%)
Widowed	11 (3.9%)
Unknown	24 (8.51%)
Exercise	
Irregular	110 (39%)
More than 3x per week	87% (13.48%)
Once a week	88 (13.48%)
No	36 (12.77%)
Unknown	11 (3.9%)
Body Mass Index (kg/m^2)	
Min-Max	18-48
Mean (± SD)	27±5.59
Median (IQR)	26 (7)
Blood Glucose (mg/dL)	
Min-Max	35-367
Mean(±SD)	114.04±42.33
Median (IQR)	105 (53)
Blood Cholesterol (mg/dL)	
Min-Max	100-310
Mean(±SD)	171.75±40.6
Median (IQR)	173 (53)
Systolic Blood Pressure (mmHg)	
Min-Max	100-220
Mean (±SD)	126.89±14.73
Median (IQR)	173 (53)
Diastolic Blood Pressure (mmHg)	
Min-Max	45-121
Mean (±SD)	78±10.02
Median (IQR)	78 9 (11.5)
Blood Pressure Category	
Normal (100-120/60-80 mmHg)	195 (69.64%)
Abnormal (above 120/80 mmHg)	85 (26.67%)

Table 2

Comparison of Health Screening Data between Female and Male Participants in South Texas

Variable	Female (*n* = 156)	Male (*n* = 110)	p-value
Age (median ± SD)	53.5 ± 18.56	44.5 ± 17.56	**0.0203**
BMI (median ± SD)	25 ± 6.04	27 ± 5.02	**0.0061**
Blood Glucose (median ± SD)	108 ± 45.91	109 ± 35.24	0.4306
Blood Cholesterol (median ± SD)	182 ± 43.08	159.5 ± 34.31	**0.0024**
Systolic Blood Pressure (median ± SD)	125 ± 15.9	130± 13.21	**0.0034**
Diastolic Blood Pressure (median ± SD)	76± 9.74	80 ± 9.67	**< .0001**

Table 3

Demographics and Health Scores of Health Screening Participants in Eastern Virginia

Variable	*N (%)*
Gender	
Female	21 (60 %)
Male	14 (40 %)
Age (Years)	
Min-Max	30-83
Mean (±SD)	64.41±12.57
Median (IQR)	65 (15)
Body Mass Index (kg/m^2)	
Min-Max	21-31
Mean (±SD)	25.09±2.95
Median (IQR)	24 (5)
Blood Glucose (mg/dL)	
Min-Max	84-450
Mean (±SD)	150.03±79.47
Median (IQR)	127 (14)
Hemoglobin A1c (%)	
Min-Max	5.2-11.1
Mean (±SD)	6.1±1.21
Median (IQR)	5.65 (0.9)
Systolic Blood Pressure (mmHg)	
Min-Max	107-168
Mean (±SD)	134.5±17.4
Median (IQR)	134 (26)
Diastolic Blood Pressure (mmHg)	
Min-Max	61-106
Mean (±SD)	81.13 +/- 10.45
Median (IQR)	82 (14)
Blood Pressure Category	
Normal (100-120/60-80 mmHg)	22 (73.33 %)
Abnormal (above 120/80 mmHg)	8 (26.67%)

to their male counterparts. Interesting, the cholesterol levels of females were significantly higher (p = 0.0024) than males. There was no significant difference in their blood glucose levels.

Eastern Virginia

Table 2 shows the summary of health screening data in Eastern Virginia from 35 FA participants. Most participants were adults (18 years and above) and female (60%). The median BMI was 24 kg/m^2 (range = 21-31 kg/m^2). The median blood glucose was 127 mg/dL (range = 84-450 mg/dL) while the median HbA1c was 5.65% (range = 5.2%-11.1%). The median systolic blood pressure was 134 mmHg (range = 107-168 mmHg) while the median diastolic blood pressure was 82 mmHg (range = 61-106 mmHg). When blood pressure was categorized into normal (100-120/60-80 mmHg) and abnormal (> 120/80 mmHg) blood pressure, 73% of participants had abnormal (> 120/80 mmHg) blood pressure readings.

Table 4 shows the comparison of health screening data between female and male participants in EVA. The age, blood glucose, HbA1c, and blood pressure (systolic and diastolic) of female and male participants were comparable. The only significant differences were in terms of height and weight with males significantly taller ($p < 0.0001$) and heavier ($p = 0.02$). Interestingly, these differences did not translate into BMI, which was not significant ($p = 0.08$).

Discussion

Table 4

Comparison of Health Screening Data between Female and Male Participants in Eastern Virginia

Variable	Female (*n* = 21)	Male (*n* = 14)	p-value
Age (mean ± SD)	64.45 ± 13.15	62.86 ± 15.56	0.75
Height (mean ± SD)	62.05 ± 3.11	66.35 ± 2.50	< 0.0001
Weight (mean ± SD)	136.91 ± 40.05	172.21 ± 40.73	0.02
BMI (mean ± SD)	24.65 ± 2.72	26.93 ± 4.14	0.08
Blood Glucose (mean ± SD)	133.38 ± 35.17	161.57 ± 110.57	0.37
HbA1c (mean ± SD)	5.82 ± 0.65	6.41 ± 1.65	0.22
Systolic Blood Pressure (mean ± SD)	133.43 ± 17.79	134.93 ± 15.53	0.79
Diastolic Blood Pressure (mean ± SD)	81.05 ± 10.83	82.43 ± 10.21	0.70

The community health screening data from STX and EVA paint a highly vulnerable minority population. Among the participants, 70% and 73% had abnormal blood pressure in STX and EVA, respectively. These findings are the first to report these high proportions of abnormal blood pressure readings in these regions which highlight the paucity of data on the risks and health disparities among FAs. However, the data showcase the rising trend of hypertension among FAs elsewhere in the US and mirror the findings which reported 67% of FA participants in a health screening distributed in Pennsylvania and New Jersey region have hypertension (Ma et al., 2018). At the community level, FAs are cognizant of this health issue. A study funded by the Patient-Centered Outcomes Research Institute (PCORI) aimed at building capacity and engaging FAs for patient-centered outcomes research and comparative effective research reported that hypertension is a prioritized issue in the five states studied: California, Hawaii, Texas, New Jersey, and New York (Vargas et al., 2020; Lapiz-Bluhm, 2020). The high rate (70%) of Filipino screening participants with abnormal blood pressure in STX provided support for the PCORI project results for TX. The high rate (73%) of abnormal blood pressure among older (mean age = 64 years old) Filipinos who participated in the EVA health screening indicate that hypertension is also an important issue in VA.

In the 2000s, disaggregated data from Asian American studies indicated high rates of hypertension among FAs. Identified risk factors included high blood pressure, low HDL cholesterol levels, high rates of smoking and physical inactivity, increased BMI, older age, family history, stress, alcohol, and chronic conditions such as high cholesterol and diabetes, and traditional Filipino diets high in sodium and cholesterol (Kim et al., 2008; Barnes et al., 2008). The health screening data for both STX and EVA did not provide much information about the profile of the participants. However, only 13% of the STX participants reported to exercise more than three times per week. The median BMI was 26 kg/m^2 and the mean BMI was 27 kg/m^2, which is considered Class 1 obesity. It should be noted that the maximum BMI reported was 48 kg/m^2, which is classified as morbidly obese. While the mean total cholesterol (172 mg/dL) was within normal limits, the max cholesterol score was 310 mg/dL, 110 units higher than the normal range. Interestingly, comparison of female and male health screening data for STX participants indicate that the latter has a more vulnerable profile than the former (see Table 2). Comparable data was seen among the EVA participants: high maximum range of blood glucose and HbA1c as well as BMI. The increased vulnerability of males among EVA participants were not as significant (see Table 4) although height and weight was significantly different between the males and females. The difference in results between STX and EVA maybe due to the smaller sample size for the EVA health screening.

The current data described were from health screenings conducted before the COVID-19 pandemic. The COVID-19 pandemic in 2020 was associated with blood pressure control declined in the US, particularly among women and older adults (Brooks, 2021). It is more than likely that the hypertension rates among Filipinos in STX and EVA would even be higher during the COVID-19 pandemic. These data is currently not available.

The current findings highlight the urgent need to test evidence-based interventions to help address hypertension among FAs. Such interventions will prevent morbidity and mortality from cardiovascular diseases resulting from uncontrolled hypertension. The limited literature on interventional studies among FAs emphasizes the need for cultural considerations when working with this minority population (Nguyen et al., 2020; Lapiz-Bluhm & Nguyen, 2019). Published intervention studies for hypertension among Filipinos include Racial and Ethnic Approaches to Community Health for Asian Americans (REACH FAR) – Keep on

Track (KOT) (Yi et al., 2019; Kwon et al., 2017), Project Asian American Partnership in Research and Empowerment (AsPIRE) – Million Hearts© (Katigbak et al., 2019; Ursua et al., 2018) and the Community Health Worker Health Disparities Initiative (Hurtado et al., 2014). Successful studies engaged the community (i.e., professional, non-profit, and faith-based organizations) and used culturally-tailored approaches to improve recruitment, retention, and study completion (Nguyen et al., 2020; Lapiz-Bluhm & Nguyen, 2019). Study design considerations may include having trusted individuals from Filipino descent providing the intervention, language considerations, involvement of family and community, and connection with faith-based organizations. The FA communities in both STX and EVA are very similar in the cultural, social, religious, and professional ties. Community leaders express a strong desire to raise the awareness of hypertension risks and support interventional studies in the FA community to prevent severe debilitating sequelae including myocardial infarctions and strokes.

Several local, regional, state, and national factors may preclude the utilization of past intervention strategies to address hypertension in STX and EVA. For example, the REACH-FAR Keep on Track (KOT) Program was developed by the New York City Department of Health and Mental Hygiene (NYC DOHMH). It implemented a multilevel and evidence-based health promotion and hypertension (HTN) control program in faith-based organizations serving Asian American (AA) communities (Bangladeshi, Filipino, Korean, Asian Indian) across multiple denominations (Christian, Muslim, and Sikh) in New York/New Jersey (NY/NJ) (Kwon et al., 2017). It was led by a coalition composed of academic (NY University Center for the Study of Asian American Health or NYU CSAAH, which was the lead agency funded by the National Institutes of Health), government, and community-based organizations. It culturally adapted and implemented the KOT program in 2015 and 2016. Filipinos were reached through the New York-based Kalusugan Coalition, a multidisciplinary collaboration dedicated to improving the health of the Filipino community through educational activities, research, community action and advocacy (Kwon et al., 2017). The aim of the REACH-FAR Keep on Track (KOT) volunteer-run, community-based blood pressure monitoring program was to lower blood pressure in community-dwelling adults in New York City and New Jersey. Unfortunately, similar city and academic-supported mechanisms and infrastructures are not available in STX and EVA. It is not known if the KOT program and others continue to exist to address hypertension among Asians, which is an important aspect to consider for program sustainability. Alternative mechanisms to address hypertension in STX and EVA are needed.

A grassroots approach may be more advantageous in US regions or states where there is lack of state or federal support. One such program that shows promise for Filipino Americans in STX and EVA is the evidence-based program for hypertension called HEALS (Healthy Eating and Living Spiritually). HEALS is a faith-based, socio-culturally modified 12-week lifestyle intervention aimed at obtaining a sustained blood pressure reduction and tested in the African American populations located in semi-urban Florida (Dodani et al., 2014). Lifestyle interventions proven to effectively lower blood pressure were culturally tailored and included weight loss, exercise, reduced salt (sodium) intake, improved diet with Dietary Approaches to Stop Hypertension (DASH)—style eating pattern, and moderation of alcohol intake were implemented in African American church communities. Following the intervention, the mean reduction of systolic blood pressure from baseline was 22 mmHg ($p < 0.001$) and 6.5 mmHg for diastolic BP ($p = 0.0048$). A mean weight reduction of 3.11 kg from the baseline ($p < 0.0001$) was also observed. The reported reduction of blood pressure is truly promising and the HEALS intervention appears to be appropriate for the reduction of hypertension risk factors among FAs (high blood pressure, increased BMI, lack of exercise, high sodium food, among others). The approach of using church communities will also be appropriate as Filipinos are steeped in religion and find supportive communities through faith-based organizations.

This study is not without its limitations. The data were retrospectively retrieved from community outreach projects intended for screening, not for rigorous scientific endeavors. The sample size for EVA health screening data is small. More rigorous systematic studies determining risk factors associated with the high rates of hypertension in these populations are recommended. The self-selection to participate in the health screening may have also biased the data. Nevertheless, the data highlight the disturbing disparities for hypertension in these populations. Moreover, our findings are supported by a previous report among FAs residing in Philadelphia and New Jersey.

Conclusions

This study is first to report the high incidence of hypertension in STX (±70%) and EVA (≥ 73%). These data and the reported alarming pattern of increase of hypertension rates among Filipinos in the U.S. call for an urgent need to address hypertension disparities in this population. The data support a call to action – to test culturally-tailored evidence-based intervention to reduce hypertension among Filipinos in the US.

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