



Stanford
MEDICINE

Center for Asian Health
Research and Education

Stanford CARE Summer Research Symposium 2021

Friday, August 13th, 2021
8:00 am – 5:30 pm, Pacific Time

Program Guide



Stanford CARE Summer Research Symposium 2021

Welcome to the Symposium

On behalf of the Stanford Center for Asian Health Research and Education (CARE), we invite you to the Stanford CARE Summer Research Symposium 2021, as a showcase for innovative Asian health research from young scholars around the world. Stanford CARE's mission is to improve the health of Asians everywhere, through excellence in precision research and education. The Symposium will feature keynotes by leaders in healthcare and Asian health. The Symposium is held virtually, by Zoom, to encourage participation. We are proud to showcase critical Asian health research conducted by the Stanford CARE Scholars and the University of Hong Kong students in medicine and public health.



The Stanford CARE Scholars program's goal is to train the next generation of Asian Health researchers, and to provide undergraduate and graduate students with high quality Asian Health research experiences leading to publication. This year, the Stanford CARE Scholars program matriculated 25 students from around the world, who worked on 2 sets of projects: a large database project and a special mentored research project with leading Stanford faculty. Their research will be presented here today.



Stanford CARE is proud to celebrate our collaboration with the University of Hong Kong Schools of Public Health and Medicine. The partnership between these two leading universities will accelerate Asian health research around the world. We are pleased to continue our partnership by welcoming HKU students to present their research at the Symposium.

Please join us, as we celebrate the importance of Asian health research and the work of our Scholars.

Malathi Srinivasan, MD
Clinical Professor of Medicine
Director, CARE Scholars
Stanford University School of Medicine

Latha Palaniappan, MD MS
Professor of Medicine
Co-Director, Stanford CARE
Stanford University School of Medicine

Bryant Lin, MD MEng
Clinical Associate Professor of Medicine
Co-Director, Stanford CARE
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Gloria Kim, MD
Director, CARE Educational Programs
Director, International Medical Services
Stanford University School of Medicine

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Please use the following **Zoom** link for the Symposium:

<https://stanford.zoom.us/j/99049199942?pwd=N2tJUis3TWJkN1NOdi9MY2p0Q25ndz09>

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CARE Executive Team



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Sam So, MD
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Malathi Srinivasan, MD
Associate Director CARE
Clinical Professor of
Medicine

CARE Advisory Board



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Parveen Jain
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Networks



Vivek Khullar
CEO, Clearfly
Communications



Thomas Kurian
CEO, Google Cloud
past President,
Oracle



Hong Seh Lim
President, Mil Kered



Karen Kun Li
Silicon Valley based Angel
Investor
Former broadcast
journalist with the China
Central Television



Rao Mulpuri
CEO, View



Jason Okazaki
Chief Legal and
Business Officer,
Assembly Biosciences



Shirley Orsak
Healthcare
Fundraiser



John Roos
Former United
States Ambassador
to Japan



Nipa Sheth
Dentist, investor, and
co-founder of Zingaris



Wayne Wang
Director, The
Joy Luck Club



Danke Wu
Philanthropist and
fundraiser



Anita Yu
Co-founder,
Westly Foundation

Stanford CARE Timeline



2019

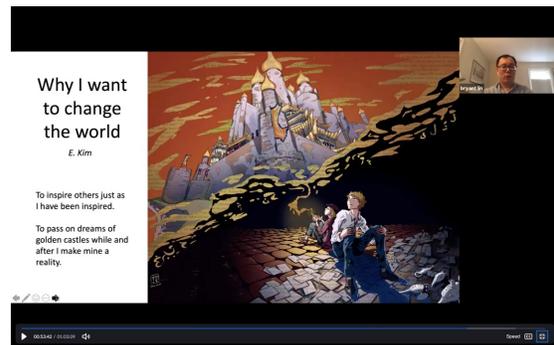
2019 CARE Summer Research Immersion Program Summer 2019

Our inaugural CARE Summer Research Intensive Program (CARE-SRI) began with 8 students from a diverse array of places convening to study pressing issues in Asian Health. Since then, we have expanded our program 3-fold, with 25 students from 4 countries across multiple time zones.



Asian Health Courses Fall 2019 - Present

Through the courageous efforts of our CARE Faculty –including Dr. Latha Palaniappan, Dr. Bryant Lin, Dr. Malathi Srinivasan, and Alan Louie – we established several undergraduate and medical school courses on the topics of “**Surveying Asian Health Issues**,” “**Tackling Cross-Cultural Boundaries in Asian Health**,” “**How to Change the World (for the Better)**,” and “**Asian Culture and Medicine**.”



2020

Gastric Cancer Summit March 2020

This multidisciplinary Summit brought together over 50 global physicians, researchers, policy makers, patients, and advocacy groups to share discoveries in gastric cancer research, to create a national roadmap to address healthcare disparities in gastric cancer. Gastric cancer is the third leading cause of cancer death worldwide, and in the United States, disproportionately falls upon ethnic minorities and immigrant communities – particularly Asians. The under-recognition of gastric cancer risk among minority communities may be one of the most significant unaddressed healthcare disparities in the United States.



2020 Seed Grant Applications

April 2020

CARE awarded \$5,000 seed grants to five outstanding researchers in the field of Asian health and disease disparities. Our awardees – Dr. Ying Lu, Dr. Ranak Trivedi, Professor Freeborn Rwere, Dr. Uchechukwu Megwalu, and Dr. Karen Eggleston – will be investigating topics ranging from thyroid cancer in Filipinos to social support networks among Indian women with breast cancer. To the left is a Word Cloud of the most common research topics presented in our awardees' work.

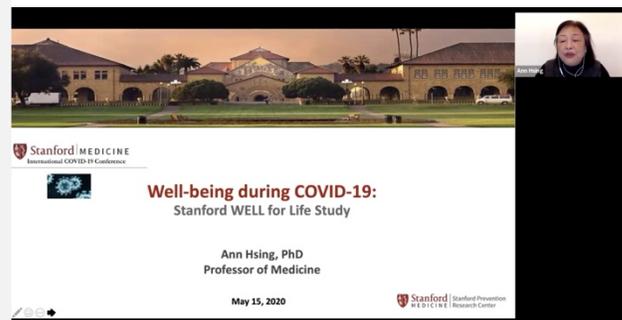


International Covid-19 Conference

May 2020

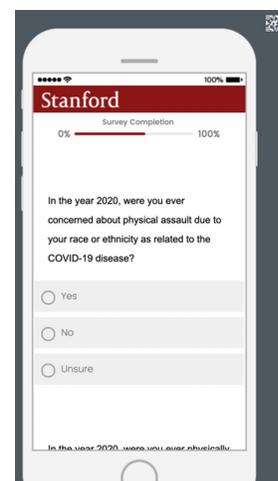
In the wake of the COVID-19 pandemic, leading experts have come together across disciplinary and national borders to address urgent public health needs, share vital data and research, and provide critical medical care. At the International COVID-19 Conference, over 50 global speakers from across 14 time zones to share COVID research, discoveries, and stories.

Garnering an audience of over 2,000 international attendees, this conference was the first of its kind to bring together policy makers, providers, patients, and advocates to look beyond American border to inform our domestic response to COVID-19.



Covid-19 Discrimination Study

Racialized language around COVID-19 has unjustly affected East Asians everywhere, resulting in a public health crisis that has turned a racial identity into a basis for discriminatory behavior. Thousands of instances of violence or emotional abuse have been reported since the beginning of the pandemic. In response, researchers at CARE, Stanford College, and the Stanford University School of Medicine have banded together to assess the mental health effects of COVID-related Anti-Asian discrimination. By raising awareness of racial injustice as a public health crisis, we hope to combat this discrimination both in our communities and beyond.



2020 CARE-Summer Research Immersion Program Summer 2020

This multidisciplinary summer research immersion program brought together 19 passionate undergraduates and graduate students from across the world to tackle critical issues in Asian Health. Students worked on two research projects—a large database project focused on precision medicine, and a specific mentored research project with faculty— with the end goal of publishing their findings in academic journals over the next several months. Aside from the research aspect of the program, students learned about core principles of career development, Asian health, and health care innovation.



Journal of Asian Health

CARE has partnered with the Stanford Online Journal System to establish the Journal of Asian Health. The Journal will promote high quality research and knowledge of Asian and Asian American health; educate patients and providers on Asian health needs; and improve culturally sensitive, evidence-based healthcare delivery to Asians everywhere. As an international, indexed, open-access journal, the Journal of Asian Health has succeeded in obtaining support from leading researchers and physicians in the field, including Dr. Gloria Wu, Dr. Paul J Wang, and Dr. JoAnn E. Manson. We look forward to expanding our efforts in 2021 to publish our first issue through Stanford University.



Garment Worker Health During COVID-19 December 2020

We heard from a variety of experts on the role of health in factory work, the oversight of health in labor improvements and labor rights, and why COVID-19 presents an opportunity to rethink our approach. We will also explore research findings in the larger context of global supply chains, inequality, and other social determinants of health. We will discuss the reality of COVID-19 in Bangladesh, its effects on mental and physical health, and the social policy and social safety nets it demands we provide.

Evidence Based Traditional Asian Medicine Conference March 2021

With increasing interest in integrating healing traditions into the practice of medicine, we seek to share the best in evidence supporting the use of these longstanding traditions in promoting health. We seek to foster dialogue, learning, identify and prioritize areas of further research and development, including:

1. Nutrition for preventing and controlling chronic diseases
2. Pain management, particularly low back pain
3. Mental health

International COVID-19 Conference – Lessons Learned May 2021

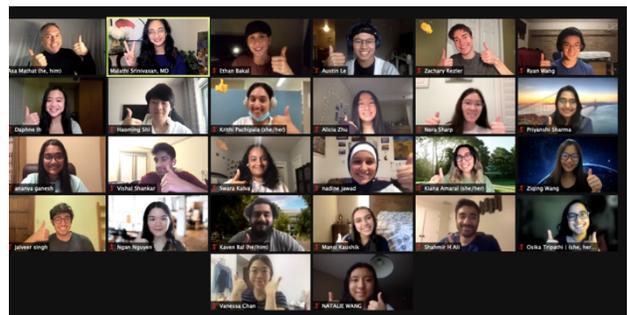
One year ago, the world was only beginning to learn about COVID-19 and its impact on public health, data and research, our patients and providers, and the most vulnerable among us. Therefore, the Stanford Center for Asian Health Research and Education, the Center for Innovation in Global Health, and the Center for Population Health Sciences organized the International COVID-19 Conference, bringing together leading experts across disciplinary and national borders to share their expertise and stories. Now, one year later, we asked these same experts to tell us: What lessons have we learned from COVID-19?

Stuck@HomeConcert: Celebrating Asian Grandmothers May 2021

In another senseless act of Anti-Asian violence, a white man in San Francisco attacked Xiao Zhen Xie, a 75-year-old Asian grandmother. Ms. Xiao used a wooden board to fight back against her attacker after being punched. Her attacker was bloodied and left on a stretcher while Ms. Xiao walked away. Ms. Xiao is donating almost \$1 million dollars, collected from a GoFundMe set up by her grandson, to charities combating hate against Asian Americans. With this event, we celebrated the power and grace of Asian grandmothers like Ms. Xiao, with videos and performances from grandmothers and their grandchildren. The performances were followed by a discussion panel on experiences of generations of Asian American Women.

2021 CARE Scholars Program Summer 2021

Rebranded as the Stanford CARE Scholars Program, we expanded our cohort to 25 passionate undergraduate and graduate students from across the world. Aside from research in Asian and global health, extra emphasis was placed on topics in innovation and career development.



Stanford CARE Summer Research Symposium 2021 Agenda



8:00 a	Welcome by Stanford CARE Leadership <i>Moderators: Latha Palaniappan, MD MS and Malathi Srinivasan, MD</i>	
8:30 a	Julieta Gabiola, MD <i>Clinical Professor of Medicine, Stanford University School of Medicine Founder, ABC's for Global Health</i>	
9:30 a	Mentor Appreciation Panel <i>Tali Elfassy, PhD; Eugene Yang, MD; Eric Gross, MD PhD; Nancy Ewen Wang, MD; Linda Geng, MD PhD; Shashank Joshi, MD; Robert Huang, MD; Bryant Lin, MD MEng; Lauren Eggert, MD; W. Ray Kim, MD; Ngan Huang, PhD; Fumiaki Ikeno, MD PhD; Nirali Vora, MD; Shanthy Kappagoda, MD; Javier Valero-Elizondo, MD MPH</i>	
10:00 a	Large Database Research Project Presentations	
10:15 a	Sleep Patterns in Asians / Ryan Wang, Armaan Jamal, Ziqing Wang	
10:30 a	Mortality Among Chinese Americans / Ethan Bakal, Natalie Wang, Ngan Nguyen	
10:45 a	Leading Causes of Death in Japanese Americans / Haoming Shi, Kiana Amaral, Daphne Ih	
11:00 a	Ultra-Processed Food Consumption of Asian Americans / Vishal Shankar, Krithi Pachipala, Zachary Rezler, Ranjana Vittal	
11:15 a	Opioid Overdose Prevalence by Race/Geography / Alicia Zhu, Austin Le, Molly Li	
11:30 a	Multigenerational Families and Preventative Healthcare / Mansi Kaushik, Kavenpreet Bal, Priyanshi Sharma	
11:45 a	Investigating Stroke Subtype Mortality Among Asian Subgroups / Swara Kalva, Ananya Ganesh, Vanessa Chan	
12:00 p	Neil Gesundheit, MD MPH <i>Senior Associate Dean for Medical Education and Professor of Medicine, Stanford University School of Medicine</i>	
1:00 p	Lunch Break / Poster "Gallery Walk"	
1:30 p	The University of Hong Kong Colloquium <i>Moderators: Gloria Kim, MD and Malathi Srinivasan, MD</i>	
1:45 p	Welcome to HKU Scholars Scientific Poster Competition Award Finalists	
2:00 p	Characteristics of Emergency Department Pediatric Visits related to child abuse in Hong Kong / Desiree Ka-ka Wong	
2:15 p	Temporal Trends and Patterns of Infective Endocarditis in a Chinese population / Hang Long Li	
2:30 p	Multi-drug Resistant Pathogens Linked to Higher Risks of 30-day Mortality in Patients with Acute COPD / Yan Kiu Li	
2:45 p	Special Mentored Research Presentations	
	Concurrent Session 1 <i>Moderators: Latha Palaniappan, MD MS</i>	Concurrent Session 2 <i>Moderators: Malathi Srinivasan, MD</i>
2:45 p	Acculturation & Mental Health Outcomes in Asian Teens / Mansi Kaushik, Kavenpreet Bal, Priyanshi Sharma	US Racial/Ethnic Group Presarcopenia Prevalence / Vishal Shankar, Krithi Pachipala, Zachary Rezler, Ranjana Vittal
3:00 p	Investigating Fatty Liver in Asian Americans / Swara Kalva, Ananya Ganesh, Vanessa Chan	Misdiagnosis of Rare Diseases in Asians / Haoming Shi, Kiana Amaral, Daphne Ih
3:15 p	Social Factors and Cardiovascular Risk / Alicia Zhu, Austin Le, Molly Li	Immigrants and Neighborhood Health / Ethan Bakal, Natalie Wang, Ngan Nguyen
3:30 p		Vaccination Patterns in Asians / Ryan Wang, Armaan Jamal, Ziqing Wang
4:00 p	Vivian Lin, DrPH MPH <i>Executive Associate Dean and Professor of Public Health Practice, Li Ka Shing Faculty of Medicine at the University of Hong Kong</i>	
5:00 p	Closing and Awards Ceremony (adjourn 5:30 p)	



**Julieta Gabiola, MD /
Finding Your Voice
and Your Inspiration
8:30 am - 9:30 am**

Julieta Gabiola, MD is a Clinical Professor of Medicine at Stanford University, and founder of the Medicine For Good podcast, founder/director of ABC's for Global Health. This philanthropic organization's mission is to improve chronic disease management and outcomes in Filipinos in the Philippines and in the US. Dr. Gabiola has authored an interdisciplinary textbook in clinical assessment, and co-authored *DISRUPT*, a book by Filipina leaders about disrupting the status quo to effect change. Most recently, she was instrumental in launching the first medical mobile clinic in Pampanga, Philippines with a vision to promote community outreach programs, continuity of care, education, prevention and research in health care. She is now involved with the planning and execution of Stanford Digital MEDIC in the Philippines, where academic institutions and non-profit organizations partner with Stanford to enhance digital medical education.



**Neil Gesundheit, MD MPH /
Innovations in Medical
Education – Meeting the
Needs of Modern Students
and Traditional Faculty
12:00 pm – 1:00 pm**

Dr. Neil Gesundheit is the Senior Associate Dean for Medical Education and Professor of Medicine at the Stanford School of Medicine. Dr. Gesundheit has oversight of educational programs for medical students, physician assistant master's students, residents and fellows in clinical training, and Stanford-sponsored continuing medical education (CME) programs for faculty. Dr. Gesundheit directs the second-year medical student endocrine physiology module, teaches in the Practice of Medicine course, and oversees implementation of the new Discovery Curriculum for medical student education. Dr. Gesundheit is the recipient of the Kaiser Family Foundation for excellence in preclinical teaching and the Arthur L. Bloomfield for excellence in teaching in clinical education.



**Vivian Lin, MPH DrPH /
Health Systems in Low-to-
Middle Income Countries
4:00 pm – 5:00 pm**

Dr. Vivian Lin is the Executive Associate Dean Faculty at the Li Ka Shing Faculty of Medicine and the Professor of Public Health Practice at the University of Hong Kong. Dr. Lin was Chair of Public Health from 2000-2013 at La Trobe University in Melbourne before serving the WHO as Director of Health Systems in the Western Pacific Regional Office for 2013-2018, where she led on the global priorities of universal health coverage and sustainable development goals, cross-cutting priority issues of antimicrobial resistance, ageing, and gender-based violence, and on health system development issues including health financing, health law and ethics, health workforce, traditional medicines, service delivery, and health information systems. She has more than 30 years of experience in public health, with a variety of leading roles in policy and program development, health services planning, research and teaching, and senior administration in complex organizations.



Leading causes of death in Japanese Americans in the United States (2005-2017)

Haoming Shi, Stanford Center for Asian Health Research and Education (CARE); Daphne Ih, Stanford CARE; Kiana Amaral, Stanford CARE; Shozen Dan, Stanford CARE; Malathi Srinivasan, MD, Division of Primary Care and Population Health, Stanford University School of Medicine; Latha Palaniappan, MD MS Division of Primary Care and Population Health, Stanford University School of Medicine; Fumiaki Ikeno, MD, Division of Cardiovascular Medicine, Stanford University School of Medicine

Importance

Japanese Americans are one of the largest, oldest Asian subgroups in the U.S. and experience different health outcomes due to their distinct immigration history. However, geographic variations in disease mortality between Japanese sub-populations from Japan, Hawaii, and the U.S. mainland have not been recently explored.

Objective

To identify and analyze geographic differences in mortality trends for leading causes of death in Japanese Americans between 2005 to 2017, in comparison to native Japanese living in Japan.

Design

Observational cross-sectional analysis of 15,747,318 native Japanese (from Japan) and 94,985 Japanese Americans (from Hawaii, U.S. mainland).

Methods

We analyzed mortality data from the U.S. Centers for Disease Control and Prevention (CDC) Mortality Multiple Cause of Death database and Statistics Bureau of Japan to compare the leading causes of death in Japanese Americans to native Japanese. We report age-standardized mortality rates by residency and sex for the top ten causes of death in Hawaiian Japanese Americans, mainland Japanese Americans, and native Japanese.

Results

Cancer, heart disease, and cerebrovascular disease were the top three causes of death in all Japanese sub-populations. Native Japanese had higher overall cancer mortality (AMR 183.60, CI 183.44-183.77) compared to Japanese Americans (AMR 118.16, CI 115.08-121.5 Hawaii; AMR 120.38, CI 118.39-122.41 mainland), but female mainland Japanese Americans experienced greater lung cancer mortality (AMR 24.53, CI 23.45-25.70) than Japanese females from Japan (AMR 16.80, CI 16.73-16.86). Differences in heart disease and cerebrovascular disease mortality trends decreased across all geographic Japanese subgroups. Influenza and pneumonia mortality declined for native Japanese and mainland Japanese Americans, but increased for Hawaiian Japanese Americans.

Limitations

Some disease patterns may be misrepresented due to misclassification of decedent race/ethnicity and underlying cause of death, as well as different clinical diagnostic practices between the U.S. and Japan. Japanese-American population data from the ACS may contain sampling errors; annual Japanese population estimates were derived from linear interpolation and extrapolation.

Conclusions

Differences in disease mortality trends among Japanese sub-populations from Japan, Hawaii, and the U.S. mainland are likely related to increased Westernization of the Japanese. In particular, diet and lifestyle changes should inform interventions and educational campaigns to address the disproportionate burden of cancer and cardiovascular disease among individuals of Japanese origin. Increasing influenza and pneumonia mortality among Hawaiian Japanese Americans also indicates a need for more robust vaccination programs.

An Analysis of Patterns and Influential Factors to Sleep Quality and Duration in Asian-Americans

Ryan Wang, Stanford Center for Asian Health Research and Education (CARE), Stanford University School of Medicine, Stanford CA, United States; Ziqing Wang, Stanford Center for Asian Health Research and Education (CARE), Stanford University School of Medicine, Stanford CA, United States; Armaan Jamal, Stanford Center for Asian Health Research and Education (CARE), Stanford University School of Medicine, Stanford CA, United States; Lauren Eggert, MD, Division of Pulmonary and Critical Care Medicine, Stanford University School of Medicine, Stanford, CA; Shozen Dan, Stanford Center for Asian Health Research and Education (CARE), Stanford University School of Medicine, Stanford CA, United States; Malathi Srinivasan MD, Division of Primary Care and Population Health, Stanford University School of Medicine, Stanford, CA

Importance

More than one third of the United States population reports less than 7 hours sleep. Asian-Americans report higher rates of short sleep than other racial groups. Elucidating patterns and influences affecting sleep in disaggregated Asian-American populations will improve precision sleep medicine.

Objective

Identify patterns and factors associated with sleep quality and duration among the different Asian subgroups.

Methods

Data from the National Health Interview Survey (NHIS) was used to examine the self-reported sleep quality measures for Chinese, Asian Indian, Filipino, and non-Hispanic white (NHW) adult populations ($n = 880,210$). Five outcome measures were analyzed: Hours of sleep per day, number of times reporting trouble falling asleep, staying asleep, waking up rested, or taking sleep medication in the past week.

A stepwise logistic regression was conducted on the five measures of sleep quality while controlling for demographic, socioeconomic, and health variables with NHW as the reference. A subsetted stepwise logistic regression analysis by race and outcome was conducted to analyze potential risk factors for poor sleep.

Results

Compared to NHW, Filipinos had a lower odds of obtaining sufficient sleep (OR 0.58, 95% CI 0.53-0.62). Filipinos had higher odds of reporting trouble falling asleep (OR 1.21, 95% CI 1.05-1.38) while Chinese (OR 0.78, 95% CI 0.67-0.91) and Asian Indian (OR 0.72, 95% CI 0.62-0.82) had lower odds. Asian Indians had significantly higher odds of waking up feeling well-rested (OR 1.67, 95% CI 1.48-1.89). Chinese (OR 0.67, 95% CI 0.58-0.77) and Asian Indians (OR 0.51, 95% CI 0.44-0.59) had lower rates of trouble staying asleep. Factors that had consistent effects across Asian-American subgroups were: being foreign born (positive effect), poor health status (negative effect), poor mental health (negative effect), and presence of another medical comorbidity (negative effect).

Age had a consistently adverse effect on sleep among Filipinos and Chinese. Gender had a consistently adverse effect on Chinese. Smoking and alcohol had inconsistently adverse effects on all Asian races.

Conclusions and Relevance

This study illustrates the disparities in sleep outcomes among disaggregated Asian ethnicities. These disparities suggest a need for ethnicity-specific precision sleep medicine. Furthermore, the positive effect of being foreign born on sleep quality and duration warrants further research to understand the underpinnings for this phenomena and clinical implications.

Investigating Stroke Subtype Mortality among Asian Subgroups

Ananya Lakshmi Ganesh, Stanford Center for Asian Health Research and Education (CARE), Stanford University School of Medicine, Stanford CA, United States; Chan Ching Yan Stanford Center for Asian Health Research and Education (CARE), Stanford University School of Medicine, Stanford CA, United States; Swara Reddy Kalva, Stanford Center for Asian Health Research and Education (CARE), Stanford University School of Medicine, Stanford CA, United States; Osika Tripathi, Stanford Center for Asian Health Research and Education (CARE), Stanford University School of Medicine, Stanford CA, United States; Shozen Dan, Stanford Center for Asian Health Research and Education (CARE), Stanford University School of Medicine, Stanford CA, United States; Malathi Srinivasan MD, Division of Primary Care and Population Health, Stanford University School of Medicine, Palo Alto, CA; Latha Palaniappan MD, Division of Primary Care and Population Health, Stanford University School of Medicine, Palo Alto, CA; Lily Wenya Zhou MD, Department of Medicine, Stanford University School of Medicine, Palo Alto, CA; Nirali Vora MD, Department of Medicine, Stanford University School of Medicine, Palo Alto, CA

Importance

Strokes affect more than 795,000 people in the US every year. Asian Americans are more likely to suffer from greater fatality when compared to NHWs. Aiming to reduce the mortality rates, we evaluate the trends for different stroke subtype (ischemic and hemorrhagic) trends among disaggregated Asian populations.

Objective

To describe stroke mortality burden among Asian American groups by sex and characterize mortality trends across a 12-year period (2006-2017).

Design

Observational study analyzing mortality data from the NVSS Mortality Dataset.

Setting

2006-2017 NVSS Mortality Dataset

Participants

2,593 Asian Indians, 7,585 Filipinos, 8,212 Chinese, 2,551 Koreans, 3,179 Vietnamese, 4,667 Japanese, and 781,966 NHWs.

Methods

Using mortality data from 2006-2017, we analyzed a total of 810,753 individuals who had died from ischemic stroke, intracerebral hemorrhage, or subarachnoid hemorrhage. They were classified according to the International Classification of Diseases – 10th Edition (ICD-10). Population data was extracted from 2006-2017 IPUMS American Community Survey. We calculated age-standardized mortality rates (AMRs), using 3-year groupings, to observe trends in stroke death. We stratified by covariates of interest, including sex and race.

Results

From 2006-2017, deaths from ischemic stroke increased for all ethnic groups. Deaths from subarachnoid hemorrhage decreased in all groups, except for the Vietnamese. A similar trend was observed for intracerebral hemorrhage. Variations in mortality rates between different Asian groups may be attributed to the differences in prevalence of risk factors for stroke.

Limitations

Due to the reliance on an external dataset, certain limitations were unavoidable including diagnosis misidentification, racial reporting bias due to miscoding on death certificates, and lack of access to data on mixed Asian groups. Additionally, we only looked at stroke as the primary cause of death, potentially underrepresenting stroke deaths.

Conclusions

While trends in stroke mortality rates are relatively similar across Asian groups, there were significant differences for certain groups such as the Vietnamese. For this reason, it is valuable to further study potential reasons for these differences between groups to provide interventions to avoid stroke all together.

Impact of U.S. Opioid Drug Overdose by Race/Ethnicity and State in 2005-2017

Yuemeng Li¹; Austin Le¹; Alicia Zhu¹; Jaiveer Singh¹; Jane Xu³; Latha P. Palaniappan, MD, MS²; Malathi Srinivasan, MD²; Eric Gross, MD, PhD³; ¹Stanford University CARE Scholars Program; ²Division of Primary Care and Population Health, Stanford University School of Medicine; ³Department of Anesthesiology, Perioperative and Pain Medicine, Stanford University School of Medicine

Importance

In 2017, the increasing prevalence of opioid-related deaths across the United States prompted the U.S. Department of Health and Human Services to declare the opioid epidemic a "public health crisis." Understanding what communities are most vulnerable and affected by opioid-related mortality would hone public health interventions and policies to address this growing issue.

Objective

To compare opioid-related overdose mortality prevalence between Non-Hispanic Whites, Blacks, Hispanics/Latinx, and Asians in the United States of America by state.

Design

Observational cross-sectional study.

Setting

United States, National Vital Statistics System, 2005-2017.

Population

563,796 drug overdose deaths with 329,896 being opioid-related deaths in 2005-2017 among Non-Hispanic Whites, Blacks, Hispanic/Latinx, and Asians.

Funding

Stanford Center for Asian Health Research and Education (CARE).

Methods

We defined underlying causes of death due to drug overdose and opioid-related overdose deaths based on the International Statistical Classification of Diseases and Related Health Problems, Tenth Revision (ICD-10). We computed unadjusted proportions of demographic characteristics categorized by race/ethnicity. Data was presented as overdose prevalence rates per 100,000 people based on state population using the American Community Survey (ACS) data.

Results

Examination of opioid-related overdose data by race and geography reveals that the Non-Hispanic Whites have the largest opioid overdose death count among all ethnicities (n=296,062). Blacks (n=28,145) and Hispanics/Latinx (n=25,657) recorded fewer overdose deaths from opioids and Asians had the lowest total number of deaths (n=1,716) among all ethnicities. Although West Virginia is the state with the highest prevalence among Non-Hispanic White (26.5), Black (23.7), and Hispanic/Latinx (29.7), the ranking of states differs drastically by ethnicity after that.

As a comparator, the highest prevalence of opioid overdose deaths among Asians was in Montana (2.7); nearly 10-fold less than the highest prevalence recorded amongst other ethnicities.

Limitations

Opioid mortality may be underestimated due to death examiners not using correct race/ethnicity classification. Earlier years may have fewer counts of opioid related deaths, which affect our reporting opioid death rates over 13 years.

Discussion

Our study results not only display a sharp difference of the average opioid overdose death rates between each ethnic group but also showcase the number of cases across all ethnicities across the United States. This data can provide valuable information regarding the regions within the United States and specific communities impacted by the opioid epidemic.

Multigenerational Households and Preventative Healthcare Utilization

Priyanshi Sharma, Stanford Center for Asian Health Research and Education (CARE), Stanford University School of Medicine, Stanford CA, United States; Mansi Kaushik, Stanford Center for Asian Health Research and Education (CARE), Stanford University School of Medicine, Stanford CA, United States; Kavenpreet Bal, Stanford Center for Asian Health Research and Education (CARE), Stanford University School of Medicine, Stanford CA, United States; Shahmir H. Ali, Stanford Center for Asian Health Research and Education (CARE), Stanford University School of Medicine, Stanford CA, United States; Shozen Dan, Stanford Center for Asian Health Research and Education (CARE), Stanford University School of Medicine, Stanford CA, United States; Malathi Srinivasan, MD, Division of Primary Care and Population Health, Stanford University School of Medicine; Latha P., MD, ²Division of Primary Care and Population Health, Stanford University School of Medicine, MS; Nancy W., MD, Professor of Emergency Medicine and Pediatrics Stanford University School of Medicine

Importance

Family plays an important role in the social and health experience of Asian Americans, including healthcare utilization. Although research has shown that Asian Americans, compared to other racial subgroups, are most likely to live in multigenerational households (a family structure where 2 or more adult generations are present), the association of living in such households with preventative healthcare utilization is largely unknown.

Objective

To determine the effect of living in a multigenerational household on the utilization of preventative healthcare among Asian American subgroups (Asian Indians, Chinese, and Filipinos) in comparison to Non-Hispanic Whites (NHWs).

Setting

United States, 2006-2016, analyzed in 2021.

Design

Cross sectional study analyzing cross-sectional National Health Interview Survey (NHIS).

Methods

Based on the definition from the Pew Research Center, an aggregate multigenerational variable was created that included the relationship of the householder surveyed with each of these other household members: parent, adult children (>25), children (<25) and parents, children and grandchild, grandchild, and grandparent. The utilization of colonoscopy, flu vaccine, and cholesterol check were then examined. Using multivariate analysis, logistic regression, and odds ratios, the covariates of sociodemographic, health behaviors, health status, insurance, multigenerational status were adjusted to obtain our results.

Results

Overall, Asians are more likely to live in a multigenerational household (Filipinos: 30%, Chinese: 21%, Asian Indian: 20%) as compared to Non-Hispanic Whites (12.2%). Compared to Non-Hispanic Whites living in a non-multigenerational household, the odds of getting a colonoscopy are lower in Chinese Americans (0.50x (0.38,0.65) and Asian Indians (0.66x (0.45,0.90) and the odds of getting cholesterol checked are higher in Asian Indians (1.1x (0.99,1.3) and lower in Chinese Americans (0.84x (0.74,0.95)).

Compared to those living in a non-multigenerational household, the odds of getting a flu vaccine are lower in Chinese Americans (0.75x (0.55,0.99) and Filipino Americans (0.83x (0.66,0.99) (observed to approach significance ($p=0.08$)).

Conclusions

The clear association between living in a multigenerational household and differences in preventative healthcare utilization suggests that policy measures must account for the important role that family structure and dynamics may play as a facilitator (or barrier) in healthcare utilization. Due to the differences in trends observed across Asian American subgroups, findings emphasize the importance of disaggregating Asian American health behavioral research.

Characterizing Ultra-Processed Food Intake Among Asian Americans: A Cross-Sectional Analysis of NHANES (2011–2018)

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Importance

Ultra-processed food (UPF) consumption is linked with adverse health outcomes such as cardiovascular disease and all-cause mortality. Since Asian Americans are the fastest growing ethnic groups within the United States, it is essential to understand their eating patterns with regard to UPFs to help direct future dietary intervention efforts.

Objective

To characterize UPF consumption amongst Asian Americans through stratification by sociodemographic, socioeconomic, self-reported health, and acculturation measures.

Design

Observational cross-sectional secondary analysis.

Setting

National Health and Nutrition Examination Survey (NHANES), 2011-2018.

Participants

2011-2018 NHANES Asian American adults (≥ 18 years old) with data on 24hr dietary intake, 2,404 participants.

Methods

We analyzed mean UPF consumption by sociodemographic (sex, age, marital status), socioeconomic (education level, income-poverty ratio), self-reported health (general health status and dietary health), and acculturation variables (nativity status, years lived in the US, language spoken at home, and acculturation index). A stepwise multivariable regression was then conducted to further assess acculturative factors associated with increased UPF consumption among AAs.

Results

In adjusted analyses, UPF consumption was 14% (95% CI: 9.5, 17.5) higher among those most acculturated compared with least acculturated and 12% (95% CI: 8.5, 14.7) higher among those who speak only English in relation to non-English speakers. It was also 12% (95% CI: 8.6, 14.7) more elevated in U.S. borns compared to foreign born, and 15% (95% CI: 10.7, 18.3) greater in U.S. borns compared to foreign born who lived in the US for less than 10 years. Age, education level, income-poverty ratio, and dietary health were also significantly associated with UPF consumption.

Limitations

The 24-hour dietary recall from NHANES was self-reported which could have introduced recall or social desirability bias. This analysis was also cross-sectional and thus causation could not be inferred. Lastly, measures of acculturation were unable to account for more disaggregated constructs related to generational status or ethnic and social relations.

Conclusions

UPF consumption increased with age, education level, income-poverty ratio, and especially acculturation through all four proxy measures. Our findings underscore the need to look at disaggregated Asian data to formulate culturally sensitive diet interventions.

Funding Source

Stanford CARE.

Leading Causes of Death Among Chinese Americans, 2006-2017

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Importance

Chinese Americans are the largest Asian American subgroup and one of the fastest growing major ethnic groups in the United States. Previous mortality research on Chinese Americans is limited and has often aggregated this population into a larger “Asian American” umbrella group that distorts the true nature of Chinese American mortality. Filling this knowledge gap is critical to addressing the major potentially preventable causes of death in this fast-growing community.

Objective

To describe the leading causes of mortality among Chinese Americans for the years 2006-2017, and to compare trends in mortality by sex, nativity, and with non-Hispanic whites (NHWs).

Study Design and Setting

This was a retrospective observational study using 2003 U.S. Standard Death Certificate data from the National Vital Statistics System (NVSS) and population data from the American Community Survey (ACS) for the years 2006-2017.

Methods

We examined the leading causes of death in 134,062 Chinese Americans and 21,345,286 NHW decedents and stratified our results by biological sex and nativity (in the case of Chinese Americans). We calculated the proportion of each of the ten leading causes of death within that leading causes group. We also reported annual and 12-year age-adjusted mortality rates (AMRs) per 100,000 person-years with 95% confidence intervals for each cause, and used annual AMRs to determine trends over time through linear regression (p-value <0.05 used to test for statistical significance).

Results

From 2006-2017, both foreign-born and U.S.-born Chinese Americans had a lower all-cause mortality burden compared to NHWs. The three leading causes of death (heart disease, cancer, and cerebrovascular disease) accounted for nearly three-fourths of the ten leading causes of death across race and nativity. Heart disease was the leading cause of death among NHWs and the second leading cause of death among Chinese Americans, whereas cancer was the leading cause of death among Chinese Americans and the second leading cause among NHWs.

For both sexes, U.S.-born Chinese Americans had higher rates of mortality due to heart disease (98.21 compared to 80.44 per 100,000 person years), while foreign-born Chinese American had relatively higher rates of mortality due to cancer (113.3 to 100.55 per 100,000 person years).

Conclusions

There was a small but observable difference in mortality between foreign-born and U.S.-born Chinese Americans, in which the foreign-born group had a slightly higher mortality burden than the U.S.-born one. Despite this, the mortality burden overall was lower for Chinese Americans compared to the NHW reference group.



Characteristics and Local Socioeconomic Trends of Emergency Department Pediatric Visits Related to Child Abuse in Hong Kong: a 20-Year Study (2000-2019)

Desiree Ka-ka WONG; Chun Kit Owen CHU; Abraham Ka Chung WAI

Child abuse is a serious yet prevalent problem with adverse outcomes and high morbidity. Families living in lower socioeconomic circumstances tend to have higher risk for child abuse. Although not all cases primarily present to the emergency department, severe cases admitted to the emergency department can reflect the current situation in the territory. Previous studies have shown certain districts have higher rates of child abuse, but whether these are absolutely associated with social deprivation and poverty remains to be explored.

This study aims to evaluate the relationship between child abuse admission rates to hospital emergency departments and socioeconomic indicators of social deprivation by district. Secondary objectives include studying demographics and type of abuse and associated co-morbidities that may increase risk for child abuse. This research received no specific funding.

This was a retrospective study of 5531 pediatric emergency department admissions related to child abuse between 2000 and 2019, sourced from the Clinical Data Analysis and Reporting System (CDARS). Data was analyzed by demographics, type of abuse, and district addresses. A Social Deprivation Index (SDI; scale: 0-100) was adapted from the School of Public Health at HKU. The SDI is a composite indicator based on several social deprivation indicators including unemployment, low-income households, no schooling, never-married persons, one-person households and sub-tenant households. Indices were collected from 5-year census data by constituency area. Further interpolation of yearly indices and population figures outside of census years was computed with population percentage change. Poisson fixed-effect regression was used to estimate the correlation between rate of child abuse admissions and SDI for each constituency area by Incidence Rate Ratio (IRR).

This study concludes that there is a positive correlation between SDI and child abuse admissions cases to the emergency department (p -value < 0.001). An increase of 1 unit of SDI is associated with a 5% (adjusted IRR: 1.05; 95% C.I.: 1.03-1.07) increase of number of child abuse cases on average.

The limitations of this study was that it was retrospective in nature, and analysis focused on emergency department admission data only. Moreover, census data was only available every 5 years, therefore the use of interpolation assumed data was proportional to population percentage change.

Therefore, there is a positive correlation between indicators of social deprivation and emergency department admissions related to child abuse, suggesting increased vigilance and social welfare resources should be directed at areas with higher social deprivation for child abuse surveillance and prevention.

Temporal Trends and Patterns of Infective Endocarditis in a Chinese Population: A Territory-Wide Study (2002-2019)

Hang Long LI; Yi Kei TSE; Si Yeung YU; Lok Yee LAM; Kwan Yu LI; Meizhen WU, MD; Qingwen REN, MD; Pui Fai WONG, MPH; Kai Hang YIU, MD, PhD

Background

The epidemiological and clinical characteristics of infective endocarditis (IE) are known to exhibit substantial geographical variability, but remain poorly understood in Asians. Furthermore, understanding the factors contributing to the dismal outcomes of IE is imperative to optimize public health intervention strategies, allocate healthcare resources and ultimately improve patient outcomes. Therefore, we aim to describe the epidemiological trends and clinical features of IE in Hong Kong, and to identify the key contributors to death in IE patients in a large Asian population.

Population and Setting

We included all patients aged 20 or above newly diagnosed with IE between January 1, 2002, and December 31, 2019 from a well-validated territory-wide database in Hong Kong.

Funding Source

The Shenzhen Key Medical Discipline (SZXK2020081) and The Sanming Project of HKU-SZH Cardiology (SZSM201911020).

Innovation/Methods

We studied the incidence and one-year mortality of IE between 2002 and 2019 and used interrupted time series to evaluate the change in incidence after revision of antibiotic prophylaxis guidelines in 2007. Significant contributors to 1-year all-cause death were identified using the population attributable fraction (PAF). We used Poisson regression with propensity score matching to study the association of surgery with mortality over time.

Results

A total of 5,139 patients (60.4±18.2years, 37% women) were included. The overall incidence of IE was 4.4 per 100,000 persons, which did not change after the revision of antibiotic prophylaxis guideline in 2007 (relative risk of change 0.85, 95% CI 0.64 to 1.14, $P = 0.293$). Patients with IE in 2019 were older and more comorbid than those in 2002. There was a significantly increasing trend in Methicillin-resistant *Staphylococcus aureus* (MRSA), with an annual percentage change of 4.2% (95% CI 1.9 to 6.6, $P < 0.001$). The one-year crude mortality rate was 30% in 2002, which did not significantly change over time ($P=0.103$). Between 2002 and 2019, the rate of surgery increased and was consistently associated with a 45% risk reduction in 1-year all-cause mortality (Hazard Ratio 0.55 [0.45-0.66], $P < 0.001$). Advanced age (PAF 19%) and comorbidities (PAF 15%) were significant contributors to death, regardless of the time period.

Limitations

Patient presentation/symptoms and echocardiographic data were not available. The rate of culture-negative endocarditis (35.4%) was higher compared with others (25.3%), though the observed differences could be attributed to geographical variation in microbiological profiles, which merits future evaluation.

Discussion

We found that the incidence of IE remained stable between 2002 and 2019 in Hong Kong and was not influenced by the revision of antibiotic prophylaxis guidelines. Over time, patients with IE are increasingly older and more comorbid. Notably, the burden of MRSA endocarditis increased, together leading to a dismal prognosis. Despite rising surgery rates and associated substantial survival benefits, the mortality of IE remained high. Taken together, our findings provide important insights into the geographical disparities in epidemiological and clinical profiles of patients with IE, with several important implications for health policymakers, researchers, and clinicians.

Multi-Drug Resistant Pathogens is Associated with Higher Risks of 30-day Mortality in Patients Admitted with Acute Exacerbations of COPD: A Territory Wide Study with Propensity Score Analysis

Yan Kiu LI, MBBS; Abraham WAI, MBChB

Background

Drug resistance is an increasingly worrying problem. However, there remains to be a paucity of data regarding drug resistance and mortality in patients admitted with acute exacerbations of COPD (AECOPD). This study aims to investigate the association of drug resistant pathogens with mortality in these patients as the primary outcome, and the length of hospital stay (LOS), intensive care unit (ICU) admission and hospital readmission interval for the next AECOPD as the secondary outcomes.

Population

Patients admitted with AECOPD.

Setting

Hospital setting.

Funding source

This study was not funded.

Methods

We conducted a retrospective territory wide study, recruiting patients admitted for AECOPD across all hospitals in Hong Kong from December 2018 to December 2019, using the Clinical Data Analysis and Reporting System (CDARS), an electronic local healthcare database, retrieving data on each patient's admission data, such as their sociodemographic characteristics, laboratory results and concurrent comorbidities, enabling the Charlson comorbidity index (CCI) to be calculated.

These were used as covariates in our propensity score analysis. Pathogens, instead of commensals, were assessed and defined as: Enterobacter aerogenes (EA), Enterobacter cloacae complex (ECC), Enterobacter species (ES), pseudomonas aeruginosa (PA), Moraxella catarrhalis (MC) and streptococcus pneumoniae (SP), as identified through a detailed literature search.

Results

A total of 1671 patients were identified and stratified to 4 groups: Group 1 being patients with no drug resistant pathogens (n=747), Group 2 resistant to 1 drug (n=553), Group 3 resistant to 2 (n=148), and Group 4 resistant to over 2 drugs (n=223). LOS and mortality showed statistically significant differences between the groups ($p < 0.001$ for both), with major differences presented in Group 4, having a median LOS of 8.00 days [Interquartile range (IQR) 3.00, 22.00] and episode mortality rate of 17.5%, compared to 5.00 days [IQR 3.00, 10.00] and 7.9% in Group 1. Group 4, with multi-drug resistance (MDR), was associated with higher risks of 30-day mortality, with a propensity score adjusted odds ratio (aOR) of 1.03 [95% confidence interval (CI) 1.00-1.07], $p = 0.046$, when compared to Group 1. Multivariate analysis also revealed MC and SP being associated with lower mortality (aOR=0.28 [95% CI 0.10-0.65], $p = 0.0054$, and 0.20 [95% CI 0.073-0.56], $p = 0.0033$ respectively).

Kaplan Meier curve showed a log rank value of $p = 0.006$, revealing significant differences in 30-day survival time between the groups. We also repeated the analysis on drug resistance in commensals, which were not associated with mortality.

Limitations

This was a retrospective study with a relatively small sample size. The handling of bacterial culture was also out of our control.

Discussion

MDR pathogens is associated with higher risks of 30-day mortality in patients admitted with AECOPD, after propensity score adjustment. MDR is also associated with a longer LOS, perhaps as more antibiotic testing is required. Our findings disagree with some literature, but this may be because we focused on pathogenic bacteria instead of both pathogenic and commensal bacteria. We plan to conduct randomized controlled trials (RCTs) regarding the prevention of drug resistance through point-of-care C-reactive protein (CRP) guided antibiotic stewardship for AECOPD in the coming months.

The University of Hong Kong Student Poster Presentation Abstracts



Predicting Mortality with Sepsis Scoring Systems: A Systematic Review and Meta-Analysis

Teddy Tai Loy Lee; Kevin Wang Leong So, BPharm; Desiree Ka-ka Wong; Keith Sai Kit Leung; Abraham Ka Chung Wai, MBChB FRCP FRCEM

Background

Sepsis is a complex and deadly disease which is challenging to diagnose. Early detection and treatment are crucial to prevent clinical deterioration from sepsis. We conducted a systematic review and meta-analysis to assess the prognostic accuracy of sepsis scoring systems to predict mortality in adult patients with suspected infection.

Population

Adult patients with suspected infection.

Setting

ED, ICU, Hospital wards.

Funding Source

Not applicable.

Methods

PubMed and EMBASE were searched from inception to 20th August 2020 for English full-text studies assessing either the quick Sequential (Sepsis-Related) Organ Failure Assessment (qSOFA), Systematic Inflammatory Response Syndrome (SIRS) criteria, Sequential Organ Failure Assessment (SOFA), and National Early Warning Score (NEWS) / National Early Warning Score 2 (NEWS2). 2*2 contingency tables were constructed from available data to derive Hierarchical Summary Receiving Operator Characteristic (HSROC) plots. Summary estimates of sensitivity, specificity, diagnostic odds ratio, and positive and negative likelihood ratios were calculated.

Results

A total of 35 studies consisting of 449841 patients were included in the meta-analysis. qSOFA was associated with a pooled sensitivity of 55.2% (95% CI [confidence interval], 44.4% to 65.5%) and a pooled specificity of 77.6% (CI, 70.4% to 83.5%). The SIRS criteria was associated with a pooled sensitivity of 86.2% (CI, 79.0% to 91.2%) and a pooled specificity of 28.6% (CI, 20.3% to 38.8%).

SOFA was associated with a pooled sensitivity of 94.8% (CI, 89.1% to 97.6%) and a pooled specificity of 33.1% (CI, 15.6% to 57.0%). NEWS/NEWS2 was associated with a pooled sensitivity of 85.0% (CI, 69.4% to 93.4%) and a pooled specificity of 41.0% (CI, 26.6% to 57.1%).

Limitations

Insufficient studies on SOFA and NEWS/NEWS2 restricted the scope of subgroup analysis.

Discussion

This is the first study to analyze the utility of SOFA and NEWS/NEWS2 to predict mortality in adult patients with suspected infection. Sensitivity analysis revealed no significant difference when scoring systems were directly or indirectly compared. For qSOFA, the sensitivity was lower but specificity was higher in European countries, which may reflect differences in how clinicians interpret scoring system criteria.

Clinical Outcomes Associated with Pre-Admission and Early In-Hospital use of Metformin, Dipeptidyl Peptidase-4 Inhibitor or Insulin in COVID-19 patients with Type 2 Diabetes: a Territory-Wide Retrospective Observational Study

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Background

Type 2 diabetes mellitus (T2DM) is associated with worse outcomes for patients with COVID-19. Commonly used glucose-lowering medications: metformin, dipeptidyl peptidase-4 inhibitor or insulin, were found to impact the level of inflammatory cytokines, therefore potentially influence the clinical outcomes in SARS-CoV-2 infected patients. Concerns remain on the pre-admission and early in-hospital use of these medications.

Population

1096 T2DM patients hospitalized from 21st January 2020 to 31st January 2021 were included in this study.

Setting

This study focused on the hospitalized COVID-19 patients with T2DM in Hong Kong.

Funding Source

Health and Medical Research Fund, Food and Health Bureau, Government of the Hong Kong Special Administrative Region, China (grant no. COVID190210).

Innovation/Methods

Exposure was defined as receiving a glucose-lowering drug class 3 days before and after admission. Patients were observed from three days before admission until discharge, in-hospital death, or censored on 30th April 2021.

Baseline covariate between the two groups were balanced by multiple imputation followed by IPTW for propensity score. Multivariable cox proportional hazard models were performed to estimate HR and their 95% CI of time-to-event outcomes.

Results

Metformin users (n=609) were associated with quicker time to clinical improvement (HR=1.41, 95%CI 1.19 to 1.65, p<0.001), hospital discharge (HR=1.43, 95%CI 1.20 to 1.69, p<0.001) and recovery (HR=2.09, 95%CI 1.42 to 3.06, p<0.001), shorter hospital length of stay among survivors (-6.45 days, 95%CI -8.34 to -4.56, p<0.001), reduced costs from 30-days onward, lower risk of composite outcome (HR=0.41, 95%CI 0.23 to 0.74, p=0.003) and macrophage activation (HR=0.64, 95%CI 0.47 to 0.87, p<0.004) when compared to control. Shorter hospital length of stay was observed in DPP4i users (n=144) compared to control (-5.32 days, 95%CI to 7.30 to -3.34, p<0.001). Insulin users (n=414) have greater risk of hypoglycemia during admission (HR=2.61, 95%CI 1.23 to 5.53, p=0.013) when compared to control.

Limitations

Most patients investigated had mild-to-moderate COVID-19 at baseline, indicating that outcomes for severe cases may not be adequately accounted for.

Next, residual confounding may not be fully accounted for. Moreover, there may be discrepancies of clinical outcomes determined in out-patient settings or in ethnically different regions.

Discussion

Metformin was primarily found to activate AMPK then ACE2, reducing NF-kappa-B's activity, both may aid in explaining how anti-inflammatory effects of metformin seem to override the allegedly worse prognosis induced by facilitating viral entry in this study. Dysregulation of DPP4 in diabetic conditions promotes subclinical activation of the immune system via non-catalytic activities between DPP4 and various ligands. DPP4 inhibition restores homeostasis, hence explaining shorter hospital length of stay for DPP4i. Insulin was suggested to have increased risk of hypoglycemia, echoing our results. Inflammatory response of insulin is disputed as it was suggested to activate pro-inflammatory cytokines while some argue to reduce the production of reactive oxidative species which reduce activation of such cytokines. Our results have yet to prove either side of argument. In view of the importance of glycemic control as well as efficacy of all drugs investigated, modification of drug regimens for diabetic patients with COVID-19 is not warranted.

Intravenous Immunoglobulins and Corticosteroids for Sepsis: A Systematic Review and Network Meta-Analysis

So, Wang Leong Kevin; Wong, Carlos King Ho; Wai, Ka Chung Abraham

Background

Mortality from sepsis remains high despite antimicrobial treatments and circulatory support. Since sepsis is defined as life threatening organ dysfunction caused by a dysregulated host response to infection, therapies targeting the host immune response hold significant potential for treating sepsis. Intravenous immunoglobulins (IVIG) and corticosteroids are the most extensively studied immunomodulators for sepsis. However, the comparative effectiveness of different corticosteroid regimens, different IVIG preparations and standard care in the management of sepsis remains unclear.

Methods

PubMed, EMBASE and CENTRAL databases were searched up to June 2020. We included randomized clinical trials (RCTs) in which patients (age > 1 year) with sepsis, severe sepsis or septic shock were randomized to IVIG or corticosteroids or to standard care or placebo. After data abstraction, we performed a Bayesian network meta-analysis with random effects. The primary outcome for this study was short term mortality. The secondary outcomes included long term mortality, hospital length of stay (LOS) and intensive care unit (ICU) LOS. Risk of bias of included studies were assessed using the Cochrane risk of bias assessment tool. Inconsistency was evaluated within each loop of evidence whenever possible. We performed sensitivity analyses by only including only data on patients with septic shock, or trials with low risk of bias.

We also explored whether results for the primary outcome are robust in network meta-regression using the following characteristics: (1) target population (severe sepsis and/or septic shock vs. all other); (2) study settings (ICUs vs. not ICUs or unknown settings); (3) age of inclusion (≥16 vs. <16).

Results

We included 67 RCTs comprising 24,667 participants. Only anti-cytokines reduced short term mortality compared with standard care (Odd ratio 0.87; 95% Credible interval 0.77-0.99). While standard polyclonal IVIG was the only intervention that reduced long term mortality compared with standard care (0.23; 0.063-0.66). Reduction in long term mortality was also observed when standard polyclonal IVIG was compared with long course of low dose hydrocortisone (0.23; 0.070-0.70). We did not identify any significant differences in all comparisons for ICU and hospital LOS. No statistically significant inconsistency was identified. The results on short term mortality did not change substantially by including only data on patients with septic shock, or including only trials with low risk of bias. In addition, network meta-regression revealed that population, age of inclusion, and settings did not contribute to the heterogeneity among included studies

Limitations

Our study has some limitations. Firstly, 28 of 67 studies were at high risk of bias. However, the results on primary outcome did not change significantly by including only trials with low risk of bias. Secondly, severity of sepsis, age, settings vary among studies. Therefore, we performed sensitivity analyses and network meta-regression to increase the certainty of evidence. Lastly, definition (sepsis-3) of sepsis and septic shock have changed dramatically in early 2016. Most trials included in our study used sepsis-1 as the criteria to recruit participants.

Conclusions

Anti-cytokines and standard polyclonal IVIG probably reduce short term mortality and long term mortality respectively in patients with sepsis, severe sepsis or septic shock compared with standard care. Moreover, no corticosteroid regimens show superiority over different IVIG preparations in all outcomes of interest.

Health Information-Seeking Behaviour and its Associations with Knowledge, Preventive Behavior and Risk Perception Towards COVID-19 Among Hong Kong Healthcare Students

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Background

Healthcare students are more experienced in seeking health-related information compared to the general public. Understanding the information-seeking behavior of healthcare students allows governments to discover more effective methods of spreading COVID-19-related information among the healthcare community. With this in mind, our study investigates the relationships between health information-seeking behavior, knowledge of COVID-19, preventive behavior against COVID-19, and risk perception towards COVID-19 among Hong Kong healthcare students.

Population

Current full-time undergraduate medical or nursing students from the University of Hong Kong (HKU) or the Chinese University of Hong Kong (CUHK) in the 2020-21 academic year.

Setting

Like many developed regions, Hong Kong has a diverse range of media outlets and a robust healthcare system. Medical and nursing students are surveyed because they will be the primary frontline healthcare workers in Hong Kong; how they make sense of COVID-19 will substantially impact patient care in the near future.

Funding source

No funding to declare.

Innovation/methods

This cross-sectional study involved the distribution of online questionnaires to the target population (volunteer sampling) between December 2020 and March 2021. The questionnaires had four COVID-19-related sections: information sources, knowledge, preventive behavior and risk perception. Selection of assessment items was based on previous studies in various countries but this is the first study to consider the correlations between the factors collectively. Pearson's chi-squared test and Spearman rank correlation were used to compare and correlate between variables respectively.

Results

Among the 370 valid responses, students most frequently receive COVID-19-related information from social media, online newspapers and television news, despite perceiving official websites of local public health institutions as their most trustworthy source. Only 81.4% of respondents often avoid people who have respiratory symptoms, and only 32.2% avoid social and public gatherings. Furthermore, 8.6% of respondents could not identify the possible transmission routes of COVID-19 and 8.4% were unable to recognize a 'coronavirus self-check test' as falsehood. Respondents accessing information from information sources weekly or daily perform more preventive behaviors than respondents accessing information from these sources monthly or less than once per month ($p < 0.05$). Risk perception correlates positively with preventive behavior ($p < 0.05$), in particular those related to cleaning, contact and droplet precautions.

Limitations

Data collection took place over several months, during which there were fluctuations in the severity of COVID-19 in Hong Kong. The 370 valid responses are slightly below the target sample size of 372 (Slovin's formula).

Discussion

It is concerning that certain COVID-19 prevention measures are infrequently adopted and that some COVID-19 knowledge questions have surprisingly low correct rates, especially among healthcare students. This should be addressed by placing greater emphasis on COVID-19 knowledge and prevention in the medical/nursing curricula. The positive correlation between risk perception and preventive behavior suggests that preventive behavior may increase with COVID-19 risk communication. We recommend that public health agencies communicate information on frequently accessed information sources (social media and online newspapers) to encourage healthcare students to perform preventive behavior. They will in turn influence the preventive behavior (e.g. vaccination) of other members of society, helping to prevent future epidemics.

Impact of E-Learning on Student Mental Health During the COVID-19 Pandemic

Tsz Lung LAM; Ho Ting CHAN; Sandra Hiu Tung WAN; Wing Yan KWOK; Tsz Yan MOK, Sheung Yi LAM; Frances WAI; Yu Fun WONG; Chun Kong TSE

Background

The COVID-19 pandemic has forced universities to shift teaching to mostly online formats. This sudden transition may undermine the mental health of students. This study examined the impact of E-Learning on local university student's perceived stress, depression, and anxiety symptoms during the pandemic. The attitudes and habits of students under E-learning were also examined.

Population

The target population of this study is local (HKSAR, China) university students.

Setting

This study is a prospective cross-section observational study.

Funding source

N/A

Methods

An online questionnaire survey was conducted from the 7th of February and the 6th of March 2021 using an exponential snowball sampling method. This study is approved by the University of Hong Kong and Hospital Authority Institutional Review Board (reference number: UW 20-875).

Results

Out of 429 respondents, 76.7% of students reported moderate stress and 10.5% of students reported high stress. Higher perceived stress was inversely associated with privacy ($P = 0.00$, Cohen's $d = -0.336$) and being able to keep up with the E-learning schedule ($P = 0.00$, Cohen's $d = -0.352$). A majority of students (78.1%) agreed that E-learning enabled them to save time from commuting, and approximately half (53.1%) agreed that E-learning helps knowledge retention. The most common perceived harms of E-learning were decreased motivation (50.6%) and that technical issues often lower teaching quality (49.7%).

Limitation

This study focuses on Hong Kong mainly.

Discussion

Though most students surveyed believe that E-learning is convenient, its usefulness is highly associated with the student's motivation, as well as their external environment. We call for universities to invest in more IT products and to better structure the learning materials. Our study suggests that under pandemic, E-learning to a certain extent is a feasible alternative to face-to-face education. However, from participants who experience higher stress under E-learning, we conclude that its feasibility is closely related to good support from the University, including IT support, financial support, and psychological support. While E-learning serves a good purpose as a temporary measure, in many scenarios it cannot fully replace face-to-face education. In some specific subpopulations, E-learning might even be associated with a negative effect on stress, anxiety, and depression.



Investigating Non-Alcoholic Fatty Liver Disease in Asian American

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Importance

The gold standard for diagnosing NAFLD is liver biopsy, which is both an invasive and costly method of detecting liver fibrosis. The Steatosis-Associated Fibrosis Estimator (SAFE) score was established at Stanford to predict low-risk fibrosis in individuals with NAFLD to evade unnecessary biopsies. Because there is a higher rate of NAFLD among Asian individuals with a healthy BMI in comparison to other races, and because BMI is a variable in the SAFE score, we investigated the accuracy in which SAFE score can predict low-risk fibrosis among Asian individuals.

Objective

To analyze the accuracy of SAFE score in predicting lower stages of fibrosis (F0-F1) in Asian individuals vs. Non-Hispanic White individuals.

Design

Observational study analyzing National Health and Nutrition Examination Survey (NHANES) 2017-2018 data.

Setting

2017-2018 National Health and Nutrition Examination Survey (NHANES).

Participants

The NHANES sample is representative of United States civilians. From NHANES 2017-2018, adult examinees with available Fibroscan and SAFE score variable data were selected. Specifically, 412 Asians, 935 NHWs, 554 Black Americans, 674 Hispanic Americans, and 135 Others (2,710 total) were included.

Methods

Individuals with a potential diagnosis of NAFLD were chosen using a Fibroscan controlled attenuation parameter (CAP) score of 240 dB/m or greater. Individuals with data indicating heavy alcohol use or a positive lab result for HBV or HCV were excluded. Using linear regression, the relationship between SAFE score and liver fibrosis was analyzed. Additionally, logistic regression measured the accuracy in which individuals' SAFE scores could predict F0-F1.

Results

Analysis showed a higher prevalence of potential NAFLD in Asian individuals with normal (18.5-24.9 kg/m²) and overweight (25-29.9 kg/m²) BMI's than in NHW's, as suggested by our initial literature review.

Additionally, the correlation coefficient between fibrosis and SAFE score for all was found to be 0.22 ($p < 0.001$), but regardless of these factors, the SAFE score was able to differentiate between F0-F1 vs. F2-F4 individuals in Asians.

Limitations

Individuals with potential alcohol-induced NAFLD were excluded based on National Institute on Alcohol Abuse and Alcoholism (NIAAA) definitions of "heavy" alcohol use. Due to the variability in standard definitions for "heavy" drinking, it is possible that this sample does not represent individuals with NAFLD. Additionally, the dataset did not include comprehensive details on Hepatitis B and C for all participants and lacked disaggregated information on Asian Americans.

Conclusions

While potential NAFLD prevalence is different among Asian individuals with certain BMI ranges, the SAFE score is still a viable method to predict low-risk fibrosis in Asians with NAFLD.

Vaccination Patterns, Disparities, and Policy in Disaggregated Asian-Americans

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Importance

Asian Americans (AA) have higher rates of some vaccine preventable diseases such as Hepatitis B, and overall vaccination rates are low in comparison to non-Hispanic whites (NHWs). Little is known about vaccination coverage among disaggregated AA ethnic subgroups. An understanding of the circumstances of these populations is needed to appropriately allocate resources to public health interventions.

Objective

To describe immunization patterns and trends over time of vaccines for 7 vaccine preventable illnesses: HPV (human papillomavirus), hepatitis B, influenza, tetanus, tetanus-diphtheria-pertussis (Tdap), shingles, and pneumococcus among disaggregated Asian American ethnic subgroups in comparison to NHWs.

Design, Setting, and Participants

We used data from the National Health Interview Survey (NHIS) from 2015-2018 to examine the vaccination status of Chinese, Asian Indian, Filipino, Other Asian and NHW adults (n=253626).

NHIS data from 2006-2018 (n = 880210) were used to conduct a longitudinal analysis to investigate the changes in vaccination rates for each ethnic group over time.

Main Outcomes and Measures

Immunization status of 7 CDC-recommended vaccines.

Methods

Joinpoint regression analysis was used to identify temporal changes in adult coverage for each vaccine. Logistic regression was used to determine differences in vaccination rates while controlling for demographic, socioeconomic and health related variables.

Results

Among the 7 vaccines, HPV and Shingles had the lowest vaccination coverage while the Tdap had the highest vaccination coverage among all races. For the HPV vaccine, Asian Indians were almost half as likely (OR: 0.61, CI95%: [0.41-0.92]), while Filipinos (1.51, [1.02-2.25]) and other Asians (1.42, [1.02-1.97]) were more likely to receive the HPV vaccine than NHWs.

Filipinos (1.50, [1.21-1.88]) and other Asian groups (1.42, [1.19-1.71]) were more likely to receive the HBV vaccine than NHWs. For the influenza vaccine, Asian Indians (1.28, [1.05-1.56]), Filipinos (1.44, [1.17-1.79]) and Other Asian (1.38, [CI 1.16-1.65]) were more likely to receive the vaccine than NHWs. For the pneumococcal vaccine, the Chinese (0.57, [0.34-0.94]) and Other Asians (0.66, [0.47-0.92]) were less likely to receive the vaccine than NHWs.

Conclusions and Relevance

Our results indicate that among US adults, there are disparities by Asian American ethnic group in the odds of receiving age-appropriate vaccines. Culturally specific public health interventions could address these disparities and improve overall vaccine coverage in the US population.

Prevalence and Predictors of Presarcopenia Across Racial/Ethnic Groups in the United States: Findings from NHANES (2011-2018)

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Importance

Presarcopenia (low skeletal muscle mass) is a predictor of sarcopenia (loss of skeletal muscle mass and function), which is linked with injuries, increased risk of falls, and all-cause mortality. While risk factors of presarcopenia have been identified in aggregate United States (US) samples, little is known about prevalence among Asian Americans (AA), whose experiences may be defined by unique socio-cultural health environments.

Objective

To examine presarcopenia prevalence among AAs and other racial/ethnic groups, stratified by sociodemographic, socioeconomic, self-reported health, and anthropometric measures.

Design

Cross-sectional secondary analysis.

Setting

National Health and Nutrition Examination Survey (NHANES), 2011-2018.

Funding Source

Stanford CARE.

Participants

11,318 American adults, aged 18-59 years with dual-energy X-ray absorptiometry data from 2011-2018 NHANES, including 1,726 Asian, 1,824 Mexican, 1,233 other Hispanic, 2,545 non-Hispanic Black, and 3,990 non-Hispanic White Americans.

Methods

Prevalence of presarcopenia for each racial/ethnic group was stratified by sociodemographic (sex, age), socioeconomic (education level, income-poverty ratio), self-reported health (general health, dietary health, physical activity levels) and body mass index (BMI). Logistic regression was conducted to calculate odds ratios.

Results

Compared with non-Hispanic Whites, the odds of being presarcopenic were significantly higher among AAs (AOR: 2.77, 95%CI: 2.14-3.58) and lower among non-Hispanic Blacks (AOR: 0.25, 95%CI: 0.17-0.36). The odds of being presarcopenic were also significantly higher among females (AOR: 1.21, 95%CI: 1.01-1.46), older adults aged 40-59 (AOR: 1.36, 95%CI: 1.07-1.73), people with fair/poor dietary health (AOR: 1.38, 95%CI: 1.01-1.88), and those with low physical activity levels (AOR: 2.40, 95%CI: 1.91-3.02), whereas obese individuals were much less likely to be presarcopenic (AOR: 0.002, 95%CI: 0.000-0.006).

Among AAs, the odds of being presarcopenic were higher for people with low physical activity levels (AOR: 2.40, 95%CI: 1.91-3.02) and lower in obese individuals (AOR: 0.002, 95%CI: 0.000-0.006).

Limitations

Presarcopenia's definition is not widely accepted among expert groups; however, thresholds used in this analysis are recommended by multiple expert groups. This analysis utilized cross-sectional data, limiting our ability to infer causation.

Conclusions

Presarcopenia prevalence was higher among AAs compared with other racial/ethnic groups. These findings underscore the need to consider racial/ethnic disparities when developing targeted screening/preventative intervention programs to mitigate the US sarcopenia burden.

Impact of Social Determinants of Health on Cardiovascular Risk Profiles in Asian-American Subgroups

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Background

Limited disaggregated Asian subgroup data exists on the association of cardiovascular risk factors with social determinants of health. While older age, poor English proficiency, low educational attainment, and low income predict poor cardiovascular outcomes, other sociodemographic and environmental factors have not been studied in detail. Better understanding of these determinants among Asian subgroups may inform more targeted and effective interventions to improve cardiovascular outcomes.

Objective

To examine how social determinants of health affect optimal cardiovascular health among Asian Indians, Chinese, Filipino, and other Asians compared to Non-Hispanic Whites.

Design

Observational, cross-sectional study.

Setting

National Health Interview Survey (NHIS) 2006-2018, analyzed 2021.

Funding

Stanford Center for Asian Health Research and Education (CARE).

Participants

260,626 total respondents: 239,023 Non-Hispanic Whites (NHW); 4,354 Asian Indians; 4,704 Chinese; 4,607 Filipinos; and 7,938 other Asians.

Methods

We selected social determinants of health covariates, such as food security, healthcare access, financial security, and neighborhood cohesion, and analyzed their associations with a cardiovascular risk profile score, calculated based on the presence of risk factors: diabetes mellitus, hypertension, obesity, smoking, insufficient physical activity, and high cholesterol. We utilized population weighted proportions and multivariate logistic regression to compare differences between NHWs and Asian subgroups.

Results

Individuals who identified as males (OR = 0.81, CI = 0.78, 0.84), had very low food security (OR = 0.56, CI = 0.50, 0.63), delayed medical care due to no transportation (OR = 0.51, CI = 0.23, 0.59), and worried about medical costs of maintaining standard of living (OR = 0.73, CI = 0.70, 0.76) were at risk for suboptimal cardiovascular health.

Those who had not seen a doctor within the past year (OR = 1.89, CI = 1.81, 1.97) and used health information technology (OR = 1.23, CI = 1.18, 1.27) had higher odds of optimal cardiovascular health.

Limitations

The NHIS is conducted only in English and Spanish, making it less likely for Asians with limited English proficiency to participate. Not all social determinants were added to NHIS at the same time; therefore, additional consideration must be taken to ensure comparability between years.

Discussion

Unexpected factors, particularly healthcare accessibility, play a major role in determining Asian cardiovascular score. Our findings underscore the importance of comparing social determinants between Asians subgroups to pinpoint ethnicity-specific sources to suboptimal cardiovascular health.

Improving the Diagnosis of Under-Recognized, Rare Diseases in Asians

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Importance

Rare diseases affect 30 million Americans—however, less than one in ten patients with rare diseases receive a correct diagnosis and appropriate treatment. Certain rare conditions disproportionately affect Asians and other minorities, but are not recognized or included in medical curricula.

Objective

To identify rare diseases in current scientific literature that disproportionately affect individuals of Asian descent.

Design

Systematic scoping review of rare disease literature in the National Organization for Rare Diseases (NORD), Genetic and Rare Diseases Information Center (GARD), and PubMed databases.

Methods

Disease identification and screening began in June 2021, with the first 11 searches completed by August 2021. NORD and GARD were systematically searched using the following keywords: “Asia”, “Asian”, “Japan”, “Japanese”, “China”, “Chinese”, “Korea”, “Korean”, “Japan or Korea”, “Middle East”, and “Indian”. Accepted diseases were prevalent in Asia and demonstrated varied prevalence across racial and ethnic groups in the U.S.

Preliminary Results

29 rare diseases were identified for further investigation and screening through PubMed.

Limitations

There is a limited body of literature on rare diseases; some studies may also be erroneous or redundant.

Discussion

While this is an ongoing project, preliminary findings highlight the need for more research on rare diseases that most commonly affect Asian Americans. Future educational programs should focus on rare diseases in racial and ethnic minority groups to minimize disparities in health outcomes.

The Association Between Immigrant Density and Health Outcomes in American Neighborhoods

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Background

Immigrants make up 14.5% of the total American population, and yet they are also one of the most historically underrepresented groups in population health research. Fascinatingly, although immigrants generally demonstrate lower socioeconomic status than non-immigrants, they have lower age-related disease prevalence and mortality compared to non-immigrants. This has been termed the “healthy immigrant effect”. Recent evidence suggests immigrants may not only have higher levels of individual physical activity, but may also influence their families and neighbors to decrease sedentary behavior. Given the magnitude of the present and future impact of immigration on our society, it is time that we look deeply at the association between immigrant density and health behaviors in a neighborhood.

Objective

To investigate the association between immigrant density with the health of neighborhoods and the health behaviors of both foreign-born and U.S.-born populations by ZIP code level.

Design

This was a retrospective, cross-sectional ecological study. Exposure is immigrant density, derived from the American Community Survey (ACS) containing 5-year estimates for 2019.

Outcomes include health behaviors, preventions, and outcomes from the CDC Behavioral Risk Factor Surveillance System (BRFSS) for 2018.

Setting

The Stanford Center for Asian Health Research and Education.

Participants

All ZIP codes with more than 16 foreign-born individuals (32409 out of 41692 total ZCTAs).

Methods

For the initial exploration of data, we used linear regression to examine the association between immigrant density and 14 selected variables. We then performed multiple regression to test our predictive model which appointed obesity and physical activity as possible mediators between immigrants density and diabetes. Due to ACS’ data collection method, there are different levels of uncertainty in the data. This is a very common yet largely ignored issue in the past ecological studies. Therefore, we plan to expand this project beyond this specific topic and develop a formal method to correct for the standard error.

Results

Higher immigrant density in a neighborhood is associated with lower prevalence of diabetes (beta estimate = -0.056657; r-squared = 0.02709); this remains true even after adjusting for prevalence of obesity (0.038646; 0.5356), physical activity (-0.014093; 0.7097), and both (-0.001015; 0.7168), with all p-values < 0.001. We conclude that immigrant density is a potential protective factor of diabetes, and the relationship is mediated by prevalence of obesity and physical activity.

Discussion

The effects may differ depending on the racial/ethnic composition of the neighborhood. A previous study has shown that living in communities with a high Hispanic concentration (>=25%) was associated with a increase in body mass index (BMI; defined as weight in kilograms divided by the square of height in meters) and higher odds for obesity for non-Hispanic Whites, respectively; meanwhile the opposite effect is observed for communities with high Asian concentration. As a next step, we will disaggregate our results by race.

Acculturative family distancing and help-seeking behaviors among Asian American adolescents

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Background

Asian American adolescents encounter culturally related stressors in addition to age-related stressors. However, Asian Americans adolescents are less likely to seek mental healthcare compared to their White, Black, and Hispanic counterparts. Further research is needed to identify what drives the lack of help-seeking behaviors in Asian American adolescents.

Objective

To explore the lived-experiences and identify the patterns of help-seeking behaviors in Asian American adolescents from Santa Clara County to implement targeted community-level interventions.

Methods

The Stanford SHINE is a mixed-methods community-based participatory research approach to explore the relationship of acculturative family distancing (AFD) with various psychosocial outcomes using a cross-sectional survey where participants self-reported answers, coupled with focus groups for both adolescents and parents, which were both completed virtually.

The survey and focus groups utilized questions developed in consultation with a coalition of community partners, including the staff members and youth from a high school in Santa Clara County in Northern California. 107 high school students and 33 parents submitted some degree of survey responses. Additionally, 4 focus groups with 3-5 members in each (one just for parents, four just for students) were conducted semi-sequentially structured around emerging findings from the survey data. A total of 12 students and 3 parents participated in the focus groups. The present study is implementing a directed content qualitative analysis to preliminarily identify patterns of help-seeking behaviors from the 12 students that participated in the focus groups from the parent study. Help-seeking behavior is stratified into 5 categories, including formal, semi-formal, informal, traditional, and other sources of help.

Funding

Woo Family Foundation, Stanford CARE

Results

The research is still in the data-collection phase; however, preliminary descriptive analysis of the student focus group data indicate two prevalent themes: the role of nativity and age on help-seeking behavior, and reasons participants may not approach their parents for help. Most students report going to a friend or a sibling for help, as the similarity in age and acculturation makes it easier to discuss issues. Conversely, some students reported that they avoid seeking help from their parents due to a judgmental environment.

Limitation

Self-selection bias may have occurred, and participants were only recruited from one high school in a medium-to-high income location in Santa Clara County.

Discussion

Further research is needed to identify what drives variations in help-seeking behaviors that avert Asian Americans from seeking more formal sources of help. Additional focus group data probing parents on who they expect their adolescents to seek-help from could indicate different expectations in student-parent dyads, while potentially drawing new areas of intervention.

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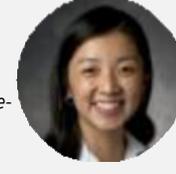
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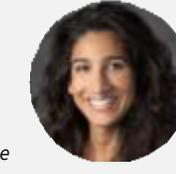
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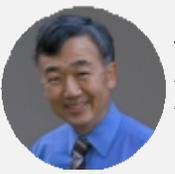
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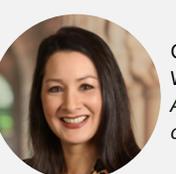
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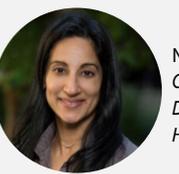
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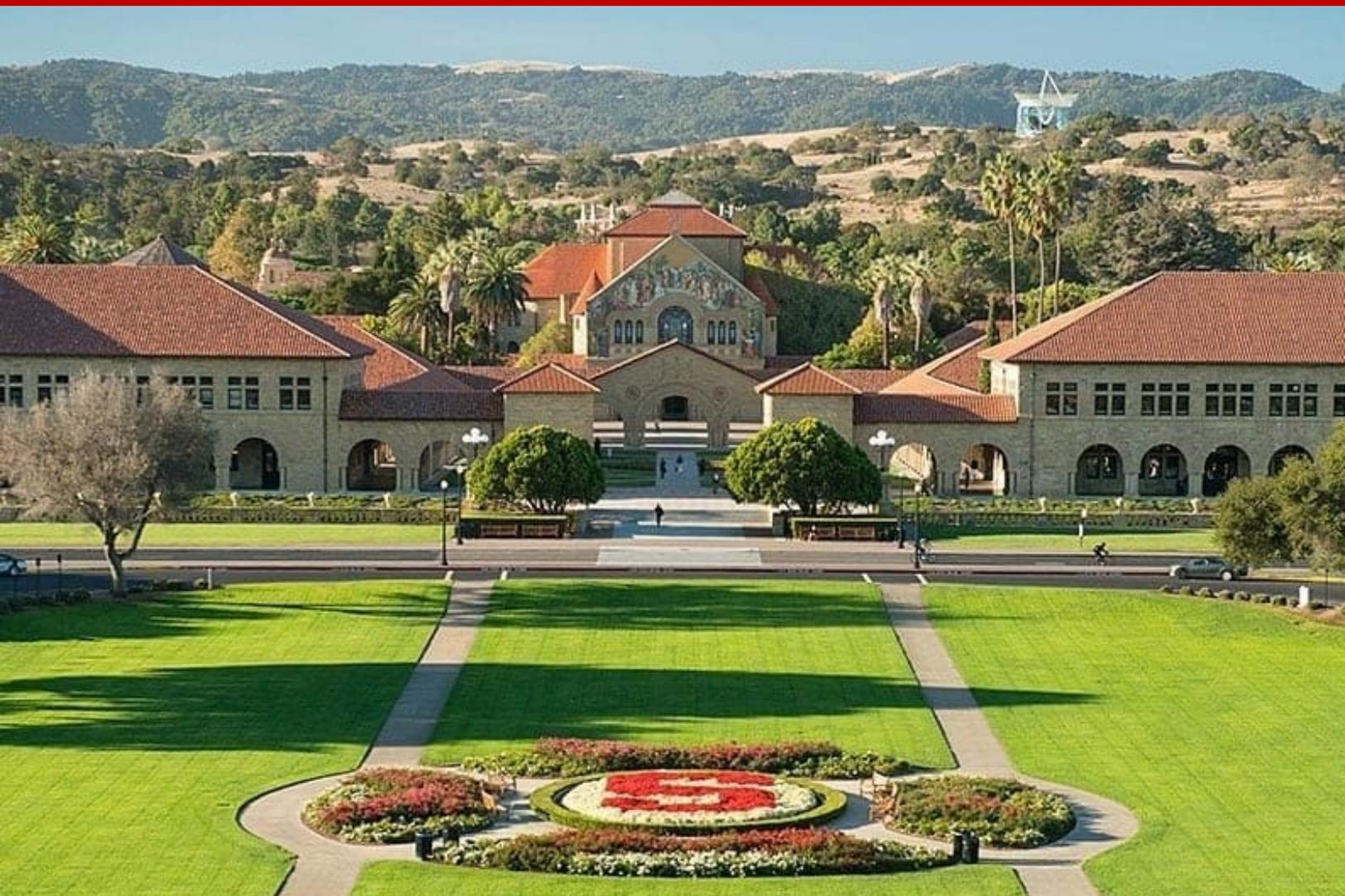
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Stanford CARE Scholars Program 2021

The Stanford CARE Scholars Program is a year-long research program in precision medicine and data science, anchored by a 9-week intensive research program, to train the next generation of Asian health researchers.

Stanford CARE Scholars was founded in 2019, with just 5 students, and summer immersion. In 2020, we expanded the program to a year long experience. We welcomed a cohort of 19 scholars, 3 Implementation Science Fellows, and Program Administrators to the program. We leveraged the unique aspects of Stanford's world-class research, technology, and medical infrastructure to create a unique virtual curriculum and mentorship structure supported by 20 Stanford faculty mentors. Now, in 2021, we expanded the program to include a cohort of 25 graduate and undergraduate students from around the world, while also expanding our faculty and mentors and program structure.

CARE Scholars participate in seminars on Asian Health, medical technology, AI, innovation, medical research, vulnerable populations, and global health with Stanford faculty and visiting faculty. Our Scholars learn large database analysis, core concepts in healthcare research, and collaborate with technologists, entrepreneurs, non-profits, and population science researchers. The Program is committed to helping these young researchers navigate their careers, as they grow in their profession. We are looking forward to seeing them change the world for the better – including improving outcomes in Asian health.

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