Stanford CARE Summer Research Symposium

Friday, August 14th, 2020
10:30 am – 6:30 pm, Pacific Time
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 2020, as a showcase for innovative Asian health research from 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. This year, due to the pandemic, the Symposium will be held virtually, by Zoom. This year, we are proud to showcase the critical Asian health research conducted by Stanford CARE Summer Research Immersion (CARE-SRI) students and Hong Kong University students in medicine and public health.

CARE Summer Research Immersion’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 CARE-SRI program took on 19 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 new 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 launch our partnership by welcoming HKU students to present their research at the Symposium.

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

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

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

Bryant Lin, MD
Clinical Associate Professor of Medicine
Co-Director, CARE at Stanford University
Stanford University School of Medicine

Gloria Kim, MD
Clinical Assistant Professor of Medicine
Director of Educational Programs, CARE
Stanford University School of Medicine
# Stanford CARE Summer Research Symposium 2020

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Please use the following Zoom link for the main symposium proceedings:

https://stanford.zoom.us/my/stanfordcare  
Password: 396203

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- https://www.linkedin.com/company/stanfordcare/  
- @stanfordcares
On behalf of the Stanford CARE Executive Team & Stanford CARE Advisory Board, we extend a warm welcome to all our speakers, students, friends, & family, who are joining us in the fight for equity in Asian health.
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.

4 Asian Health Courses
Fall 2019 – Spring 2020
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.”

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 25 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.

The mission of the Stanford Center for Asian Health Research and Education (CARE) is to increase research and knowledge in Asian and Asian-American health; to educate patients, providers, and the community on these pressing health needs; and to improve the culturally sensitive and evidence-based delivery of health care to Asians everywhere.

This work was made possible by the unwavering support and constant dedication of our CARE Executive Leadership, Advisory Board, faculty, staff, and donors. We thank them for their time, treasure, and talent, and look forward to advancing our mission through future projects—including our first annual Traditional Asian Medicine Conference and production of a Global Health Docuseries.
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Robert Harrington, MD / The Future of Asian Health
11:00 am - 11:30 am

Dr. Harrington serves as president of the American Heart Association (AHA) for 2019-20. He is a world-renowned interventional cardiologist and clinical investigator in the area of heart disease and Arthur L. Bloomfield Professor of Medicine and Chairman of the Department of Medicine at Stanford University. He was previously the Richard Sean Stack, MD Distinguished Professor and the Director of the Duke Clinical Research Institute (DCRI) at Duke University. Dr. Harrington is currently a member of the American Heart Association’s Board of Directors, Executive Committee and Science Advisory and Coordinating Committee and served as Chair for the Association’s Committee on Scientific Session Program in 2013 and 2014.

Gilberto Ka-Kit Leung, MBBS PhD LLM / Building International Collaborations
2:45 pm – 3:00 pm

Professor Gilberto K. K. Leung is a Clinical Professor, academic neurosurgeon and the holder of the endowed Tsang Wing-Hing Professorship in Clinical Neuroscience at The University of Hong Kong (HKU). He graduated from the University of London with BSc in Physical Anthropology (University College London) and M.B.B.S. (St. Bartholomew’s Hospital) in 1992. During his neurosurgical training, he was awarded the Hallet Gold Medal by the Royal College of Surgeons of England, and the J. Douglas Miller Medal in Neurosurgery by the Royal College of Surgeons of Edinburgh. He joined HKU in 2005 where he obtained two doctorate degrees of MS and a PhD. He holds an LLM in Medical Law and Ethics from the University of Edinburgh with Distinction and the McLagan Prize for Best Graduate.

Nirav Shah, MD MPH / The Future of Health and Healthcare
12:00 pm – 1:00 pm

Nirav R. Shah, MD, MPH, is Senior Scholar at Stanford University’s Clinical Excellence Research Center. He is a leader in patient safety and quality, innovation and digital health, and the strategies required to transition to lower-cost, patient-centered healthcare. Board-certified in Internal Medicine, Dr. Shah is a graduate of Harvard College and Yale School of Medicine and is an elected member of the National Academy of Medicine. He serves as an independent director for STERIS plc, as trustee for The John A. Hartford Foundation, as Senior Fellow of the Institute for Healthcare Improvement (IHI), and as a member of the HHS Secretary’s Advisory Committee on National Health Promotion and Disease Prevention Objectives for 2030. Previously, he served as senior vice president and Chief Operating Officer for clinical operations for Kaiser Permanente in Southern California, and as Commissioner of the New York State Department of Health.

Abraham Verghese, MD MFA / The Search for Meaning in a Medical Life
5:00 pm – 5:45 pm

An infectious disease physician and a writer, Abraham Verghese is Senior Associate Chair, and Professor of the Theory and Practice of Medicine in the Department of Medicine at Stanford University. Abraham Verghese is a strong advocate for the value of bedside skills and physical diagnosis, skills he sees as waning in an era of increasingly sophisticated medical technology.


He is a member of the National Academy of Sciences, and in 2016 received the National Humanities Medal from President Obama.
Prevalence of risk factors for severe COVID-19 illness in Asians and Non-Asians

Hang Long Li, BSc, Department of Medicine, The University of Hong Kong; Bernard MY Cheung, PhD, Department of Medicine, The University of Hong Kong.

Background
Conditions such as obesity, diabetes (DM), heart disease, chronic obstructive pulmonary disease (COPD), and chronic kidney disease (CKD) predispose COVID-19 patients to severe illness. In the US and UK, ethnic minorities appeared to be more susceptible to COVID-19. This study aims to compare the prevalence of these risk factors in Asians vs non-Asians in America.

Population
The National Health and Nutrition Examination Survey (NHANES) is a nationally representative survey of the US which used the complex sampling technique. In the 2011-2016 cycles, adult non-pregnant participants with complete laboratory/examination/self-reported data were included.

Setting
After informed consent, participants were interviewed and examined in Mobile Examination Centers by trained personnel.

Funding source
None.

Methods
The prevalence and 95% confidence intervals (CIs) of obesity (BMI ≥27.5 for Asians and ≥30 for Non-Asians), DM, heart disease, COPD and CKD in Asian and non-Asian participants were determined and were compared using logistic regression adjusted for age and sex. Age ≤50 and ≥50 years were pre-specified subgroups. Statistical analysis was performed using R “survey” (v3.6.3).

Results
Altogether 6271 participants (789 Asians, 5482 Non-Asians; age, 47.3 [SD 16.8] years; male/female, 0.93) were analyzed. Among Asians, the commonest risk factor was obesity (21.1%, 95% CI 17.5 – 25.0%), followed by DM and CKD. The prevalence of ≥1 risk factor among Asians was 37.5% (95% CI 32.9 – 42.0%), compared to 54.9% (95% CI 52.6 – 57.0%) among Non-Asians (P<0.001). In participants aged ≥50 years, the prevalence of ≥1 risk factor among Asians was 52.4% (95% CI 45.3 – 59.0%), close to that in Non-Asians (65.4%, 95% CI 61.4 – 69.0%) (P=0.009).

Limitations
Medical history in NHANES relied on self-report, so the prevalence of risk factors could be underestimated. Moreover, cancer was not included for analysis due to its heterogeneity, and uncommon conditions such as sickle cell anemia and post-transplant immunodeficiency were not included.

Discussion
Asian Americans appear to have fewer risk factors for severe COVID-19 illness. Nevertheless, 37.5% of Asians are at risk, and these individuals should strictly follow social distancing and personal hygiene measures. Obesity is prevalent and so weight reduction through lifestyle modifications should be adopted.

MRI as a Surveillance tool in IGBT treated cervical cancer patient in Hong Kong

A descriptive epidemiological comparison of two local public hospitals and cost-effectiveness analysis

Esther MF Wong, Amy TY Chang, Elaine YP Lee, Benjamin Cowling

Background
Image Guided Brachytherapy (IGBT) has improved treatment outcome and led to increased cancer survivorship. Early detection of local recurrence becomes one of the important targets of post-treatment surveillance. Use of radiological follow up for this purpose was however controversial. With limited of healthcare resource, justification for MRI as a surveillance modality is essential.

POPULATION
Cervical cancer patients treated with IGBT in clinical remission phase of the disease.

Setting
Hospital Authority Hospitals in Hong Kong

Funding Source
None

Innovation/Methods
Cohorts from two hospitals under Hospital Authority Hong Kong (Hospitals A & B) were retrospectively analyzed. Consecutive cases which completed IGBT treatment in the period Dec 2014 - Dec 2017 and Feb 2014 - Sept 2018 were included from Hospital A & B respectively.

Hospital A incorporated MRI as part of routine follow up protocol, while surveillance MRI was not performed in Hospital B. Demographic factors such as age and initial disease staging distribution were compared. Survival trends were studied with Kaplan Meier analysis. With the survival figures from the pre-selected hospitals, cost-effectiveness analysis were subsequently performed with Markov state transition models. Primary outcome measure was Incremental Cost Effectiveness ratio (ICER) per Quality adjusted life year (QALY) gained. Secondary outcomes were QALY and life years gained.

Results
The two cohorts selected were comparable in age distribution and mean and initial disease FIGO staging. Hospital A showed lower local recurrence free survival at most time points and higher disease-free survival and overall survival for the first period of two years as compared to Hospital B, after which the overall survival and disease-free survival curves approximated with each other.

Limitations
Potential unobserved confounding biasing the treatment outcome differences. Costs incurred were subjected to under-estimation due to non-systemic expenses. Opportunity costs such as competing healthcare priorities in public sector are not reflected.

Discussion
Routine incorporation of surveillance MRI is not cost effective. Lowering of monetary cost of MRI does not improve cost effectiveness.
## Bayesian age-period-cohort analysis & projection of diabetes incidence in Hong Kong, 2007-2027

### Background

Our study primarily aimed to examine the effects of age (biological changes), time period (current population-wide factors), and birth cohort (generational factors) on incidence rate of diabetes and generate projections of trends in Hong Kong.

### Population

We identified all individuals who had a recorded diagnosis for diabetes from the electronic medical record database of Hospital Authority in Hong Kong from 1 January 2007 to 31 December 2017.

### Setting

We included individuals aged from 20 years old (14 age groups at 5-year intervals) with birth cohorts from 1922 to 1997.

### Funding Source

The authors received no financial support for the research, authorship, and/or publication of this article.

## Methods

We applied a Bayesian age-period-cohort model which decomposed the age, period, and cohort effects on diabetes incidence trends separately for males and females. Based on past data from 2007 to 2017, we projected future trends for the next decade to 2027.

### Results

We identified 469,325 incident cases of diabetes from 2007 to 2017. As expected, we observed clear age effects on incidence in both sexes. Overall incidence rates increased among successive birth cohorts from 1980s to 1990s while period effects remained negligible. In the projection model for male, incidence rate increased with older age groups in a progressive manner. We noticed an increasing trend projection for the 30-39 age group and a decreasing trend projection for the 70-79 age group; while other age groups remained stable. For female, incidence rate also progressively increased with older age groups in a pattern similar as male. 20-29 age group had a stable projected trend. The next 30-39 and 40-49 age groups showed a small rising trend. While for the remaining age groups with patients above 50 years old, they all revealed declining trends in the projected years.

### Limitations

Age-period-cohort analyses described trends so we could only speculate the aetiologies but not the causal factors that lead to the incidence trends observed. With limited data covering from 2007 to 2017, our projection of future trends had large confidence intervals in incidence projection.

### Discussion

Age had the greatest impact on incidence rates among people with diabetes, while period had negligible impact. The increase in cohort effects from 1980s in both sexes could be due to the increasing prevalence of obesity for the millennials in Hong Kong. We could observe that the age of onset of diabetes had a decreasing trend had large confidence intervals in incidence projection.

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**Community-Based Low-Intensity Cognitive Behavioral Therapy for Insomnia: Evaluation with a Randomized Controlled Trial**

Ka Yan Wong, MBBS, The University of Hong Kong; Ka Fai CUNG, MBBS (HK), MEd W’gong, MRCPsych, FHKCPsych, FHKAM(Psychiatry), Department of Psychiatry, The University of Hong Kong; Chi Hung AU, MBChB (CUHK), MSc (Oxon), FHKCPsych, Department of Psychiatry, Queen Mary Hospital

### Background

The entry-point treatment for insomnia encompasses various low-intensity interventions based on the stepped-care model. A randomized controlled trial (RCT) was performed to compare a community-based workshop of cognitive-behavioral therapy for insomnia (CBTI), self-help CBTI and sleep hygiene education (SHE), in terms of insomnia severity, mood-related symptoms, quality of life, treatment adherence and credibility.

### Method

An active-treatment-controlled and assessor-blinded RCT was commenced. Participants were block-randomized to the half-day CBTI workshop, Internet-delivered CBTI and half-day SHE workshop equally. Baseline assessment, 8-week and 16-week post-baseline follow-ups were conducted. The primary outcome measure was the Insomnia Severity Index. The secondary measures included the Hospital Anxiety and Depression Scale, Short-Form Six-Dimension Health Survey, treatment adherence and credibility.

### Results

All three arms demonstrated significant improvements on insomnia severity (effect size = 0.23) after intervention (p < 0.001), mood-related symptoms (effect size = 2.4, 95% CI, 1.2 to 3.6, p < 0.0001) and quality of life (effect size = 0.020, 95% CI, 0.006 to 0.033, p = 0.002). However, there was no difference between interventions for both follow-ups. The treatment credibility of the self-help group dropped (effect size = -0.23) whereas that of the CBTI workshop rose (effect size = 0.23) after intervention (p = 0.037).

### Limitations

(1) The outcome assessments relied on self-reported questionnaires. However, this preserved the high response rate (70.0%); (2) The workshop attendance rates were lower than expected. Consequently, the respective workshop materials were provided for the attendees; (3) Patients with diagnosed mood disorders under treatment, and participants using hypnotics were not excluded, but their proportions were small.

### Discussion

Significant and lasting efficacy was noted for all three arms. Comparable outcomes between CBTI and the active control SHE were explained by the comprehensiveness of SHE content, model equivalence between the two workshops and reduced interactions in larger groups. Face-to-face and Internet-delivered interventions elicited mixed results from previous literature. Nevertheless, self-help CBTI possesses additional advantages including high accessibility, convenience and few required resources. It is thus recommended as the preferred entry point for insomnia treatment.
Knowledge Difference in Sexually Transmitted Diseases between Hong Kong Undergraduates from Local and International Secondary Schools: A Cross-Sectional Study

Darren Li Liang Wong, B.S.; Allen Zhang, M.Sc.; Kylie KY Cheung; May PS LAM, Pharm.D., Ph.D.

Background
Due to the increasing high-risk sexual behaviors among youths and prevalence of sexually transmitted diseases (STDs) in Hong Kong, this study aims to assess and compare the STD knowledge between undergraduates who attended local and international secondary schools.

Population
17,007 full-time undergraduate students - excluding exchange and visiting students – who attended any of the 473 local or 33 international secondary schools in Hong Kong were eligible to participate.

Setting
From January to March 2019, a cross-sectional survey was conducted at the University of Hong Kong (HKU) by convenience sampling (ethical approval HKU/HA HKW IRB Reference Number: UW 18-650).

Funding Source
This research did not receive any funding.

Methods
A 42-item self-administered questionnaire – which included questions on demographic characteristics, attitude towards sexual health, sources of sex education, and STD knowledge (29 questions) – was developed. Independent t-tests were conducted to analyze the differences between those who attended local and international secondary schools. Bivariate and multiple linear regression analyses were also conducted to evaluate the association between STD knowledge level and demographic characteristics, previous sex education, and attitudes toward sexual health.

Results: Undergraduates from international secondary schools (n=58) scored higher on the 29-question STD quiz than those from local secondary schools (n=338) (18.2 (95% CI, 16.5–19.9) vs. 15.4 (95% CI, 14.8–16.0); p<0.01). Higher year of study, affiliation with medical faculties, inclusion of sexual health curriculum and higher satisfaction in previous sex education, higher self-rated STD knowledge, and higher comfort in sexual health discussions with peers/friends were predictors of higher STD quiz scores (p<0.05).

Discussion: The scores of 15.4 (53.1%) and 18.2 (62.8%) suggest disparities and inadequacy of STD knowledge among young adults in Hong Kong as they would likely demonstrate lower STD awareness than HKU undergraduates, warranting the implementation of an effective and standardized sex education that would reduce the prevalence and thus the disease burden of STDs in Hong Kong, particularly in this vulnerable demographic.

Understanding and Perception of Direct-to-Consumer Genetic Testing in Hong Kong

Hoi Kin Chow, BSc; Vivian Chin Chin Hui, MPhtl; Hiu Ching Li; Yan Wing Lui; Sheung Chit NG

Background
Direct-to-consumer genetic testing (DTCGT) is gaining popularity in Hong Kong. As DTCGT forgoes specialist medical involvement, healthcare professionals have raised concerns regarding its validity, utility, and the public’s ability to interpret the test results. Thus, genetic counselling (GC) is consistently recommended to facilitate interpretation of DTCGT results. This study aims to investigate the Hong Kong public’s perception towards DTCGT and the importance of GC in DTCGT.

Population
Hong Kong citizens aged 18 years old or above

Setting
Web-based questionnaire

Funding Source
None

Methods
304 participants completed a 37-item survey distributed online. The survey assessed participants’ understanding and attitude towards DTCGT and GC, level of genomic literacy using a previously developed genomic sequencing knowledge scale, and responses to a mock DTCGT scenario predicting increased risk of colon cancer.

Results
48% of participants were aware of DTCGT and 82% indicated interest in DTCGT. Only 30% of participants were aware of GC services in Hong Kong; 49% were interested in using GC services to understand DTCGT results. Participants scored on average 7.6/11 (95% CI 7.3 to 7.9) in the genomic sequencing knowledge scale, especially weak in limitations of genomic testing. In the mock DTCGT scenario, 73% of participants expressed concern with the positive results initially. After being explained limitations of DTCGT, 40% participants reported decreased concern; levels of perceived helpfulness in medical management and lifestyle modification also decreased by 35% and 27% respectively.

Discussion
The Hong Kong population has a high level of awareness and interest in DTCGT. As potential DTCGT users, they might experience excess concern and overestimate the usefulness of positive DTCGT results, particularly in terms of medical management. The importance of GC to educate and guide interpretation of DTCGT results is supported; yet there is inadequate awareness and access of GC services in Hong Kong.

Limitations
Older, lower-educated individuals were under-represented in this population. Although it is believed most probable users of DTCGT have been captured, future studies would benefit from more diverse survey distribution channels. The hypothetical DTCGT scenario was limited to a positive result and might not fully simulate the actual experience.
**Analysis of SARS-CoV-2 Genomes Regarding Time and Geographical Regions**
Hoi Man Chung, Bachelor of Biomedical Sciences

**Background**
SARS-CoV-2, a novel virus originated from Wuhan in 2019, had developed into a pandemic and infected over 15 million people around the globe. As a single-stranded RNA virus, SARS-CoV-2 genome can easily undergo nucleotide mutation. Therefore, we aim to track mutation of the virus.

**Methods**
We first downloaded near 26,000 complete genomes from GISAID Initiative. We only analyzed samples with high coverage (i.e. <1% missing value coded in Ns). We applied multiple sequence alignment to include samples with slightly different lengths. We then performed correlation analysis between SARS-CoV-2 mutations and different covariates including time and geographical regions.

Results
First, we evaluated the mutation rate by comparing each viral genome to the early reference on a per month window. We observed that the number of mutations per viral genome consistently increases from 4.76 +/- 2.80 (mean, SD) in February to 11.3 +/- 3.31 in June. A linear regression further confidently suggests that there are 1.60 +/- 0.0873 (mean) or 1.64 +/- 0.0715 (median) more mutations per month (both Pearson’s correlation R > 0.98).

Then, we analyzed the mutation frequency across the whole genomes to identify frequent mutations. We revealed that positions 241/3037/14408/23403 (from 5' to 3' end) co-mutated in 76.5% samples and co-conserved in 21.6% samples. More interestingly, this clade can be well fitted by a first-order dynamical model (p-value = 0.0004, MAE = 0.0774), and the half-life of the reference allele is 1.10 months. This provides an evidence for natural selection of SARS-CoV-2 with time, and this A23403G (i.e. D614G) mutation has been suggested to be more infectious in recent study. (Kerbos et al, Cell, 2020, July 2nd).

Furthermore, we discovered several mutation patterns regarding geographical regions. For example, position 25563 mutates in 56.4% of samples in North America and 3.40% - 34.8% in other continents.

**Discussion**
Through this analysis, we hope to provide more information regarding the mutation of SARS-CoV-2 genomes. Additionally, a spatial-temporal model to jointly analysing these samples will have better power to reveal further insights on the evolution and transmission, which we plan to work on.

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**Remdesivir for the treatment of severe SARS-CoV-2 (COVID-19): a systematic review and meta-analysis**
Zhipeng Yan (MBBS Year 4); Ka Shing Cheung, MBBS, MPH; Eric Ho-Yin Lau; Ching-Lung Lai, MD

**Background**
Coronavirus Disease in 2019 (COVID-19) is a pandemic caused by SARS-CoV-2 infection. As of 8 July 2020, over 11 million people in more than 200 countries have been infected, resulting in over 530,000 deaths. However, there has been no standard treatment or vaccine to date. Recently, several studies have demonstrated the efficacy of remdesivir for the treatment of severe COVID-19 patients. This is a systematic review and meta-analysis to define its efficacy.

**Population**
Severe COVID-19 patients with pathologically confirmed tests.

**Settings**
Inpatient settings.

**Funding Source**
None.

**Methods**
A systematic review was done on databases (Pubmed, Embase, Medline, Cochrane) on 9 July 2020. Search keywords were remdesivir, COVID-19, SARS-CoV-2, randomised controlled trials and cohort studies. Studies with high-evidence values were selected to evaluate the clinical efficacy of remdesivir in terms of risk ratio, time to clinical improvement, and mortality risk. Subgroup analysis was performed based on baseline hospitalization status, age and ethnicity.

**Results**
Of the 999 studies, 5 studies were selected and pooled for meta-analysis. Remdesivir was associated with clinical improvement (risk ratio 1.14, 95% CI 1.02-1.28, p=0.02). It shortened the mean time of clinical improvement by 3.32 days (95% CI -4.37 to -2.28, p=0.001). However, its use was not associated with reduced mortality risk (risk ratio 0.75, 95% CI 0.40-1.40). In subgroup analysis, remdesivir was associated with clinical improvement in patients without the need of invasive ventilation (risk ratio 1.90, 95% CI 1.58-2.29, p=0.001; hazard ratio 2.22, 95% CI, 1.64-3.02), and of age older than 65 (risk ratio 2.14, 95% CI 1.39-3.28, p=0.001).

**Limitations**
Limited literatures were available for systematic review and meta-analysis to date.

**Discussion**
Remdesivir is effective to treat severe SAR-CoV-2 infections, in particular to those without invasive ventilation. This may be due to the absence of irreversible alveolar damage as observed in severe and critically ill COVID-19 patients.

A study focusing on the Chinese population showed remdesivir was effective to reduce viral load and provided symptomatic relief in the early phase, yet its effectiveness waned afterwards. Some other studies showed that the Black and the White populations had a higher chance of clinical recovery after receiving remdesivir, compared with Asians. It has been postulated that non-Asians may have a higher chance of clinical improvement due to the lower levels in angiotensin-converting enzyme 2 (ACE2) expression.

Remdesivir monotherapy is not very effective for COVID-19 patients with invasive ventilation and old age groups (older than 65 years old), research on combination therapy or novel agents is required.

**Conclusions**
Remdesivir is effective in the treatment of severe COVID-19 patients, especially those without invasive ventilation.
Prevalence, Care, and Control: The Association of Community-Level Effects on the Chinese Diabetes Spectrum

Kalpana K. Balaraman, BS, The Stanford Center for Asian Health Research and Education; Shozen Dan, The Stanford Center for Asian Health Research and Education; Nicholas Ortega, The Stanford Center for Asian Health Research and Education; Jaiveer Singh, The Stanford Center for Asian Health Research and Education; Sukyung Chung, PhD, Med/Quantitative Sciences Unit, Stanford University, Palo Alto, CA; Malathi Srinivasan, MD, Division of Primary Care and Population Health, Stanford University School of Medicine, Stanford, CA; Latha P. Panlakappan, MD, Division of Primary Care and Population Health, Stanford University School of Medicine, Stanford, CA; Karen Eggleston, PhD, Asia Health Policy Program, Stanford University, Stanford, CA.

Background
China is rapidly aging and home to over 25% of the world’s population with diabetes, an illness contributing immensely to the global burden of disease. There is a necessity for longitudinal diabetes studies focusing on changes in the diabetes spectrum and the community’s role in that change to understand the needs of the elderly population.

Objective
To explore the portion of the Chinese population at each step of the diabetes care cascade to consider the influence of various lifestyle factors on the likelihood of movement from one stage of the spectrum to another.

Setting
China Health and Retirement Longitudinal Survey, 2011 (baseline) and 2015 (4th wave).

Population
All 2011 respondents over 45 years old with a valid blood sample (7500 Chinese adults).

Funding
Stanford Center for Asian Health Research and Education (CARE), Palo Alto, CA.

Methods
Fasting plasma glucose and Hemoglobin A1C from blood samples were used to diagnose diabetes status. A mixed effects logistic regression scheme was utilized to account for community level differences that variables in our model were unable to capture.

Results
Most people were unaware of diabetes status at both baseline and after 4 years. If uncontrolled at baseline, it was unlikely to become controlled after 4 years, regardless of awareness. Most of those unaware of diabetes were controlled, and majority of those aware were uncontrolled. Community/village characteristics: Hay/marsh gas as fuel significantly decreased likelihood of awareness, but increased likelihood of control. Living in communities with high per capita expenditure increased likelihood of diabetes and control. Individual characteristics: High levels of C-reactive protein increased likelihood of having diabetes and awareness, and decreased likelihood of control (all results significant at alpha = 0.05).

Limitations
Majority of the respondents were not included due to absence in 4th wave or unavailability of blood samples. Also, we cannot account for the effect of economic development in the community due to the unavailability of community descriptors in the 4th wave.

Discussion
While some variables have an effect on movement between diabetes spectrum stages, most are covariates with economic development; the adoption of an urbanicity scale may assist in determining these associations. Further research on the effects of inflammation on diabetes may be necessary to understand the connection between lifestyle and diabetes management.

Underdetection of CFTR Mutations in South and East Asians
Manaeha Rao; Lilly Bar; Yunnan Yu; Sid Venkatraman; Sriram Vaidyanathan, PhD; Zachary Sellers, MD; The Stanford Center for Asian Health Research and Education

Background
Cystic Fibrosis (CF) is a fatal autosomal recessive genetic disorder affecting mainly non-Hispanic Whites (NHW). The disease’s effects are widely unrecognized in Asian populations. However, 30% of CFTR variants in South and East Asian patients at Stanford’s CF center would have been missed by the majority of US states’ newborn screening panels, evidence of a possible underdiagnosis.

Population
24 South and 5 East Asian CF Patients at The Stanford Cystic Fibrosis Center, and literature review.

Setting
Stanford University, Palo Alto, CA, analyzed in 2020.

Funding
Stanford Center for Asian Health Research and Education (CARE), Palo Alto, CA

Methods
An intensive review of CF case reports in South and East Asians in the past 30 years, compiling all disease-causing mutations and frequencies of appearance. Analysis of the Stanford Asian cohort’s mutation profile to compare to the South and East Asians found in the literature. All mutations found in the literature and at Stanford were checked to see if they would be detected by the top screening panels in the US.

Results
The mutation profiles of South and East Asians differed drastically, with largely no overlap in common mutations with each other. F508del, the most common mutation in NHWs, was largely absent in East Asians. A majority of South and East Asian mutations from the literature and in the cohort would be missed with the most advanced screening, short of full sequencing, in the US today.

Limitations
Inaccurate reporting of ethnicity. Inconsistencies between regions in method of mutation screening.

Discussion
Asians exhibited a wider variety of mutations, thus they can’t be screened for standard NHW mutations. States and Asian countries must reevaluate their screening or commit to full sequencing to include a diverse mutation profile. A significant population of Asians outside of the US are likely being underdiagnosed.
Cancer Mortality Among Asian American Ethnic Groups:

National Mortality Trends by Etiology and Nativity

Osika Tripathi1; Bridgette Han2; Yuelin He1; Darynn Gayle Paragas2; Caroline Thompson, PhD1; 1: San Diego State University; 2: Stanford Center for Asian Health Research and Education

Background
Disaggregation of Asian Americans (AA) by subgroups have shown substantial heterogeneity in the health outcomes. While research indicates varying mortality burdens by cancer type amongst different AA groups, an improved understanding about cancer mortality by etiology and nativity may inform future health behavior prevention strategies.

Population

Setting
The National Center for Health Statistics provides national level death certificate data.

Funding
Stanford Center for Asian Health Research and Education (CARE), Palo Alto, CA

Innovation/Methods
Thirteen cancer sites were categorized by etiology: tobacco-related (colon & rectum; pancreas, lung & bronchus; leukemia; kidney & renal; oral cavity & pharynx), screen detected (colon & rectum; female breast; prostate), infection-related (stomach; liver; Non-Hodgkin’s Lymphoma; oral cavity & pharynx), and diet-related (colon & rectum; female breast; ovary; uterine corpus). We used Age-Adjusted Mortality Rates (AAMR) and Standardized Mortality Ratios (SMR) to compare nativity with foreign-borns as the reference population.

Results
Mortality from tobacco-related deaths was higher for all foreign-born groups than U.S.-born except in Japanese males (Foreign AAMR 17.64 per 100,000 persons (14.91-20.38); U.S. AAMR 16.56 per 100,000 persons (15.26-17.87)) and Filipino females (Foreign AAMR 35.38 per 100,000 persons (34.41-26.65); U.S. AAMR 37.70 per 100,000 persons (34.19-41.22)). U.S.-born Japanese males experienced 14% more tobacco-related and screen-detected deaths than their foreign-born counterparts [SMR 1.14, (1.10 - 1.18) and SMR 1.2 (1.14-1.27), respectively. Furthermore, native Asian Indian females and males had a relatively large difference in mortality burden for infection-related cancers — although both groups still had lower mortality [Male SMR 0.81 (0.54 - 1.08 ] and [Female SMR 0.33 ( 0.13 - 0.54)].

Limitations
Three age-stratified groups with non-zero death counts have numerators as zero due to possible errors from the American Community Survey website. 3% of the groups stratified by race, sex, and nativity had death counts smaller than 15, resulting in an inability to make accurate conclusions for the groups.

Discussions
Most ethnicities experienced a greater mortality burden in foreign-born male and females than their U.S. counterparts, excluding Japanese males. The disproportionate risk of Japanese men indicates a potential hazard of longer immigration history in the U.S., and thus, requires more focused research in AA groups of more recent immigration. These findings indicate the need for personalized prevention tactics of health behaviors by ethnic groups as an effective method for specific cancer prevention.

Impact of Cultural and Familial Ties in the Decision-Making Preferences of Asian Americans & Non-Hispanic White Cardiovascular Patients: A Qualitative Study

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Background
Asian Americans (AAs) make up 5.6% of the United States population. There is a 1.8% incidence of cardiovascular heart disease in AAs. Thus, they may require cardiac procedures and often need to make medical decisions about obtaining them. AAs tend to have strong family relations and tend to involve family members in their decision-making process. However, there has been very little research about how AA decision-making is impacted by familial and cultural factors, as well as medical informational sources.

Study Design
Cross sectional Study: Semi-Structured Qualitative Interview.

Population
Minimum ten participants in each of the six AA and NHW groups to yield a minimum of 70 participants. Continue enrollment until thematic participation.

Setting

Funding
Stanford Center for Asian Health Research and Education, Palo Alto, CA

Study Goals
Our aim is to explore the influence of familial ties in decision-making around cardiovascular procedure participation by AA and NHW. We also want to highlight the utilization of traditional and complementary medicines to understand their influence on cardiovascular procedure decision-making.

Instrument Development
We will conduct a thirty-minute interview with questions consisting of: demographic details, cardiovascular procedure details, nature of patient-physician relationship, family role in medical decision-making about procedure, and use of traditional and complementary medicine.

Patient Recruitment Methods
Stratified sampling by clinic, by physician by using patient list at the Stanford Cardiac Electrophysiology clinic. There will be rolling enrollment until minimum participation and enrollment will continue till thematic saturation. No monetary incentive for participation. To start, there will be a warm introduction by MyHealth email message from primary cardiologist.
Outcomes for Asian Heart-Lung Transplant Recipients Compared to Non-Hispanic White
Shreya Ingle; Rishab Bhatt; Ashley Sackpraseuth; Sidharth Venkatraman; Yashiro Shudo, MD; Stanford Center for Asian Healthcare Research and Education (CARE)

Background
Combined Heart-Lung Transplant (HTLx) is a definitive surgical procedure that has been used to treat irreversible, life-threatening cardiopulmonary failure. It was first successfully performed at Stanford Hospital in 1982 and has since been used to treat over 3200 patients worldwide. The number of HTLx each year significantly declined from 1990 to 2015 due to the increase in less-invasive procedures, the shortage of suitable donors for HTLx, and the low survival rate of HTLx recipients compared to heart or double lung transplant recipients.

Population
We used data from the United Network for Organ Sharing (UNOS) database, which collects and stores data related to organ transplants. For HTLx donors, we included Asian (N=32), Black (N=125), Hispanic (N=162), and NHW (N=749) adults. For HTLx recipients, we included Asian (N=36), Black (N=106), Hispanic (N=88), and NHW (N=836) adults.

Setting
United States from January 1987-March 2019, data was analyzed in 2020 at Stanford CARE.

Funding
Stanford Center for Asian Health Research and Education, Palo Alto, CA.

Methods
We included patients ≥18 years old who underwent heart-lung transplants and completed their 1-year post-surgery follow-up. Patients were excluded if they were undergoing previous heart-lung transplants. We assessed various baseline demographics of the donors and recipients, and also looked at surgical data to identify any comorbidities. We used R programming, version 3.63, to conduct a Chi-squared test, 2-sample t-test, Kaplan–Meier curve, and Wilcoxon test.

Results
Over 32 years, we identified 36 Asian HTLx recipients and 32 HTLx donors; and 836 NHW recipients and 749 HTLx donors, with the other patients from other races. At 3 years, 40% of Asians and 25% of NHW had functional grafts. We found that graft survival within 5 years is statistically higher for Asians than for NHW (p = 0.065).

Limitations
Though we used United Network for Organ Sharing (UNOS) database, a national database, the Asian recipient sample size is still extremely small. Additionally, this was a retrospective study, not a randomized controlled clinical trial.

Discussion
Knowing that graft survival is higher for Asians, we will now match the cohort of Asians with NHW to confirm the survival probability after adjustment of possible confounding factors. To do this, we will use one of two methods: (1) matching several select variables, or (2) propensity score matching.

Patterns of Behavior among Chinese Hypertension Patients
Claudia Fernandez Perez; Kevin Xi; Aditya Simha; Karen Eggleston, PhD

Importance
There is a notable difference in hypertension prevalence between Asian Chinese and American Chinese. Furthermore, there is also a substantial difference between rural and urban Asian Chinese. As Asian Chinese are the largest ethnic subgroup in the United States, there is an increasing need to develop evidence-based prevention and treatment measures for the adequate management of hypertension in this population.

Objective
To identify the risk factors that are contributing to the significant difference in hypertension prevalence between American Chinese, urban Asian Chinese and rural Asian Chinese, comparing them to non-Hispanic Whites (NHW).

Design
Serial cross-sectional analysis of the NHIS and CHARLS databases.

Setting

Participants
388 Chinese American, 2807 rural Asian Chinese, 1690 urban Asian Chinese and 74,000 NHW from 45 years-old to 80+.

Main Measures
Association between presence of HTN in these 4 groups, in relationship to 15 variables including: demographics (male), lifestyle (ex. exercise), socioeconomic (ex. education), medical (ex. BMI) and behavioral variables (smoking). We examined the U.S. NHIS database, which reports on a broad range of health topics collected through interviews to personal households selected by cluster sampling, to study the American Chinese population. We also studied the Chinese CHARLS database, which is a longitudinal study following a cohort of individuals, reporting on socioeconomic and health topics for the Chinese Asian population, both urban and rural.

Results
Regression models showed significant correlation between smoking and BMI loss in Chinese urban and rural hypertensives, but not Chinese Americans. Furthermore, smoking showed a positive correlation with BMI in American cohorts vs a negative correlation in mainland Chinese cohorts. Exercise was positively correlated with BMI for all hypertensive groups but only significant in rural Chinese and Chinese American.

Discussion and Limitations
First, causation cannot be established because of the cross-sectional nature of the NHIS database, which does not allow for variable manipulation, and measures a different set of patients each year. On the other hand, the CHARLS database is longitudinal, which must be taken into account when comparing variables between both databases. Furthermore, since the information included in both databases is self-reported, there is the potential for misclassification of race and ethnicity data.

Conclusions and relevance
The results of this study are crucial in order to develop evidence-based policy recommendations directed to improve the prevention and management of hypertension disease in the Chinese population.

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Background
Asian American (AA) population has distinct cultures and origins that can contribute to many different cancer risk factors. Breast cancer is the second leading cause of female cancer mortality in the United States. Disaggregated AA subgroups can reveal heterogeneity in breast cancer mortality.

Population
11,388 AA and 473,927 non-Hispanic White (NHW) females for breast cancer deaths.

Setting

Funding Source
Stanford Center for Asian Health Research and Education, Palo Alto, CA.

Methods
Age-adjusted mortality rates and rate ratios were used to model trends in breast cancer mortality in Asian Indians, Vietnamese, Koreans, Filipinos, Chinese, Japanese, and non-Hispanic Whites from 2003–2017.

Results
Overall, NHWs had higher breast cancer mortality compared to any AA subgroup. However, the mortality rate significantly decreased with an annual percentage change on average of -0.49 (CI -0.76 to -0.55, p=1.788e-13) from 2003–2017. In contrast, mortality in Asian Indians (APC 0.27, CI 0.10 to 0.45, p=0.004) significantly increased on average. Breast cancer made up 18.6% of cancer deaths in Filipinas, 19.8% in AAs, and 14.4% in NHWs. Modification also decreased by 35% and 27% respectively.

Limitations
NVSS Mortality data provided little information on SES and no information on patient care and respective treatment; no inferences about care were made. The American Community Survey (ACS) data was missing for all groups in 2003, and 2004 population counts were inaccurate. Linear interpolation was used to estimate the age-specific population counts for 2003 and 2004.

Discussion
Our AMRs and rate-ratios showed significant increasing mortality in Asian Indians and Vietnamese while NHWs exhibited decreasing mortality. Proportionate mortality rates varied for disaggregated AA groups while NHWs and aggregate AAs had comparable results. After researching, we found AAs are under screened by mammography, the recommended measure. AAs have dense breast tissue making mammography less effective. The follow-up time from physicians after screening for AAs is longer than follow-up time for NHWs. Asian Indians generally present with triple-negative cancer while Vietnamese present with HER2-positive cancer. Although treatments for these cancers are advancing, our results show that these two AA subgroups aren’t benefitting.

Cigarette and Tobacco Product Use in Asian Indians, Chinese, and Filipinos

Manaeha Rao; Lilly Bar; Yunnan Yu; Malathi Srinivasan, MD; Arnab Mukherjee, DrPH, MPH; Jiang Li, Ph.D., MPH; Sukyung Chung, PhD; Latha Palaniappan, MD MS

Background
When aggregated, distinct usage of tobacco products is obscured in Asian subgroups. The extent to which sex and nativity influence Asian American smoking varies from the broader American population, showcasing the importance of Asian disaggregation to identify smoking and tobacco use trends in the US.

Population

Setting
Palo Alto, CA, analyzed in 2020.

Funding
Stanford Center for Asian Health Research and Education, Palo Alto, CA

Methods
Prevalence and 95% confidence intervals of current, daily, and former smokers calculated for race-ethnic groups, further separated by sex and place born. A subset of respondents from 2016-2018 analyzed for e-cigarette, smokeless tobacco, cigar, and pipe use. Behavioral variables analyzed using ANOVA, the Tukey HSD test, and logistic regression.

Results
Filipinos comprised 12.4% of current smokers, the highest rate out of all Asian subgroups, and 2x the prevalence of Asian Indians and Chinese. 9x as many Asian Indian men currently smoke compared to Asian Indian women; 5x as many Chinese men and only 2x as many Filipino men are current smokers compared to their female counterparts. 16% of US-born and 10% of foreign-born Filipinos were current smokers (p<0.001). Chinese cessation occurred only 2 years earlier than NHWs.

Limitations
NHIS data is a self-reported survey. NHIS samples a proportion of the Asian American population likely unrepresentative of the current demographic, given their rapid growth in the past decade. A possible exclusion of Asians less proficient in English.

Discussion
Filipinos were the Asian subgroup with the highest current and daily smoker rates. Disparities in rates between genders were distinct for each subgroup; Filipino women especially stood out among current and daily smokers. Inconsistent with the general trend of smoking among Asian immigrants decreasing with prolonged stay in the US, more US-born Filipinos were current and daily smokers than foreign-born. Despite lower current smoking rates, cessation among Chinese did not substantially deviate from NHWs. Identifying distinct smoking trends within subgroups may help prevention programs and aid in curbing tobacco use.
Complementary Therapy as a Health Practice: The Effects of Culture on Increasing Patterns of Use Among Ethnic Groups

Bridgette Han; Yuelin He; Darynn Gayle Paragas; Nora Sharp; Sukyung Chung, PhD, Stanford University; Randall S. Stafford, MD, PhD, Stanford University; Malathi Srinivasan, MD FACP, Stanford University

Importance
Use of complementary therapies (CT) is generally increasing in the United States, however recent utilization patterns are largely unknown when considering specific ethnic groups, including disaggregated Asian Americans.

Objective
To determine the rates of CT use in non-Hispanic whites (NHWs), non-Hispanic blacks (NHBs), Hispanics, American Indian/Alaska Native (AIAN), Asian Indians, Chinese, and Filipinos.

Design
Observational cross-sectional analysis of 2017 National Health Interview Survey (NHIS) CT supplementary questions.

Setting
The Stanford Center for Asian Health Research and Education

Participants
2017 NHIS: 1,331 Asian Americans (310 Asian Indians, 291 Chinese, 286 Filipinos); 18,841 NHWs; 2,936 NHBs; 3,127 Hispanics; and 273 AI/ANs.

Methods
We examined utilization of Body-Based Therapies (yoga, Tai Chi, Qi Gong), Mind-Body Therapies (mantra meditation, mindfulness meditation; spiritual meditation; guided imagery; progressive relaxation), and Biologically-Based Therapies (traditional medicines, homeopathy, or naturopathy) in eight ethnic groups. Using ANOVA, logistic regression, and odds ratios (NHW, reference group), we controlled for demographics (age, gender, region of the country, place of birth), socioeconomic status, education level, and self-reported health status.

Results
Overall, participants used body-based therapies (3998, 13.4%), mind-body therapies (4326, 15.8%), and biologically-based therapies (868, 3.2%). Respondents living in western United States were more likely to use all CTs [1.69 (1.50 - 1.67), <0.001] and women were twice as likely to use CT as men [45.2%, OR 0.52 (0.47 - 0.58), <0.001] in every category. However, place of birth did not indicate a significant impact on CT use, and popular uptake by age differed for each practice. Persons of Asian Indian heritage were significantly more likely to practice yoga [1.69 (1.28 – 2.20), < 0.001], while persons of Chinese descent had the highest use of Tai Chi and Qi Gong [3.44 (2.07 – 5.39), <0.001]. Surprisingly, AIANs use Biologically-Based Therapies three times more than NHWs [3.41 (2.25 – 5.00), <0.001].

Limitations
Potential limitations include the format of the NHIS CAM supplemental questions, interview-style structure, small sample sizes, and missing data. Significant values were not concluded for all variable associations by race. Additionally, observations of greater female use of CT may be attributable to the demographic of respondents answering NHIS CAM questions.

Conclusions
Use of complementary therapies is widespread amongst the U.S. population, with significantly different usage patterns by gender, region of the country, and ethnicity. Our results illustrate the need to consider medical pluralism amongst Asian Americans and other ethnicities when considering the influence of culture on health behaviors.

Mental Distress and Mental Health Service Utilization in Asian Americans

Kalpana K. Balaraman, The Stanford Center for Asian Health Research and Education; Shozen Dan, The Stanford Center for Asian Health Research and Education; Nicholas Ortega, The Stanford Center for Asian Health Research and Education; Jaiveer Singh, The Stanford Center for Asian Health Research and Education; Sukyung Chung, PhD, Median/Quantitative Sciences Unit, Stanford University, Palo Alto, CA; Malathi Srinivasan, MD, Division of Primary Care and Population Health, Stanford University School of Medicine, Stanford, CA; Latha P. Palaniappan, MD, Division of Primary Care and Population Health, Stanford University School of Medicine, Stanford, CA; Shashank V. Joshi, MD, Department of Psychiatry & Behavioral Sciences, Stanford University School of Medicine, Stanford, CA

Background
Despite having disproportionately high rates of suicidality, Asian Americans (as an aggregated group) have lower prevalence of mental health disorders and lower utilization of mental health services (MHS) than their non-Hispanic White (NHW) counterparts. There also exists a lack of previous studies focusing on mental health in disaggregated Asian American (AA) ethnic subgroups and understanding the circumstances of these populations is necessary to formulate better outreach.

Objective
To explore the prevalence of AA adults (of disaggregated ethnic groups) with mild to severe mental distress receiving professional mental health treatment in comparison to that of NHWs with the same mental distress levels.

Setting

Funding
Stanford Center for Asian Health Research and Education, Palo Alto, CA

Population
All AA and NHW respondents with a valid K6 score (138,161 respondents).

Methods
Cross-sectional study. Exposures included sociodemographic information, general health-related variables, self-reported degrees of mental distress (using Kessler-6 scale), and place of birth (native or foreign-born). The main measure was utilization of MHS (i.e. has the respondent visited a mental health professional in the past year).

Results
All AA ethnic subgroups were less likely to visit mental health professionals than NHW after controlling for all variables (Asian Indian: OR = 0.46 (0.32; 0.66), Chinese: OR = 0.55 (0.41; 0.75), Filipino: OR = 0.56 (0.43; 0.73)). Native-born respondents were more likely to visit a mental health professional than those who were not (OR = 1.54 (1.39; 1.74)). Respondents over 65 years of age were less likely to visit a mental health professional than any other age group (OR = 0.31 (0.27; 0.35)).

Limitations
Due to the study design, causality cannot be determined. There are also no specific variables from our data that indicate stigma affecting MHS utilization, so all assumptions related to cultural stigma are derived from previously published literature.

Discussion
The clear lower prevalence of MHS utilization among Asian Indian-, Chinese-, and Filipino-American individuals (in comparison to NHWs) indicates a need for culturally specific mental health education and outreach efforts. Topics such as stigma, somatization of symptoms, and acculturation issues must be broached, and emphasis should be placed on increasing awareness of resources in the elderly and foreign-born populations.
Disparities in the Age of Diagnosis of Type 2 Diabetes in Asian Subgroups
Shreya Ingle; Rishab Bhatt; Ashley Sackpraseuth; Sid Venkatraman; Sukyung Chung, PhD; Malathi Srinivasan, MD; Latha Palaniappan, MD MS; Stanford Center for Asian Healthcare Research and Education (CARE)

Background
Asians have been shown to have a 60% higher prevalence of diabetes than Non-Hispanic Whites (NHWs), with the risk being substantially worse for Asian Indians and Filipinos. The age of diagnosis of diabetes for these subgroups can be a critical indicator of health disparities and may explain the difference in prevalence.

Population
The National Health Interview Survey (NHIS) is an annual nationwide survey that collects self-reported health-related information from the civilian population in all fifty states in the United States. From this dataset, we included 320 Asian Indians, 203 Chinese, 495 Filipino, and 23543 NHW adults (24,561 total).

Setting
United States from 2006-2018, data was analyzed in 2020 at Stanford CARE.

Funding
Stanford Center for Asian Health Research and Education, Palo Alto, CA

Methods
Using the NHIS data from 2006-2018, we analyzed the age of diagnosis of diabetes in 24,562 participants who were between 20-80 years of age and reported having diabetes (DIBAGE/ DIBAGE1). To understand the difference between the mean age of diagnosis of diabetes in Asian Americans (between subgroups and compared to NHWs), we conducted ANOVA and Tukey Honest Significant Difference statistical tests.

Results
We found that Asian Indians are diagnosed five years earlier (p=0.0045) and Chinese are diagnosed two years later (p=0.071) than NHWs. A comparison of Filipinos to NHWs show no statistical difference in the age of diabetes (p=0.89). Filipinos were diagnosed at a mean age of 50, Asian Indians at 47, while Chinese at 55, and NHWs at 52.

Limitations
The data we analyzed was self-reported by respondents. Additionally, though age at diagnosis may not accurately reflect the age of diabetes onset, the disparity in the age of diagnosis of diabetes among Asian American subgroups is still significant.

Discussion
When disaggregated Asian subgroups are compared, Filipinos and Asian Indians seem to be diagnosed at a significantly earlier age than Chinese (p < 0.01). This difference could indicate that Chinese respondents develop diabetes later in life or that screening measures are not being conducted early enough for Chinese Americans and demonstrates the need to consider ethnicity when determining screening recommendations for diabetes.

Mortality in Asian Indians 2003-2017, Leading Causes, Trends, and Nativity Status
Kevin Xi; Aditya Simha; Claudia Fernandez Perez; Robert Huang, MD; Malathi Srinivasan, Nilay Shah, MD; Latha Palaniappan MD, MS

Importance
Asian American health research often aggregates the six major subgroups (Chinese, Japanese, Korean, Vietnamese, Indian, and Filipino) into a single population, masking multiple significant health trends. As Asian Indians are the fastest growing ethnic subgroup in the United States, the need for adequate awareness and education will be crucial in the coming years for disease prevention and management.

Objective
To characterize mortality rates and trends for the top ten causes of death among the Indian American population compared to aggregate Indian Americans and non-Hispanic Whites (NHW) from 2003-2017.

Design
Serial cross-sectional analysis of the American vital statistics mortality database

Setting

Funding
Stanford Center for Asian Health Research and Education, Palo Alto, CA

Participants
75,470 (68,100 foreign-born & 5,370 native-born) Asian Indian American, other Asians (Chinese, Thai, Filipino, Vietnamese, Japanese) and 19,501,200 NHW decedents from all causes, classified by ICD10 codes.

Main Measures
For each of the top ten causes of death, we examined absolute percentage, age-standardized mortality rates (ASMR), proportional mortality rates, longitudinal mortality trends and absolute percent rate of change between 2003 and 2017 by sex in Indian Americans, aggregated Asian Americans and NHWs. We also examined the impact of place of birth (America vs foreign born) on mortality.

Results
Most recently, the top ten causes of death of Asian Indians in the United States were: diseases of the heart, malignant neoplasms, diabetes mellitus, Alzheimer’s diseases, Nephritis, nephrotic syndrome and nephrosis, intentional self-harm (suicide), accidents (unintentional injuries), cerebrovascular diseases, chronic lower respiratory diseases or influenza and pneumonia. Age-adjusted mortality rates were significantly lower (p <0.05) across many diseases in American born Asian Indians, compared to other Asians and NHWs. Asian Indian women were significantly less likely to die from diseases of the heart (9.6 per 100,000 foreign, 30.5 native), cerebrovascular disease (7.1 foreign, 10.7 native), malignant neoplasms (60.9 foreign, 36.4 native), diabetes (20.6 foreign, 7.5 native), Alzheimer’s (16.8 foreign, 10.7 native), influenza and pneumonia (21.0 foreign, 7.6 native), and chronic liver disease (9.6 foreign, 4.9 native). These results were mirrored in Asian Indian males, although the absolute mortality rates were on average 23% higher.

Conclusions and Relevance
Asian Indians are more likely than either heart disease and strokes than NHW, and more likely that other Asians. Top 10 causes of death amongst Asian Indians has changed over the past 15 years. These high Asian Indian mortality rates, especially amongst foreign born Asian Indians, calls for increased cardiovascular control and prevention measures to bend the CVD mortality curve.
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The Stanford CARE Summer Research Immersion Program (CARE-SRI) is an 8-week intensive research program to train the next generation of Asian health researchers. The program was founded in 2019, with just 5 students.

In 2020, we welcomed 25 CARE-SRI Students, Implementation Science Fellows, and Program Administrators to work in Data Sciences, Vulnerable Populations, and AI, with a focus in Asian Health. We leveraged the unique aspects of Stanford’s world-class research, technology and medical infrastructure. 20 Stanford faculty mentors supported the students through their experience.

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