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A Syndemic Perspective on Anti-Asian Racism and Asian American Mental Health During the COVID-19 Pandemic

Rebecca McGarity-Palmer
DePaul University, rmcgarit@depaul.edu

A Syndemic Perspective on Anti-Asian Racism and Asian American Mental Health During the COVID-19 Pandemic

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Rebecca McGarity-Palmer

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College of Science and Health

DePaul University

Chicago, Illinois

Dissertation Committee

Anne Saw, PhD, Chair

Megan Greeson, PhD

Jocelyn Smith Carter, PhD

Fernando De Maio, PhD

Maria Ferrera, PhD

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Biography

The author was born in Johnson City, New York on January 19, 1993. She took her first steps under the watchful eyes of the Twin Peaks in Longmont, Colorado, lost herself under the waves of the Southern California Pacific Ocean, tiptoed in the woods of Western New York, and opened herself to love where Lake Michigan kisses the concrete of Chicago. Rebecca graduated high school in Lima, NY in 2011. She received her BA in Psychology from Houghton College in 2015 and her MA in Community Psychology from DePaul University in 2019.

Table of Contents

List of Tables

List of Figures

Abstract

Asian Americans have been negatively impacted by the COVID-19 pandemic, experiencing COVID-related anti-Asian racism as well as exacerbated pandemic-related stressors, such as increased negative mental health symptoms and economic challenges, due to existing structural inequities. Asian Americans are a diverse group made up of various ethnic and cultural groups with differential impacts from the pandemic. Examining differences within Asian Americans is therefore important to further understand the impacts of health inequities, economic challenges, and racism. Using a large, national dataset, I conducted three studies that examine Asian Americans' experiences of anti-Asian racism, negative mental health symptoms, and economic challenges within the context of the COVID-19 pandemic. Study one examined Asian Americans' prevalence rates of psychological distress and unmet mental health needs by sociodemographic subgroups. In study two, I examined rates of discrimination and awareness of anti-Asian COVID-related racism by sociodemographic subgroups as well as the impacts these two forms of racism have on psychological distress and physical health decline. Finally, in study three, I examined latent profiles of a proposed COVID-19 anti-Asian racism syndemic, describing how experiences of anti-Asian racism, mental and physical health, and economic challenges overlap and differ for Asian American subgroups. Asian Americans' wellbeing is an important public health concern that needs to be addressed systemically. By examining subgroup differences in mental health and related disparities (i.e., anti-Asian racism and economic inequities), these three studies delineate specific Asian American subgroups who are most vulnerable and in need of services and policy change.

Keywords: Asian American, COVID-19, mental health, anti-Asian racism, subgroup analysis, syndemic

Chapter 1. Introduction

The impacts of the COVID-19 pandemic are broad, including social distancing, adjusting to remote work and school, job loss, decreased access to healthcare, difficulty accessing food and housing resources, educational disruptions, and the loss of loved ones (Lund, 2021; Sinclair et al., 2020). However, for communities of color and Asian Americans[1] specifically, these negative effects of COVID are exacerbated due to racism and pre-existing social inequalities, and are undergirded by structural racism (Liu & Modir, 2020; Lund, 2021; Saw et al., 2021).

Anti-Asian Racism

Racism is the ideology that certain racial and cultural groups are inherently inferior to others (Williams et al., 2019). Structural racism refers to the ways this ideology permeates societal structures, institutions, and laws, which then reinforce discriminatory beliefs and practices (Bailey et al., 2017; Williams et al., 2019). Structural racism may take the form of social segregation within workplaces, health care facilities, schools, and residence (Gee & Ford, 2011). Other experiences of racism can include interpersonal experiences (e.g., microaggressions, harassment), racism-related life events (e.g., housing discrimination, loan rejection), vicarious racism (e.g., observing experiences of discrimination that happen to others), chronic-contextual stress (e.g., the impact of institutional and structural racism), and collective experiences of racism (e.g., economic conditions impacting the group, stereotypic portrayals, lack of representation; Harrell, 2000). Racism in all forms constitutes chronic or acute stress that impact health and wellbeing (Bailey et al., 2017; Harrell, 2000; Williams & Mohammed, 2009).

[1] Throughout I use the term Asian American to refer to the broad and diverse group of Americans and people residing in the United States of Asian ethnicity and descent.

Anti-Asian racism is not a recent development from the COVID-19 pandemic but has long been a feature of U.S. history and society. U.S. government-sponsored discrimination has included the Chinese Exclusion Act of 1882—the first restrictive immigration law to ban a specific group of immigrants based on race (Lee, 2002); as well as the Page Act of 1875, which essentially prohibited the immigration of Chinese women based on sexualized stereotypes of Asian women (Rotondi, 2021). Asian Americans have been scapegoated and blamed for bringing diseases long before COVID; examples include "Yellow Peril" and the Bubonic plague outbreak in the early 19th century (Power, 1995) as well as increased fear and distrust toward Asian Americans during the 2003 SARS outbreak (Chen et al., 2020). Asian Americans are stereotyped as perpetual foreigners—a false idea that Asian Americans can never be true Americans and are always second-class citizens (e.g., "Where are you really from?"; Stevens, 2020; Sue et al., 2007). Furthermore, the model minority myth—the belief that all Asian Americans are economically and educationally successful—assumes Asian Americans are a homogenous group who do not experience problems such as those of other communities of color (Hu, 2019; Saw et al., 2022). Essentially, the model minority myth makes Asian Americans and their needs invisible (Sue et al., 2007; Yi et al., 2022).

Anti-Asian racism, driven by fear of COVID-19 and the inaccurate blaming of the pandemic on Asian Americans, has increased during the COVID-19 pandemic (Ahrens, 2020; Ruiz et al., 2020). Government leaders and the news media have perpetuated anti-Chinese rhetoric (e.g., "Wuhan virus", "Chinese virus"), possibly encouraging xenophobia and anti-Asian hate (Human Rights Watch, 2020; Kelley, 2020; Marquardt & Hansler, 2020; Somvichian-Clausen, 2020). In 2020, hate crimes against Asian Americans rose 149% compared to a 7% decrease of overall hate crimes (Center for the Study of Hate & Extremism, 2021a). Anti-Asian

discrimination has occurred online and in-person, becoming more physical and violent (Brantley-Jones & Chen, 2021; Han, 2020; Nguyen et al., 2020; Tahmasbi et al., 2021). During the first year of the pandemic, the Stop AAPI Hate online reporting portal received over 9,000 reported incidents of racism and hate targeting Asian Americans, including verbal harassment, shunning, physical assault, being coughed at or spat on, civil rights violations, and online harassment (Yellow Horse et al., 2021). Furthermore, a large national study of Asian American and Native Hawaiian/Pacific Islanders by Ta Park and colleagues (2022) found that 60.7% of respondents experienced racial discrimination during COVID-19.

Economic Challenges

The COVID-19 pandemic lockdowns economically devastated businesses and families. However, the pandemic has had an unequal economic impact on communities of color and specifically Asian Americans due to structural racism (Cheng et al., 2021; Chin et al., 2021; Gemelas et al., 2021). Structural racism in the United States creates economic disparities for communities of color through differential access to societal goods, resources, and jobs (Williams & Mohammed, 2009). For example, rates in employment for Asian American, Black, and Latinx workers during the COVID-19 pandemic showed greater declines compared to employment rates for White workers (Gemelas et al., 2021). Furthermore, Asian Americans had the highest percentage decline in frontline workers compared to all other racial/ethnic groups (Gemelas et al., 2021), and Asian American women had the highest rates of long-term unemployment compared to women of other racial/ethnic groups (Chin et al., 2021). Jobless rates for Asian Americans increased from 2.8% in 2019 to 15% in May of 2020 (Horsley, 2020).

Asian American owned businesses were also disproportionately impacted financially (Amuedo-Dorantes et al., 2021; Chin et al., 2021). Anti-Asian racism resulted in avoidance of

many Asian American owned businesses (Cheng et al., 2021; Hay & Caspani, 2020; Yan et al., 2020). Additionally, Asian American business owners encountered challenges to obtaining federal government support for small businesses (i.e., Payment Protection Program [PPP] loan) due to lack of knowledge about the loan program, inaccessibility, and difficulty meeting eligibility (Cheng et al., 2021; Chin et al., 2021; Dinh et al., 2020).

Mental Health Challenges

Racism impacts health, particularly mental health, through pathways such as economic injustice and social deprivation (e.g., social segregation within workplaces, healthcare), environmental health inequities (e.g., disproportionate exposures to hazards, location of toxic waste sites), psychosocial trauma, and inadequate health care (e.g., access, discriminatory care; Bailey et al., 2017; Gee & Ford, 2011). Before the COVID-19 pandemic, Asian Americans reported fewer mental health symptoms and less use of mental health services compared to other racial/ethnic groups (Office of Minority Health, 2021; Substance Abuse and Mental Health Services Administration, 2015), though prevalence studies have often been criticized for use of culturally biased assessment tools (Sue et al., 2012). In addition to general barriers to mental health services in the U.S., such as inadequate funding of providers, lack of geographical distribution of providers (Hu, 2019), and stigma (Yang et al., 2019), Asian Americans face cultural and structural barriers to accessing mental health services, which may account for lower service use and reporting of symptoms. Many mental health providers lack cultural competence, which may lead to under-detection, misdiagnosis, and discriminatory care for Asian Americans (American Psychiatric Association, 2020; Hu, 2019). Finally, there is a lack of access to Asian-language-proficient mental health service providers (Sue et al., 2012).

Similar to previous pandemics, the COVID-19 pandemic has led to increased rates of anxiety and depression among the general population (Guerrini et al., 2021; Han et al., 2020; Vahratian et al., 2021). Despite historical data showing low rates of psychological distress, Asian Americans are also reporting increased rates of stress, depression, and anxiety (Lee & Waters, 2021; Quach et al., 2021), with some estimates reporting Asian Americans experiencing significantly higher rates of anxiety and depression compared to White Americans (Wu et al., 2021). Increased rates of mental health symptoms for Asian Americans are likely due in part to the anti-Asian hate and associated negative economic impacts of the COVID-19 pandemic. Recent literature confirms that experiencing COVID-related racial discrimination is associated with increases in symptoms of anxiety, depression, and psychological distress for Asian Americans (Lee & Waters, 2021; Litam & Oh, 2020; Liu et al., 2021; Liu et al., 2020; Maglalang et al., 2021; Pan et al., 2021; Woo & Jun, 2021; Wu et al., 2021; Zafra, 2021; Zhou et al., 2021).

Variation Among Asian Americans

National-level health surveys rarely meaningfully include Asian Americans, often ignoring ethnic differences by lumping various ethnicities together or collecting data in English-only surveys (Kim et al., 2021b; Yi et al., 2022). This lack of equitable representation in data is rooted in institutional racism and obscures the health and economic inequities of and among Asian Americans (Dinh et al., 2020; Yi et al., 2022b). Examining differences among Asian Americans is important as the Asian American racial category includes many ethnicities and cultures with distinct migration and settlement histories and differential opportunities.

Asian Americans are not targeted by anti-Asian hate equally. Stop AAPI Hate found that women reported experiencing twice the number of hate incidents compared to men (Asian Pacific Policy & Planning Council & Chinese for Affirmative Action, 2020), which may allude

to the specific way Asian women are racialized as exotic and sexual (Sue et al., 2007). Stop AAPI Hate also found that Chinese people reported the highest number of hate incidents compared to other Asian ethnic groups (Yellow Horse et al., 2021). Because of similar processes of racialization and racial scapegoating that resulted in increases in discrimination against South Asians following 9/11 (South Asian Americans Leading Together, n.d.), East Asians and others perceived to be Chinese may face disproportionately more anti-Asian hate during COVID-19.

Economic disparities among Asian Americans also exist. Asian Americans have the highest within-group income inequality of any racial/ethnic group in the U.S. (Kochhar & Cilluffo, 2018). Furthermore, compared to Whites of equal education levels, Asian Americans with less education are more likely to lose employment during the pandemic, whereas Asian Americans with more education are not (Kim et al., 2021a).

Reporting of mental health symptoms also varies among Asian Americans. Young Asian American adults report higher rates of psychological distress (Park et al., 2020), and older adults report less (Maglalang et al., 2021). Women are more likely to report psychological distress compared to men (Maglalang et al., 2021). Additionally, previous research has found varying levels of psychological distress and depression symptoms in Asian Americans by education level, income level, and ethnicity (Misra et al., 2020; Park et al., 2020).

Syndemic Framework

Influenced by Singer's syndemic approach (Singer, 2009), we use a Syndemic Framework (see Figure 1) to conceptualize the clustering of anti-Asian racism, economic stress, and mental health challenges in the Asian American population (Saw et al., 2022). Syndemic theory is a recent public health framework used to explain two or more co-occurring and intertwined health conditions within a population that are the result (at least in part) of social,

political, or economic factors (Mendenhall, 2017; Mendenhall et al., 2017; Mendenhall & Singer, 2020; Singer et al., 2020). Instead of a typical public health framework that examines one health condition at a time, syndemic theory identifies conditions and contexts that cause and exacerbate health issues to understand the patterns of interaction (Mendenhall & Singer, 2020; Singer, 2009).

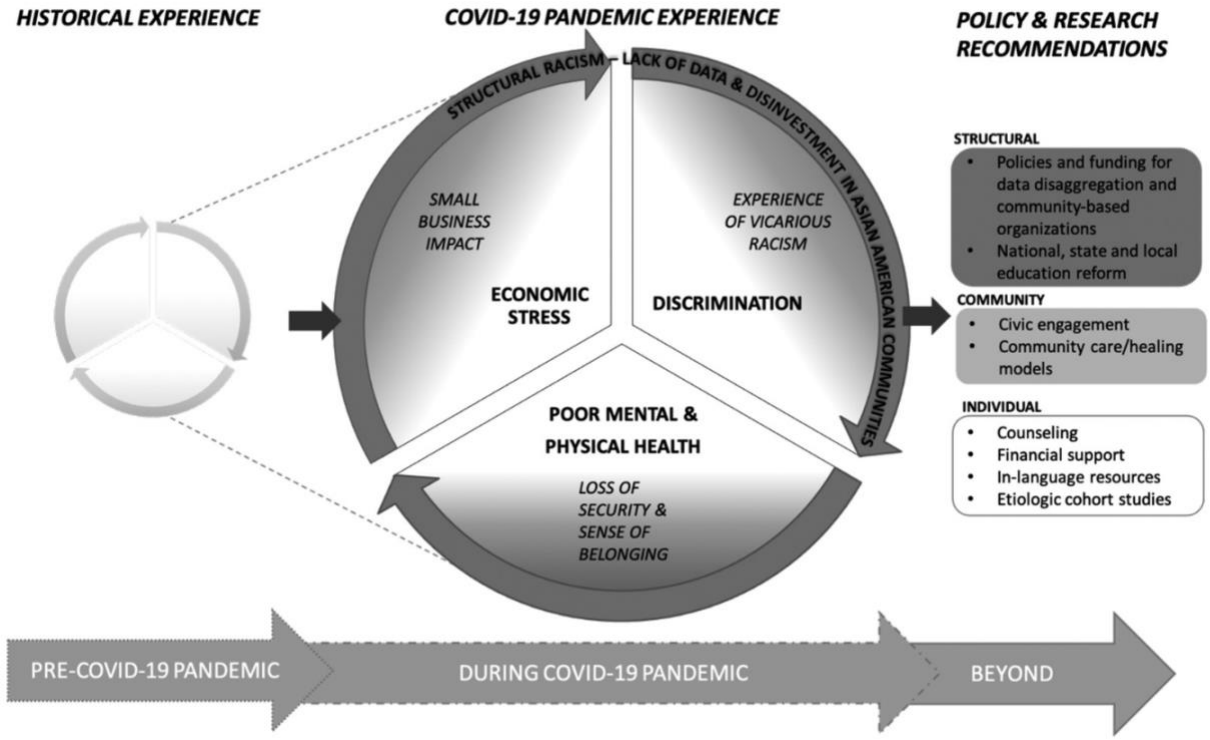


Figure 1 *Syndemic framework to understand anti-Asian racism, economic stress, and health challenges for Asian Americans in the context of COVID-19.*

Note. Syndemic framework to understand anti-Asian racism, economic stress, and health challenges for Asian Americans in the context of COVID-19. Reprinted from "Improving Asian American health during the Syndemic of COVID-19 and racism," by A. Saw, S. S. Yi, L. N. Đoàn, J. Y. Tsoh, A. J. Yellow Horse, S. C. Kwon, R. Samoa, N. Aitaoto, & D. T. Takeuchi, 2022, *eClinicalMedicine*, *45*. Reprinted with permission.

These interrelated threats faced by Asian Americans during the COVID-19 pandemic are driven by structural racism and can best be understood using a syndemic framework (Saw et al., 2022). Structural racism contributes to economic injustice through educational and occupational

segregation to low-quality jobs, reduced salary for same work, and reduced rate of promotion for marginalized racial groups (Bailey et al., 2017). Racism also impacts mental health through economic injustice and social deprivation, environmental health inequities, and inadequate health care (Bailey et al., 2017; Gee & Ford, 2011).

Studies

I conducted three studies using a large, national sample of Asian Americans collected during early 2021 to examine the issues of anti-Asian racism, economic challenges, and mental health challenges for Asian Americans during the COVID-19 pandemic. Subgroup analyses to further understand differences within the Asian American community are emphasized in order to locate health inequities and needs of Asian Americans.

In study one, we examined prevalence rates of psychological distress and unmet mental health needs for Asian Americans during the COVID-19 pandemic. We conducted subgroup analyses using multivariable logistic regressions to examine who is most vulnerable to psychological distress and has the greatest unmet mental health needs within the Asian American community.

In study two, we examined the rates of discrimination and COVID-related collective racism. We conducted subgroup analyses, using logistic and linear regression models to understand sociodemographic differences in the rates of discrimination and collective racism. We also conducted hierarchical logistic regression models to assess the extent to which discrimination and COVID-related collective racism impact psychological distress and physical health decline separately and interactively for Asian Americans.

In study three, we conducted a latent profile analysis to extract distinct typologies that portray how experiences of anti-Asian racism, economic challenges, and mental and physical

health challenges overlap amongst Asian Americans. We also conducted chi-square analyses to investigate subgroup differences by latent profile.

Chapter 2. Mental Health Needs Among Asians/Asian Americans During the COVID-19 Pandemic

Keywords: Asian, Psychological distress, Unmet mental health needs, COVID-19, Mental health

Rebecca McGarity-Palmer, MA
Doctoral Candidate
DePaul University

Anne Saw, PhD
Associate Professor of Psychology
DePaul University

Mengxue Sun
Doctoral Student
DePaul University

Michael Pham Huynh, MPH
Doctoral Student
University of California, Irvine

David Takeuchi, PhD
Associate Dean for Faculty Excellence
University of Washington

Abstract

Objective: To describe the prevalence of psychological distress and unmet mental health needs among Asians/Asian Americans (A/AAs) during the COVID-19 pandemic. To determine which sociodemographic subgroups within A/AAs are most vulnerable.

Methods: Cross-sectional, weighted data from the U.S.-based 2021 Asian American and Native Hawaiian/Pacific Islander COVID-19 Needs Assessment Study (unweighted n=3,508) were used to estimate prevalence rates of psychological distress and unmet mental health needs overall and by nativity status. Population-weighted multivariable logistic regression analyses were performed to examine sociodemographic factors associated with these mental health outcomes.

Results: Thirty-three percent of A/AAs reported psychological distress; vulnerable A/AA groups included women, trans and nonbinary, younger and middle-age, U.S.-born, Cambodians, multiracial, and foreign-born with lower income. Of those reporting psychological distress, 42% reported unmet mental health needs; vulnerable A/AA groups included young adults, Koreans, Japanese, Cambodians, U.S.-born women, foreign-born young adults, and foreign-born with more education.

Conclusions: Mental health of A/AAs is a significant public health concern, with some groups more vulnerable and in need of services. Mental health resources need to be targeted toward vulnerable subgroups, and cultural and systemic barriers to mental health care need to be addressed.

Introduction

The COVID-19 pandemic, in addition to *causing* death and severe debilitating illness, brought dramatic changes to daily life, such as social distancing and remote work, as well as job loss and other challenges including decreased healthcare access and reduced number of social services providing necessary food and housing resources (Lund, 2021; Sinclair et al., 2020). For Asians/Asian Americans (A/AAs) and other historically marginalized groups, these COVID-19 stressors occurred within the context of racial inequities and discrimination (Bambra et al., 2020).

Anti-Asian hate incidents rose during COVID-19 (R. H. Han et al., 2020), driven by anti-Asian racism and xenophobia combined with blame for COVID-19 (Ahrens, 2020; Kelley, 2020), and continuing a historical pattern of stereotyping and scapegoating A/AAs for bringing diseases (e.g., "Yellow Peril" in the 19th century; the 2003 SARS outbreak; Chen et al., 2020). Among A/AAs, COVID-19-related discrimination and vicarious racism is synergistically intertwined with other COVID-19 stressors. Syndemic theory, which explains how two or more co-occurring and intertwined health conditions may exacerbate one another and be rooted in and impacted by social, political, historical, and/or ecological factors, can be used to frame the distinct mental health experiences of A/AA during the pandemic (Mendenhall & Singer, 2020; Saw et al., 2022).

A/AAs have generally reported lower prevalence rates of psychological distress and mental health service use compared to other racial/ethnic groups (Office of Minority Health, 2021; Sue et al., 2012; U.S. Department of Health and Human Services, Substance Abuse and Mental Health Services Administration, Center for Behavioral Health Statistics and Quality, 2016, 2017, 2018, 2019). Substance Abuse and Mental Health Services Administration

(SAMHSA) data from the 2019 National Survey on Drug Use and Health show that 9% of Asian adults reported symptoms of serious psychological distress in the past 12 months, compared to 12.7% of non-Hispanic Whites (Office of Minority Health, 2021). SAMHSA data from 2008 to 2012 show that A/AA and Native Hawaiian/Pacific Islander adults with a mental illness used mental health services the least among all racial/ethnic groups (Hu, 2019). In 2019, SAMHSA data show 7% of A/AA adults received mental health services in the past 12 months compared to 19.8% of non-Hispanic Whites (Office of Minority Health, 2021). Because racism is associated with increased symptoms of depression and anxiety (Chae et al., 2021; Choi et al., 2020; S. Lee & Waters, 2021), within the context of COVID-19 stressors and anti-Asian racism, A/AAs may be more vulnerable to psychological distress and have increased mental health needs. It is important to examine differences within the A/AA population to understand who is most vulnerable to psychological distress and has unmet mental health needs.

In the current study, we describe the prevalence of psychological distress and unmet mental health needs among A/AAs during the COVID-19 pandemic. Although the U.S. Census Bureau's Household Pulse Survey (HPS) documented psychological distress and service utilization during the COVID-19 pandemic for A/AAs (U.S. Census Bureau, 2021), HPS data were collected only in English and Spanish, thereby missing critical data on the two-thirds of A/AAs who speak a non-English language at home (Budiman & Ruiz, 2021). We make population estimates using weighted data from a large study of A/AAs conducted in multiple languages. We also pay particular attention to differentiating vulnerabilities between foreign-born versus U.S.-born A/AAs, as first-generation immigrants often experience more difficulty accessing mental health care due to structural, cultural, and linguistic barriers (Ngo-Metzger et al., 2003; Sue et al., 2012).

Methods

Participants and Sample Design

Data for this study come from the Asian American and Native Hawaiian/Pacific Islander (AA & NH/PI) COVID-19 Needs Assessment Project, which itself is part of a larger study examining the impact of COVID-19 on communities of color.[23] This national cross-sectional survey was conducted by a multidisciplinary team led by the second author on behalf of the Asian American Psychological Association to examine AA and NH/PI experiences during the pandemic in areas such as mental health, discrimination, health, healthcare access, economic and housing impact, food security, and education.

A/AA and NH/PI individuals living in the United States and age 18 years and older were recruited through multiframe sampling: 68% of participants through community organization events (e.g., vaccination drives, food deliveries) and outreach (e.g., email lists, flyers, word of mouth), and 32% through an online Qualtrics panel (*Qualtrics*, 2022). The survey was offered in online, paper, and over-the-phone formats, and participants completed the survey between January 18 and April 9, 2021. Ethics approval was received from the Association of Asian Pacific Community Health Organizations Institutional Review Board.[2] Participants were paid via $10 gift card or equivalent compensation for panel participants.

For the current study, we focused solely on the A/AA subsample. Five Asian groups were targeted during study recruitment: Chinese, Filipino, Korean, Vietnamese, and specific South Asian ethnicities (e.g., Indian, Bangladeshi, Pakistani). Individuals of other Asian ancestries, although not the focus of these sampling strategies, were not excluded from participating and are included in the final analytic sample. The survey was translated from English into the following

[2] AAPCHO IRB Number: 2010-AAPCHO-02N-California-AAPI-COVID19-Needs-Assessment

languages based on recruitment strategy and community partner requests: Bangla, Chinese (traditional and simplified), Hindi, Khmer, Korean, Tagalog, Urdu, and Vietnamese.

A total of 3,508 respondents who self-identified as Asian for their race, including multiracial individuals, and who did not have missing ethnicity data, were included in analyses. Table 1 includes frequencies for key demographic variables for the unweighted sample.

Measures

The survey was designed with input from national and community organization partners. It included validated and recent COVID-19 pandemic-related measures, items taken from HPS, and items developed in collaboration with community partners. Study data were collected (or, in the case of paper/phone surveys, entered into) and managed using Qualtrics (*Qualtrics*, 2022).

Psychological Distress

Psychological distress was calculated from the modified version of the Patient Health Questionnaire-4 (PHQ-4) used by HPS (Centers for Disease Control and Prevention, 2021; Kroenke & Williams, 2009; U.S. Census Bureau, 2021), which is composed of the two-item Generalized Anxiety Disorder scale (GAD-2) and the two-item Patient Health Questionnaire-2 (PHQ-2; Staples et al., 2019), assessing symptoms over the last seven days (rather than 14 days) with the following items: "Over the last 7 days, how often have you been bothered by the following problems: (a) Feeling nervous, anxious, or on edge; (b) Not being able to stop or control worrying; (c) Having little interest or pleasure in doing things; and (d) Feeling down, depressed, or hopeless." Response options were: *Not at all* (0), *Several days* (1), *More than half the days* (2), and *Nearly every day* (3). Summed scores were calculated for anxiety (items a and b) and depression (c and d). Summed scores of at least 3 suggest anxiety/depression (Centers for Disease Control and Prevention, 2021). We then dichotomized psychological distress as follows:

Table 1. Unweighted Sample Sizes and Population-Weighted Rates of Psychological Distress and Unmet Mental Health Needs for Asians/Asian Americans

Correlate Subgroup (*n*)	Psychological Distress		Unmet Mental Health Needs	
	Unweighted n	% (95% CI)	Unweighted n	% (95% CI)
TOTAL	1419	32.93 (30.6, 35.2)	638	41.83 (37.8, 45.8)
Ethnicity				
Chinese (n = 789)	267	25.37 (21.91, 28.83)	107	35.88 (28.87, 42.88)
Filipino (n = 601)	232	28.36 (24.12, 32.60)	111	40.65 (32.59, 48.72)
Korean (n = 470)	173	28.77 (23.97, 33.56)	83	53.65 (44.37, 62.93)
Vietnamese (n = 464)	205	34.74 (29.10, 40.39)	81	35.40 (26.96, 43.83)
Indian (n = 340)	121	26.92 (21.46, 32.37)	53	40.12 (29.21, 51.03)
Pakistani (n = 82)	37	35.14 (23.48, 46.81)	12	28.45 (12.12, 44.79)
Japanese (n = 60)	25	32.35 (18.45, 46.25)	14	48.38 (23.22, 73.55)
Cambodian (n = 45)	24	49.52 (31.29, 67.75)	13	47.46 (22.79, 72.14)
Other (n = 111)	45	35.16 (24.56, 45.75)	23	52.31 (35.39, 69.22)
Multiethnic (n = 274)	146	40.13 (31.83, 48.43)	64	42.58 (32.34, 52.81)
Multiracial (n = 272)	144	46.61 (39.07, 54.15)	77	43.22 (32.72, 53.71)
F statistic, *P*		F = 5.23, *P* < .001		F = 0.87, *P* = .524
Gender Identity				
Man (n = 1,328)	438	26.93 (23.62, 30.23)	168	38.97 (32.21, 45.73)
Woman (n = 2,139)	954	37.44 (34.42, 40.47)	455	44.49 (39.60, 49.39)
Nonbinary, Trans, or Other (n = 36) †	27	82.55 (63.30, 101.80)	15	25.04 (0.94, 49.14)
F statistic, *P*		F = 18.26, *P* < .001		F = 1.98, *P* = .209
Age				
18-24 (n = 1,086)	636	52.94 (48.67, 57.22)	312	50.86 (44.85, 56.87)
25-44 (n = 1,439)	593	37.37 (33.99, 40.74)	258	42.27 (36.74, 47.79)
45-64 (n = 535)	132	22.09 (17.80, 26.39)	46	34.24 (23.61, 44.86)
65 and older (n = 251)	52	22.03 (14.84, 29.23)	21	34.92 (17.85, 51.99)
F statistic, *P*		F = 24.49, *P* < .001		F = 2.23, *P* = .092
Household Income				
Less than $25,000 (n = 700)	340	46.92 (40.38, 53.47)	156	43.67 (34.07, 53.27)
$25,000-$49,999 (n = 703)	300	37.84 (32.87, 42.80)	128	40.64 (32.94, 48.34)
$50,000-$74,999 (n = 540)	231	36.21 (30.45, 41.97)	121	49.73 (39.85, 59.60)
$75,000-$99,999 (n = 444)	179	33.57 (27.19, 39.95)	79	45.61 (34.17, 57.05)
$100,000 and above (n = 1,059)	349	26.11 (22.62, 29.60)	146	36.25 (29.25, 43.26)
F statistic, *P*		F = 11.08, *P* < .001		F = 1.56, *P* = .185
Education				
HS, GED, or less than HS (n = 536)	234	41.33 (34.67, 47.99)	107	38.15 (28.19, 48.11)
Some college (n = 800)	415	45.74 (40.73, 50.75)	183	45.03 (38.07, 52.00)
Technical or Associate's Degree (n = 305)	144	42.00 (34.43, 49.57)	57	34.62 (24.70, 44.54)
Bachelor's Degree (n = 1,118)	402	32.14 (28.53, 35.76)	182	40.38 (33.80, 46.96)
Graduate Degree (n = 717)	212	22.83 (19.23, 26.43)	101	46.61 (38.11, 55.12)
F statistic, *P*		F = 14.96, *P* < .001		F = 0.89, *P* = .451

Table 1. Rates of Psychological Distress and Unmet Mental Health Needs for Asians/Asian Americans (continued)

Correlate Subgroup (*n*)	Psychological Distress		Unmet Mental Health Needs	
	Unweighted n	% (95% CI)	Unweighted n	% (95% CI)
Years in the U.S.				
Entire life (n = 1,835)	870	41.89 (38.52, 45.25)	403	45.10 (39.90, 50.29)
15+ Years (n = 1,028)	313	23.98 (20.56, 27.40)	142	38.97 (31.37, 46.57)
5-14 Years (n = 490)	188	35.63 (29.64, 41.62)	77	39.03 (29.09, 48.96)
Less than 5 Years (n = 129)	38	31.31 (20.45, 42.17)	14	53.58 (32.81, 74.34)
F statistic, *P*	F = 14.98, *P* < .001		F = 1.29, *P* = .277	
Survey Language				
English (n = 3,021)	1244	32.20 (29.82, 34.58)	567	43.50 (39.25, 47.76)
Another Language (n = 487)	175	36.70 (29.95, 43.46)	71	34.22 (24.01, 44.42)
F statistic, *P*	F = 1.58, *P* = .208		F = 2.53, *P* = .112	
U.S. Region				
Northeast (n = 412)	138	27.13 (21.47, 32.80)	59	38.15 (27.34, 48.96)
Midwest (n = 585)	202	25.29 (20.58, 30.00)	88	41.25 (31.31, 51.18)
South (n = 645)	225	31.55 (26.58, 36.51)	82	32.20 (24.09, 40.31)
West (n = 1,858)	852	37.87 (34.41, 41.33)	407	45.93 (40.26, 51.59)
F statistic, *P*	F = 6.97, *P* < .001		F = 2.79, *P* = .040	

Note. Other Ethnicity includes Hmong, Thai, Laotian, Bangladeshi, Burmese, Indonesian, Nepalese, Sri Lankan, Malaysian, Bhutanese, Mongolian, Okinawan, and other Asian ethnic identities not listed.
† Estimates are unstable due to small sample size.

Yes, experiencing psychological distress (scoring a 3 or higher on *either* the anxiety or depression subscales); *No, not experiencing psychological distress* (scoring a 2 or lower on *both* the anxiety and depression subscales).

Unmet Mental Health Needs

Unmet mental health needs was calculated for those experiencing psychological distress and reporting needing help accessing mental health services. Need for mental health services was assessed with one item developed for this study in consultation with community partners: "Which of the following do you need more help getting during the COVID-19 pandemic? Select all that apply." Participants selected as many options as were applicable from a list including mental health services (as well as food, housing, unemployment, health services, and other needs). Participants experiencing psychological distress who selected they need help accessing mental health services were categorized as having unmet mental health needs (1). Participants experiencing psychological distress who did not select they needed help accessing mental health services were categorized as not having unmet mental health needs (0). Participants who were not experiencing psychological distress were excluded in analyses of this outcome.

Correlates

Participants were asked to select their race from: Asian, Native Hawaiian or Pacific Islander, Native American or Alaskan Native, African American or Black, White Non-Hispanic/Latino, Hispanic/Latino, Middle Eastern or North African, and Other. Participants could select as many racial identities as applicable, and we categorized respondents who identified with more than one racial group as multiracial. Participants who reported Asian as their race were additionally asked to select from the following list terms that "best express how [they] describe [their] ethnic identity": Chinese, Filipino, Indian, Vietnamese, Korean, Japanese,

Pakistani, Cambodian, Hmong, Thai, Laotian, Bangladeshi, Burmese, Indonesian, Nepalese, Sri Lankan, Malaysian, Bhutanese, Mongolian, Okinawan, and Other. Participants could select as many ethnic identities as applicable; respondents who identified with more than one ethnic group were categorized as multiethnic. Ethnic identity categories with $n < 40$ were combined into an Other category in analyses. The categories for this variable were also mutually exclusive, such that if a participant was classified as multiethnic, they were not counted again within their identified ethnic groups. Ethnic identity categories were: Chinese, Filipino, Indian, Vietnamese, Korean, Japanese, Pakistani, Cambodian, Other, Multiethnic, or Multiracial. Other sociodemographic variables included gender identity, age group, annual household income group, and education. Years living in the U.S. was calculated based on participants' reported country of birth and number of years living in the U.S. if reporting a country of birth other than the United States. Those reporting a country of birth other than the U.S. were categorized as foreign-born. Survey language (English, Another language) was calculated based on the language of survey completion (English [n=3,021], Chinese [n=378], Korean [n=91], Khmer [n=12], Urdu [n=3], and Vietnamese [n=3]). U.S. region was calculated based on participants' reported ZIP codes and categorized according to the four U.S. Census regions (Northeast, Midwest, South, West; U.S. Census Bureau, 2010).

Data Analysis

Sample weights were created using the ranking method to match the Asian population estimates from the 2019 U.S. Census American Community Survey (ACS) 1-Year estimates, reflect the representative A/AA population in the U.S. as of 2019, and account for multiracial A/AAs (U.S. Census Bureau, 2022a). Weights were created based on the following variables: ethnicity, nativity (foreign-born vs. U.S.-born), education, household income, gender identity,

and age. The 2019 ACS provides the most up-to-date population information for the U.S. by Asian ethnic groups.

Examining missing data, annual household income had the most missing values (n=62; 1.8% missing). To generate the correct parameter estimates, we used multiple imputation methods to account for missingness, creating 25 imputed datasets to calculate pooled results.

The population-weighted prevalence of psychological distress and unmet mental health needs were computed, stratified by ethnicity, gender identity, age, income, education, number of years in the U.S., survey language, and U.S. region. Weighted Rao-Scott statistics were used to test the significance of differences between proportion estimates (Rao & Scott, 1987). Multivariable logistic regression models were computed to examine the effect of the demographic variables on both outcomes. Most reference groups for the demographic variables were selected based on previous research indicating lower risk, or, where research findings were mixed or not available, because the group was on one extreme of the ordinal variable (e.g., years in the U.S.). In the case of ethnicity, Chinese was selected as the reference group because it was the largest subsample. In the case of geographic region, Northeast was selected arbitrarily. We report the weighted odds ratios and 95% confidence intervals for the overall, U.S.-born, and foreign-born models for both outcomes. All analyses were conducted in R (v4.0.3 in RStudio v1.4.1106) using the ‘stats’ (v. 4.0.3) and the ‘survey’ (v. 4.1-1) packages (Lumley, 2020; R Core Team, 2020).

Results

Overall, 32.9% (95% CI, 30.6-35.2%) of A/AAs reported psychological distress, and 24.1% (95% CI, 22.1-26.1%) reported needing help accessing mental health services. Of those

who reported psychological distress, 41.8% (95% CI, 37.8-45.8%) reported needing help accessing mental health services and thus having unmet mental health needs.

Psychological Distress

Rates of psychological distress significantly differed among all correlates except for survey language (Table 1). Table 2 shows the weighted adjusted odds ratios and 95% confidence intervals for three logistic regression models of psychological distress. Overall, we see increased odds of psychological distress for: Cambodians (particularly foreign-born) and multiracial A/AAs (particularly U.S.-born) compared to Chinese; women and trans/nonbinary individuals; younger individuals (ages 18-24; 25-44); and those who have lived their entire life in the U.S. Generally, individuals with less income are at increased odds of psychological distress; this is particularly apparent in the foreign-born A/AAs. For U.S.-born A/AAs, middle-income earners have higher odds of psychological distress. Having some education (i.e., technical or associate's degree) increases odds of psychological distress, particularly for foreign-born A/AAs; however, those with less education do not have increased odds. For U.S.-born A/AAs, those who completed the survey in an Asian language had increased odds of psychological distress.

Unmet Mental Health Needs

Rates of unmet mental health needs were not significantly different for any of the correlates except U.S. region, with 46% residing in the West having unmet mental health needs (Table 1). Table 3 shows weighted adjusted odds ratios and 95% confidence intervals for three logistic regression models of unmet mental health needs. Overall, young adults (ages 18-24; particularly foreign-born), as well as Koreans (particularly foreign-born), Japanese, Cambodians, and Other A/AAs—compared to Chinese—were at increased odds of having unmet mental health needs. U.S.-born women had higher odds of unmet mental health needs. Generally, those

Table 2. Population-Weighted Logistic Regression Models of Psychological Distress for Asian/Asian Americans

Correlate Subgroup	Model 1: Overall *aOR* (95% CI)	Model 2: U.S.-Born *aOR* (95% CI)	Model 3: Foreign-Born *aOR* (95% CI)
Ethnicity			
Chinese	Ref.	Ref.	Ref.
Filipino	1.03 (0.77, 1.37)	1.06 (0.67, 1.69)	1.00 (0.69, 1.47)
Korean	1.09 (0.77, 1.56)	1.01 (0.54, 1.89)	1.17 (0.74, 1.85)
Vietnamese	1.04 (0.75, 1.43)	0.96 (0.60, 1.53)	1.05 (0.66, 1.64)
Indian	1.13 (0.87, 1.48)	0.76 (0.48, 1.19)	1.34 (0.95, 1.89)
Pakistani	1.23 (0.73, 2.07)	1.45 (0.58, 3.65)	1.07 (0.55, 2.09)
Japanese	1.12 (0.71, 1.77)	0.35 (0.12, 1.05)	1.66 (0.95, 2.89)
Cambodian	2.12 (1.34, 3.37) **	1.53 (0.29, 7.97)	1.94 (1.15, 3.29) *
Other	1.22 (0.83, 1.78)	0.99 (0.51, 1.94)	1.32 (0.82, 2.12)
Multiethnic	1.36 (0.81, 2.30)	1.75 (0.88, 3.47)	0.85 (0.34, 2.14)
Multiracial	1.54 (1.18, 2.00) **	1.90 (1.32, 2.74) ***	0.99 (0.65, 1.51)
Gender Identity			
Man	Ref.	Ref.	Ref.
Woman	1.50 (1.28, 1.75) ***	1.70 (1.32, 2.18) ***	1.37 (1.11, 1.69) **
Nonbinary, Trans, or Other	9.09 (3.79, 21.78) ***	6.70 (1.37, 32.84) *	4.59 (1.43, 14.72) *
Age			
18-24	3.04 (2.18, 4.24) ***	4.82 (2.53, 9.21) ***	3.26 (2.06, 5.17) ***
25-44	2.05 (1.56, 2.71) ***	3.01 (1.60, 5.66) ***	2.211 (1.51, 2.95) ***
45-64	1.16 (0.87, 1.55)	2.02 (1.03, 3.94) *	1.08 (0.77, 1.52)
65 and older	Ref.	Ref.	Ref.
Household Income			
Less than $25,000	2.29 (1.76, 2.97) ***	1.28 (0.82, 2.00)	3.04 (2.17, 4.26) ***
$25,000-$49,999	1.38 (1.08, 1.77) *	1.18 (0.80, 1.74)	1.61 (1.15, 2.25) **
$50,000-$74,999	1.38 (1.09, 1.74) **	1.53 (1.08, 2.17) *	1.38 (0.99, 1.91)
$75,000-$99,999	1.40 (1.09, 1.78) **	1.88 (1.29, 2.75) ***	1.13 (0.80, 1.60)
$100,000 and above	Ref.	Ref.	Ref.
Education			
HS, GED, or less than HS	1.22 (0.93, 1.60)	1.14 (0.71, 1.81)	1.23 (0.86, 1.76)
Some college	1.30 (0.95, 1.77)	1.28 (0.81, 2.03)	1.39 (0.88, 2.19)
Technical or Associate's Degree	1.67 (1.16, 2.37) *	1.20 (0.65, 2.21)	1.89 (1.20, 2.98) **
Bachelor's Degree	1.22 (0.99, 1.49)	1.11 (0.81, 1.53)	1.31 (1.00, 1.73)
Graduate Degree	Ref.	Ref.	Ref.
Years in the U.S.			
Entire life	2.08 (1.37, 3.17) ***	--	--
15+ Years	1.28 (0.84, 1.93)	--	1.41 (0.92, 2.16)
5-14 Years	1.42 (0.93, 2.15)	--	1.47 (0.96, 2.24)
Less than 5 Years	Ref.	--	Ref.
Survey Language			
English	Ref.	Ref.	Ref.
Another Language	1.19 (0.93, 1.53)	2.63 (1.22, 5.67) *	0.98 (0.74, 1.31)

Table 2. Population-Weighted Logistic Regression Models of Psychological Distress for Asian/Asian Americans (continued)

Correlate Subgroup	Model 1: Overall	Model 2: U.S. Born	Model 3: Foreign-Born
	aOR (95% CI)	*aOR* (95% CI)	*aOR* (95% CI)
U.S. Region			
Northeast	Ref.	Ref.	Ref.
Midwest	0.84 (0.62, 1.14)	1.12 (0.68, 1.86)	0.85 (0.58, 1.26)
South	1.08 (0.82, 1.44)	0.87 (0.54, 1.40)	1.21 (0.84, 1.74)
West	1.15 (0.89, 1.50)	1.00 (0.67, 1.48)	1.36 (0.96, 1.93)

*$p < .05$; **$p < .01$; ***$p < .001$

Note. a*OR* = adjusted odds ratio; *CI* = confidence interval. Other Ethnicity includes Hmong, Thai, Laotian, Bangladeshi, Burmese, Indonesian, Nepalese, Sri Lankan, Malaysian, Bhutanese, Mongolian, Okinawan, and other Asian ethnic identities not listed.

Table 3. Population-Weighted Logistic Regression Models of Unmet Mental Health Needs for Asian/Asian Americans

Correlate Subgroup	Model 1: Overall *aOR* (95% CI)	Model 2: U.S.-Born *aOR* (95% CI)	Model 3: Foreign-Born *aOR* (95% CI)
Ethnicity			
Chinese	Ref.	Ref.	Ref.
Filipino	1.31 (0.79, 2.15)	1.67 (0.79, 3.53)	1.01 (0.50, 2.05)
Korean	2.53 (1.36, 4.72) **	1.62 (0.61, 4.34)	2.87 (1.22, 56.75) *
Vietnamese	0.82 (0.48, 1.42)	1.02 (0.49, 2.15)	0.62 (0.27, 1.45)
Indian	1.16 (0.73, 1.85)	1.93 (0.92, 4.03)	0.80 (0.42, 1.51)
Pakistani	0.68 (0.27, 1.69)	0.90 (0.23, 3.57)	0.63 (0.18, 2.27)
Japanese	2.56 (1.16, 5.62) *	4.79 (0.55, 41.78)	2.20 (0.87, 5.58)
Cambodian	2.43 (1.17, 5.04) *	2.99 (0.22, 40.74)	1.96 (0.80, 4.79)
Other	1.94 (1.04, 3.63) *	2.81 (0.98, 8.10)	1.43 (0.62, 3.31)
Multiethnic	1.12 (0.50, 2.53)	1.37 (0.51, 3.68)	0.84 (0.16, 4.232)
Multiracial	1.29 (0.84, 2.00)	1.65 (0.91, 2.98)	1.00 (0.47, 2.11)
Gender Identity			
Man	Ref.	Ref.	Ref.
Woman	1.15 (0.88, 1.50)	1.50 (1.01, 2.23) *	0.90 (0.61, 1.31)
Nonbinary, Trans, or Other	0.70 (0.28, 1.75)	2.40 (0.45, 12.89)	0.43 (0.10, 1.83)
Age			
18-24	2.58 (1.42, 4.69) **	2.88 (0.80, 10.35)	4.01 (1.66, 9.71) **
25-44	1.41 (0.84, 2.37)	1.98 (0.53, 7.44)	1.51 (0.80, 2.84)
45-64	10.95 (0.55, 1.62)	1.33 (0.33, 5.31)	0.97 (0.51, 1.83)
65 and older	Ref.	Ref.	Ref.
Household Income			
Less than $25,000	1.74 (1.15, 2.64) **	1.44 (0.74, 2.78)	1.69 (0.94, 3.03)
$25,000-$49,999	1.50 (1.00, 2.25)	1.51 (0.83, 2.74)	1.26 (0.68, 2.33)
$50,000-$74,999	2.10 (1.42, 3.10) ***	2.10 (1.25, 3.54) **	1.69 (0.89, 3.19)
$75,000-$99,999	1.77 (1.17, 2.67) **	1.56 (0.88, 2.78)	1.92 (0.99, 3.70)
$100,000 and above	Ref.	Ref.	Ref.
Education			
HS, GED, or less than HS	0.41 (0.25, 0.66) ***	0.44 (0.21, 0.95) *	0.36 (0.18, 0.72) **
Some college	0.49 (0.29, 0.82) **	0.52 (0.25, 1.05)	0.41 (0.18, 0.95) *
Technical or Associate's Degree	0.42 (0.23, 0.77) **	0.74 (0.30, 1.87)	0.25 (0.10, 0.60) **
Bachelor's Degree	0.65 (0.46, 0.92) *	0.63 (0.38, 1.05)	0.69 (0.41, 1.15)
Graduate Degree	Ref.	Ref.	Ref.
Years in the U.S.			
Entire life	0.58 (0.29, 1.17)	--	--
15+ Years	0.56 (0.28, 1.12)	--	0.53 (0.25, 1.09)
5-14 Years	0.47 (0.23, 0.95) *	--	0.45 (0.22, 0.93) *
Less than 5 Years	Ref.	--	Ref.
Survey Language			
English	Ref.	Ref.	Ref.
Another Language	0.76 (0.49, 1.17)	0.32 (0.10, 1.08)	0.84 (0.50, 1.42)

Table 3. Population-Weighted Logistic Regression Models of Unmet Mental Health Needs for Asian/Asian Americans (continued)

Correlate Subgroup	Model 1: Overall	Model 2: U.S.-Born	Model 3: Foreign-Born
	aOR (95% CI)	*aOR* (95% CI)	*aOR* (95% CI)
U.S. Region			
Northeast	Ref.	Ref.	Ref.
Midwest	1.05 (0.62, 1.79)	0.55 (0.25, 1.23)	1.88 (0.86, 4.08)
South	0.13 (0.49, 1.33)	0.85 (0.40, 1.82)	0.97 (0.48, 1.98)
West	1.31 (0.83, 2.06)	0.82 (0.43, 1.57)	2.23 (1.11, 4.45) *

*$p < .05$; **$p < .01$; ***$p < .001$

Note. a*OR* = adjusted odds ratio; *CI* = confidence interval. Other Ethnicity includes Hmong, Thai, Laotian, Bangladeshi, Burmese, Indonesian, Nepalese, Sri Lankan, Malaysian, Bhutanese, Mongolian, Okinawan, and other Asian ethnic identities not listed.

with less education had decreased odds of unmet mental health needs; this is particularly apparent in foreign-born A/AAs. Among foreign-born A/AAs, those living in the U.S. between 5-14 years had decreased odds of unmet mental health needs; those living in the West, however, had increased odds of unmet mental health needs.

Discussion

The increased stress, social isolation, and anti-Asian racism and discrimination brought on by the COVID-19 pandemic have magnified mental health challenges for A/AAs. Even prior to the pandemic, accessing quality mental health care was challenging for A/AAs due to inadequate funding for mental health services, uneven geographic distribution of providers, and lack of coordination between service providers (Hu, 2019). Our findings suggest unprecedented mental health needs among A/AAs and may inform the targeting of public health and other social policies toward vulnerable A/AA subgroups.

Although our study found lower rates of psychological distress (32.9%) compared to rates for the general U.S. adult population assessed from the 2020-2022 HPS (conducted only in English and Spanish) during the same time period (41.5%; Vahratian et al., 2021), we found far greater rates of psychological distress for A/AAs compared to pre-pandemic (9% as of 2019 SAMHSA data; Office of Minority Health, 2021) and using HPS data (4-week average of 20%; H. Lee et al., unpublished data, 2022). Additionally, results from our study point to vulnerable demographic subgroups within the A/AA community with higher rates of psychological distress. Similar to 2020 California Health Interview Study (CHIS) data, we found that younger A/AAs (ages 18-24) reported more symptoms of psychological distress. Our findings also confirm 2020 CHIS data on gender differences among A/AAs, finding that women generally experienced higher rates of psychological distress compared to men. Our study additionally finds that

nonbinary and trans A/AAs experienced higher rates of psychological distress compared to men; 2020 CHIS data results were unstable comparing transgender to cisgender individuals.

Consistent with previous research, we found that A/AAs had high rates of unmet mental health needs (Abe-Kim et al., 2007; Hu, 2019; Office of Minority Health, 2021). Compared to national estimates during the same time period, in our study, A/AAs reported far greater unmet mental health needs (41.8% compared to 11.7%; Vahratian et al., 2021). Furthermore, we identified specific demographic subgroups with high unmet mental health needs. Contrary to the 2002/2003 National Latino and Asian American Study (NLAAS) that found no effect for years in the U.S. (Abe-Kim et al., 2007), we found that A/AAs living in the U.S. for fewer than five or greater than 15 years had higher rates of unmet mental health needs compared to those living in the U.S. between 5-14 years. Although NLAAS did not find ethnic differences (Abe-Kim et al., 2007), we found that, compared to Chinese, Koreans and Cambodians had higher rates of unmet mental health needs. Of note, those categorized into an "other" category due to insufficient sample sizes also had higher rates of unmet mental health needs, underscoring the importance of oversampling distinct ethnic groups to draw more precise conclusions about them.

Using a syndemic lens, the impacts of synergistic interplays of poor health and healthcare access, anti-Asian racism, and other COVID-fueled stressors are not uniform across A/AAs (Saw et al., 2022). Accordingly, subgroups with intersecting marginalized identities, such as women, trans and nonbinary, lower income, and less educated A/AAs, have faced disproportionate stressors such as discrimination (Pillai et al., 2021) and job loss (A. T. Kim et al., 2021a), that increase odds of psychological distress and unmet mental health needs. Consistent with the syndemic framework, other vulnerable subgroups, such as Cambodians, may have higher mental

health needs due to historical trauma coupled with ongoing structural violence and inadequate community resources (Marshall, 2005; Tang, 2015).

Generally, our findings confirm other research that U.S.-born individuals have worse mental health compared to foreign-born individuals (Alegría et al., 2008). Yet, stratifying results for foreign-born A/AAs highlight subgroups, such as Cambodians, younger adults 18-44, women, trans and nonbinary, and lower income individuals, as most vulnerable to psychological distress; as well as Koreans, young adults 18-24, those with more education, and those residing in the West, as most vulnerable to unmet mental health needs. Although there is not yet research to explain all the subgroup differences we found, we are hopeful these findings can help direct resources and policy towards these vulnerable A/AA subgroups as well as provide a foundation for future research.

Notably, during the period of data collection, the Atlanta-area shootings that killed eight individuals, including six Asian women, occurred. Immediately following the March 2021 shootings, mainstream and social media coverage of anti-Asian racism and discrimination likely increased, raising risks for poor mental health (Lowe & Galea, 2017). In exploratory post-hoc analyses, we found that significantly more respondents reported psychological distress after the Atlanta-area shootings compared to before, suggesting that A/AAs were impacted. Further research is needed to explore how distinct subgroups of A/AAs were broadly impacted and may continue to be impacted by this and other events.

Limitations and Future Research

To our knowledge, the current study is the largest study assessing A/AAs' mental health needs during the pandemic in multiple Asian languages and English. Although we oversampled some Asian ethnic groups for data disaggregation, our conclusions are still limited for the

smallest subgroups. Our subsample of nonbinary and trans A/AAs is also small, resulting in unstable estimates. Future research should focus recruitment of these and other groups for whom we currently lack adequate data to better illuminate the experiences of health inequities and drive policy change and resource allocation. The current study is also limited in its cross-sectional view of mental health during a few months of the pandemic; we cannot conclude longitudinal or causal relationships between the correlates and mental health outcomes. Particularly as anti-Asian racism, as well as other impacts from the COVID-19 pandemic, continue, future research examining the long-term mental health impacts of the COVID-19 pandemic, through a syndemic lens, is needed.

Conclusion

Connecting vulnerable groups within the A/AA community to culturally and linguistically appropriate mental health services is critical. Doing so requires long-term investments in training culturally responsive mental health providers; expanding the general and A/AA-specific mental health workforce; incentivizing mental health providers to serve A/AA communities, particularly those most vulnerable; increasing accessibility to affordable health insurance that covers mental health services; and decreasing mental healthcare costs. Furthermore, taking a syndemic approach, it is important to address the drivers of psychological distress—specifically at this moment in time, the multitude of pandemic- and racism-related stressors that negatively impact A/AAs' mental health, such as poor working conditions, violent hate incidents, discrimination in health care, *and* anti-Asian political and social rhetoric.

Chapter 3. Trends in Racial Discrimination Experiences for Asian Americans During the COVID-19 Pandemic

Rebecca McGarity-Palmer, MA & Anne Saw, PhD
Department of Psychology, DePaul University

Janice Y. Tsoh, PhD
Department of Psychiatry and Behavioral Sciences, University of California San Francisco

Aggie J. Yellow Horse, PhD
School of Social Transformation, Arizona State University

Abstract

Background: Asian Americans (AAs) are experiencing increased rates of anti-Asian racism during COVID-19. Experiences of racism, whether personal or collective, constitute stress and psychosocial trauma that negatively impact mental and physical health.

Objectives: Examine trends and subgroup differences in rates of discrimination and COVID-related collective racism and the extent to which discrimination and COVID-related collective racism are associated with mental and physical health for AAs.

Methods: Nationally representative data from the 2021 Asian American and Native Hawaiian/Pacific Islander COVID-19 Needs Assessment Project were used to estimate prevalence rates of discrimination and average COVID-related collective racism scores for AAs (unweighted N = 3,478). We conducted logistic and linear regression models to examine subgroup differences by sociodemographic factors. We also conducted hierarchical logistic regression models to examine associations between racism and psychological distress and health decline.

Results: Twenty-four percent of AAs (95% CI: 21.6, 25.6) reported experiencing discrimination during the first year of the COVID-19 pandemic. Subgroup analyses revealed significant differences in rates of discrimination by ethnicity, age, years living in the United States, and survey language. For COVID-related collective racism, subgroup analyses revealed differences by ethnicity, gender, age, education, years living in the United States, and geographical region. Both discrimination and collective racism were independently associated with negative mental and physical health.

Conclusion: Discrimination and COVID-related collective racism are associated with negative mental and physical health outcomes for AAs. Results from our study point to vulnerable AA

subgroups and the need for targeted public health efforts to address racism in the context of COVID-19.

Introduction

During the COVID-19 pandemic, Asian Americans (AAs) have experienced economic, health, and social stressors of COVID-19 as well as increased and COVID-specific anti-Asian racism (Bambra et al., 2020; Chin et al., 2021; Horsley, 2020; Lund, 2021). Anti-Asian racism in the United States, however, is not a new phenomenon begun during COVID (Alvarez et al., 2006). Stereotypes of AAs in mainstream U.S. culture, such as those that portray AAs as perpetual foreigners, encourage xenophobic prejudice, bias, and discrimination towards AAs and invisibility of AAs in policy discourse (Stevens, 2020; Sue et al., 2007). Historical examples of racism include the Chinese Exclusion Act of 1882, which was the first restrictive immigration law in the United States and the first to specifically restrict immigration based on race (E. Lee, 2002). AAs have also been scapegoated and blamed for bringing diseases throughout U.S. history (e.g., "Yellow Peril" in the 19th century [Chen et al., 2020]; Bubonic plague outbreak in San Francisco in the early 20th century [Power, 1995]; SARS 2003 outbreak [Chen et al., 2020]).

As COVID-19 spread and grew into a public health crisis and global pandemic, this pattern of associating AAs with diseases continued with the effect of increased anti-Asian racism and hate incidents (Human Rights Watch, 2020; Kelley, 2020). COVID-related anti-Asian racism manifested in various ways, such as racial scapegoating (e.g., Trump administration using phrases such as 'Wuhan virus' and 'Chinese virus'), ostracization (e.g., foreigner stereotype, xenophobia towards AAs), denigration (e.g., defaming and ridiculing Asian businesses and culture), monolithic racialization (e.g., ignoring differences among AAs), and dehumanization (e.g., physical assaults, viewing AAs as animals, viruses, contagious diseases; Cheng et al., 2021). These forms of anti-Asian racism in the context of COVID came from U.S. government leaders (Human Rights Watch, 2020; Kelley, 2020), mainstream media outlets (Burton, 2020),

and online social media (Ahrens, 2020; Borja et al., 2020; He et al., 2021; Nguyen et al., 2020; Tahmasbi et al., 2021)—translating to anti-Asian rhetoric as well as interpersonal discrimination and violence (Brantley-Jones & Chen, 2021; Y. Han, 2020). Stop AAPI Hate, which opened an online portal for reporting anti-Asian and Pacific Islander hate crimes in March 2020, received 1,135 reports of hate incidents in its first two weeks of operation and over 10,905 reports from March 2020 to December 2021 (Asian Pacific Policy & Planning Council & Chinese for Affirmative Action, 2020; Yellow Horse et al., 2021). In one study surveying Chinese parents and youth, over half reported experiencing COVID-19 racial discrimination in person (Cheah et al., 2020). Furthermore, a large national study of Asian American and Native Hawaiian/Pacific Islanders (NH/PI) by Ta Park and colleagues (2022) found that 60.7% experienced racial discrimination during COVID-19 with a great deal of subgroup differences ranging from 40.5% among NH/PI to 80% among Hmong.

As a multilevel system, racism includes the ideology and assumption of the inferiority of certain racial and cultural groups (Williams et al., 2019). This ideology permeates societal culture, infiltrating institutions, structures, and individual values and beliefs (Williams et al., 2019). Experiences of racism take many forms across multiple levels, including interpersonal racism (e.g., microaggressions, verbal and physical harassment), chronic-contextual stress (e.g., social structure, political dynamics), racism-related life events (e.g., housing discrimination), vicarious racism (e.g., observing or learning about others' experiences of racism), and collective experiences of racism (e.g., stereotypic portrayals, lack of representation, or economic conditions of group; Harrell, 2000).

Experiences of racism constitute chronic and acute stress and psychosocial trauma that negatively impact mental and physical health (Bailey et al., 2017; Gee et al., 2007; Karlsen &

Nazroo, 2002; Williams & Mohammed, 2009). A multitude of research studies confirm this is true for AAs: experiences of racism and discrimination are associated with symptoms of depression and anxiety and physical health complaints (Gee et al., 2007; S. Lee & Waters, 2021; C. Liu et al., 2021; Maglalang et al., 2021; Misra et al., 2020; Pan et al., 2021). This negative impact on mental health is also documented for indirect experiences of racism (Chae et al., 2021; Tao, 2021). A growing body of research has found a similar positive association between COVID-related anti-Asian racism and increased symptoms of anxiety and depression (Choi et al., 2020; Litam & Oh, 2020; Woo & Jun, 2021; Zhou et al., 2021). There are few studies, however, that examine the relationship between discrimination and AAs' physical health (Chen et al., 2020; Gee et al., 2007).

AAs may be experiencing heightened COVID-related collective racism during COVID. Only a few studies have examined the impact of COVID-related collective racism on mental health, finding the expected association with increased mental health symptoms (Fisher et al., 2021a, 2021b; Tao, 2021). However, no study, to our knowledge, has specifically examined the impact of COVID-related collective racism on the mental or physical health of AAs.

Furthermore, AAs are a diverse group made up of many ethnicities, histories of migration and settlement, and differential experiences. Previous research shows that the likelihood of being targeted for anti-Asian racism varies for different groups within the AA community (Asian Pacific Policy & Planning Council & Chinese for Affirmative Action, 2020; Yellow Horse et al., 2021). Anti-Asian racism related to COVID-19 is specifically Sinophobic, that is, fearful of or holding contempt toward China and Chinese (Borja et al., 2020). Relatedly, Stop AAPI Hate found that Chinese reported the highest number of hate incidents compared to other racial/ethnic groups (Yellow Horse et al., 2021). Stop AAPI Hate also found that women reported twice the

number of hate incidents compared to men (Asian Pacific Policy & Planning Council & Chinese for Affirmative Action, 2020). Women experience anti-Asian racism differently from men due to the racialized sexism reimagining Asian women as exotic, hypersexual and submissive (Mukkamala & Suyemoto, 2018; Sue et al., 2007). This perception of Asian women has a long history in the United States; the Page Act of 1875, for example, essentially prohibited the immigration of Chinese women to the United States due to stereotypes of Asian women as prostitutes (Rotondi, 2021).

Using nationally representative data from a large AA sample, in the present study we seek to understand the impacts of both discrimination and COVID-related collective racism on AAs' mental health and physical health decline. We first examine subgroup differences in discrimination and collective racism in the multivariate framework, then look at their association with health outcomes. Research has suggested patterns of differential experiences of racism for various AAs during the COVID-19 pandemic descriptively (Asian Pacific Policy & Planning Council & Chinese for Affirmative Action, 2020; Yellow Horse et al., 2021). The present study systematically examines subgroup differences in discrimination and COVID-related collective racism among AAs. Specifically, we hypothesize that (1) Chinese respondents will have significantly higher odds of reporting discrimination and collective racism compared to other ethnic groups, and (2) women will have significantly higher odds of reporting discrimination and collective racism compared to men. This paper also explores subgroup differences by age, income, education, nativity, survey language, and geographical U.S. region.

Although theory conceptualizes direct discrimination and collective racism as qualitatively distinct forms of racism (Harrell, 2000), to our knowledge, no published studies have disentangled the unique or interactive contributions of these forms of racism on

psychological distress or physical health decline. The present study assesses the extent to which discrimination and COVID-related collective racism impact psychological distress and physical health decline. We hypothesize that, after controlling for sociodemographic factors and other COVID-related stressors, discrimination and COVID-related collective racism are separately associated with psychological distress and physical health. This paper also explores potential interaction effects between these two forms of racism on psychological distress and physical health.

Method

Sample

Data from the Asian American and Native Hawaiian/Pacific Islander (AA & NH/PI) COVID-19 Needs Assessment Project were used. The project was part of a larger study examining the impact of COVID-19 on communities of color (Grills et al., 2022). Conducted by the Asian American Psychological Association (AAPA), the AA & NH/PI COVID-19 Needs Assessment Project is a nationally representative cross-sectional survey examining AA and NH/PI experiences during the pandemic in areas such as mental health, discrimination, healthcare access, and economic impact.

AA and NH/PI individuals aged 18 years and older were recruited to participate. Five Asian ethnic groups were targeted during study recruitment: Chinese, Filipino, Korean, Vietnamese, and South Asian ethnicities (i.e., Indian, Bangladeshi, Nepalese, Pakistani, Sri Lankan, Bhutanese); individuals of other Asian ancestry, although not targeted by the sampling strategy, were not excluded from the survey. The survey was translated from English into the following languages based on recruitment strategy and community partner requests: Bangla, Chinese (traditional and simplified), Hindi, Khmer, Korean, Tagalog, Urdu, and Vietnamese.

Participants were recruited through community organization events (e.g., vaccination drives, food deliveries) and outreach (e.g., email lists, flyers, word of mouth; 68% of participants), as well as through an online Qualtrics panel (32% of participants; *Qualtrics*, 2022). Community organization recruitment was targeted in the following geographic locations: Honolulu, Los Angeles, Chicago, Houston, Portland, Seattle, and Jersey City. The survey was offered online, on paper, and over the phone formats, and participants completed the survey from January 18 to April 9, 2021. Ethics approval was received from the Association of Asian Pacific Community Health Organizations (AAPCHO) Institutional Review Board. Informed consent was obtained from participants at the beginning of the survey, and participants were paid via $10 gift card or equivalent compensation for panel participants. The survey took an average of 28 minutes to complete. To attention checks were included in the survey; participants who failed either attention check were dropped from the final analyses.

A total of 3,478 respondents who self-identified as Asian for their race, including multiracial individuals, and who did not have missing data for ethnicity (removed 15.6% of original 3,975 respondents) or any of the nine Coronavirus Racial Bias Scale (CRBS) items (removed 0.9%) are included in analyses.

Measures

The AA & NH/PI COVID-19 Needs Assessment survey was designed with substantial input from different national and community organizations. The survey included validated and pandemic-related measures and items taken from the U.S. Census Bureau Household Pulse Survey (U.S. Census Bureau, 2021), the NIH PhenX Toolkit (Hamilton et al., 2011), and items developed in collaboration with community partners. Survey items included the CRBS, an item

on facing discrimination, psychological distress, health decline, COVID-19-related stressors, and sociodemographic questions.

Coronavirus Racial Bias Scale (CRBS)

To assess COVID-related collective racism, we used the CRBS, a 9-item measure that examines beliefs about how the COVID-19 pandemic has negatively affected people of one's race/ethnicity (Fisher et al., 2021b). We adapted the wording of the nine CRBS items to be in a question format rather than a statement format. We also changed the last question of the scale to ask about political rhetoric instead of negative social media posts. Our adapted version of the CRBS scale can be viewed in Appendix A. A sample item includes "Has the U.S. become more physically dangerous for people in your racial/ethnic group because of fear of COVID-19?" Participants responded to items on a 5-point scale, where a higher score indicates more negative impact or racial bias (i.e., 1 = *Much more positive*; 5 = *Much more negative*).

Discrimination

Participants responded to the following multiple-choice item developed with community partners: "How has the COVID-19 pandemic impacted your family's life?" Participants were able to select *Yes* to as many options as they chose. One possible option was "Facing discrimination." We used this item to measure participants' experience of facing discrimination as a binary (*Yes*/*No*) variable.

Psychological Distress

We measured psychological distress using the modified Patient Health Questionnaire-4 (PHQ-4; Centers for Disease Control and Prevention, 2021; U.S. Census Bureau, 2021), comprised of the two-item Generalized Anxiety Disorder scale (GAD-2) and the two-item Patient Health Questionnaire-2 (PHQ-2; Staples et al., 2019), which both ask for symptoms over

the last seven days (rather than 14 days). A sample question includes "Over the last 7 days, how often have you been bothered by the following problems: Feeling nervous, anxious, or on edge." Response options included the following: *Not at all* (0), *Several days* (1), *More than half the days* (2), and *Nearly every day* (3). To measure psychological distress, we calculated summed scores from the four-items.

Health Decline

Participants responded to the following item for both currently and before the COVID-19 pandemic: "Would you say your health in general is excellent, very good, good, fair, or poor?" (U.S. Census Bureau, 2021). Response options included (1) *Excellent,* (2) *Very good*, (3) *Good*, (4) *Fair*, and (5) *Poor*. To measure health decline, we subtracted participants' current health score from their pre-COVID health score, such that negative scores indicate worsening of health.

COVID-19 Stressors

Participants also responded to a multiple-choice question regarding COVID-19-related stressors (Environmental Influences on Child Health Outcomes, 2020). The question reads, "What have been your greatest sources of stress from the COVID-19 pandemic? Select all that apply." Participants were able to select yes to as many options as they chose. Options included the following: Physical health concerns; Mental health concerns; Financial concerns; Housing concerns; Transportation concerns; Caregiving responsibilities (for example, caring for children, family members); Impact on work; Impact on your child; Impact on your community; Impact on family members; Access to food; Access to baby supplies (e.g., formula, diapers, wipes); Access to clean water for hand washing etc.; Access to personal care products or household supplies; Access to medical care, including mental health care; Social distancing or being quarantined.

Selected options were coded as *Yes* (1); unselected options were coded as *No* (0). The individual COVID-19 stressors were used as covariates in later analyses.

Sociodemographic Variables

Participants responded to a variety of demographic questions, including ethnic identity (Chinese, Filipino, Indian, Vietnamese, Korean, Japanese, Pakistani, Cambodian, Other, Multiethnic, or Multiracial), gender identity (man, woman, nonbinary/trans/another gender identity), age (18-24, 25-44, 45-64, > 65), annual household income (< $25,000, $25,000-$49,999, $50,000-$74,999, $75,000-$99,999, and > $100,000), education (High school/GED/less than high school, Some college, Technical Certificate or Associate's degree, Bachelor's degree, Graduate degree), and number of years living in the United States (entire life, 15+ years, 5-14 years, and less than 5 years). We categorized respondents who identified with more than one racial group as multiracial. The categories for the ethnic identity variable were mutually exclusive, such that if participants reported being both multiracial and multiethnic, they were counted once as multiracial—and not counted within their identified ethnic group categories. Number of years living in the United States was calculated based on participants' reported country of birth and subsequently reported number of years living in the United States if reporting a country of birth other than the United States. Additional variables include survey language (English, Asian language), which was calculated based on the language in which participants completed the survey (English [n=3,002], Chinese [n=376], Korean [n=82], Khmer [n=12], Urdu [n=3], and Vietnamese [n=3]); and U.S. region, which was calculated based on participants' reported ZIP codes and categorized according to the four U.S. Census regions (Northeast, Midwest, South, West; U.S. Census Bureau, 2010).

Data Analysis

We used the ranking method to create sample weights matching the Asian population estimates from the 2019 American Community Survey (ACS) 1-Year estimates from the U.S. Census (U.S. Census Bureau, 2022a). The 2019 ACS currently provides the most detailed population information for Asian ethnic groups in the United States. Sample weights reflect the representative AA population in the United States as of 2019 and account for multiracial AAs. Data weights were created based on the following variables: Asian ethnicity, nativity (foreign born vs U.S. born), education, household income, gender identity, and age.

There were less than 5 missing values for all variables except four (i.e., age, education, household income, and years in the United States). Annual household income had the highest number of missing values (n = 55; 1.58%). To generate the correct parameter estimates, we conducted multiple imputation by chained equations, creating 25 imputed datasets where each variable has its own imputation model (van Buuren et al., 2021).

To validate our adapted version of the CRBS (see Appendix A) as well as confirm the one-factor structure reported by the scale authors (Fisher et al., 2021b), we conducted a confirmatory factor analysis (CFA) on the CRBS scale. Using the confirmed CRBS scale from the CFA, we then conducted weighted, bivariate subgroup analyses to examine differences in discrimination and COVID-related collective racism by ethnic identity, gender identity, age, income, education, years living in the United States, survey language, and U.S. region. We also computed multivariable logistic and linear regression models to examine the effect of sociodemographic factors on both discrimination and COVID-related collective racism. We report results for the overall model, U.S.-born subsample, foreign-born subsample, women subsample, and men subsample for both variables. Lastly, to examine the relationships both

discrimination and COVID-related collective racism have with psychological distress and health decline, we conducted two hierarchical, multivariable linear regression models using weighted data, controlling for sociodemographic factors and COVID-19 stressors. All analyses were conducted in R (v4.0.3 in RStudio v1.4.1106) using the 'stats' (v4.0.3; R Core Team, 2020), 'psych' (v2.1.9; Revelle, 2022), 'dplyr' (v1.0.7; Wickham et al., 2021), 'survey' (v4.1-1; Lumley, 2020), 'mice' (v3.14.0; van Buuren et al., 2021), weights, (v1.0.4; Pasek, 2021), and 'sandwich' (v.3.0-1; Zeileis & Lumley, 2021) packages.

Results

Confirmatory Factor Analysis

Using maximum likelihood estimation, we first assessed a one-factor, 9-item structure for the CRBS. We removed three items (5, 6, and 9; refer to Appendix A) with low factor loadings and assessed a second one-factor, 6-item structure. The fit for this model was insufficient, however. We then removed a fourth item with the weakest factor loading (item 4). Model fit indices revealed that this 5-item model had an adequate fit: CFI = 0.923, TLI = 0.846, RMSEA = 0.130 (90% confidence interval [.117, .142]), SRMR = 0.053.

Sociodemographic Subgroup Differences

Table 4 presents sample characteristics, prevalence rates for discrimination, and means for COVID-related collective racism by sociodemographic factors. Table 5 presents adjusted odds ratios of discrimination by sociodemographic factors. Table 6 presents regression coefficients for COVID-related collective racism by sociodemographic factors.

Discrimination

Overall, about 24% of AAs reported facing discrimination as an impact of the COVID-19 pandemic. Rates of discrimination significantly differed by ethnicity, age, number of years living

in the U.S., and survey language. Chinese had higher odds of experiencing discrimination compared to Filipino, Korean, Indian, Pakistani, and multiracial individuals. Chinese women additionally had increased odds compared to Japanese women. Chinese men, however, had lower odds of discrimination compared to Vietnamese and Cambodian men. The overall model did not show any differences by gender. However, among U.S.-born AAs, nonbinary and trans individuals showed higher odds of discrimination compared to men. Both 18-24 and 25-44 age groups showed higher odds of experiencing discrimination compared to those aged 65 and older. Among U.S.-born individuals and men, however, those aged 45-64 had higher odds of discrimination compared to those aged 65 and older. In the overall model, AAs earning a household income of $50,000 to $74,999 showed higher odds of discrimination compared to those making $100,000 or more. Among men, the lowest income bracket (earning less than $25,000) showed increased odds of discrimination; however, those in the next income bracket ($25,000 to $49,999) had decreased odds of reporting discrimination compared to those making $100,000 or more. In the overall sample, AAs with some college experience showed lower odds of discrimination compared to those with a graduate degree. Among women, however, all without a graduate degree had lower odds of discrimination. The overall model did not show any differences by number of years living in the U.S.; however, among men, those living in the U.S. for 15 years or longer had lower odds of reporting discrimination compared to recent immigrants. Additionally, those who completed the survey in an Asian language showed greater odds of discrimination; this is particularly true for foreign-born individuals and women. Lastly, there were no differences by region in the overall model; among women, however, those living in the South had lower odds of discrimination compared to those living in the Northeast.

Table 4. Sample characteristics and bivariate subgroup analyses by discrimination and COVID-related collective racism (n = 3,478)

Correlate Subgroup	Overall		Discrimination		COVID-Related Collective Racism
	n	Weighted % [95% CI]	*n*	Weighted % [95% CI]	*M* ± *SD*
TOTALS	3,478	100	1004	23.63 [21.62, 25.64]	3.57 ± 0.67
Ethnicity					
Chinese	779	18.87 [17.27, 20.48]	263	29.66 [25.82, 33.50]	3.75 ± 0.63
Filipino	600	13.45 [12.12, 14.78]	154	20.86 [17.09, 24.63]	3.53 ± 0.66
Vietnamese	463	8.45 [7.40, 9.49]	157	34.36 [28.55, 40.17]	3.81 ± 0.65
Korean	460	6.41 [5.66, 7.15]	136	24.23 [19.71, 28.75]	3.63 ± 0.64
Indian	338	18.85 [16.65, 21.05]	38	9.34 [5.83, 12.85]	3.15 ± 0.62
Pakistani	82	2.28 [1.69, 2.87]	6	8.17 [0.95, 15.39]	3.07 ± 0.50
Japanese	59	3.36 [2.35, 4.37]	21	31.64 [17.59, 45.69]	3.65 ± 0.56
Cambodian	42	4.26 [2.74, 5.78]	11	25.91 [9.24, 42.59]	3.66 ± 0.74
Other[1]	110	5.04 [3.87, 6.21]	27	30.72 [19.32, 42.13]	3.68 ± 0.60
Multiethnic[2]	273	2.19 [1.78, 2.60]	117	39.25 [29.99, 48.51]	3.97 ± 0.59
Multiracial[3]	272	16.85 [14.61, 19.08]	74	25.26 [18.87, 31.65]	3.64 ± 0.63
F statistic, *P*				$\chi^2 = 6.59$; $p < 0.001$	$F = 46.72$; $p < 0.001$
Gender Identity					
Man	1322	47.31 [44.82, 49.81]	343	22.31 [19.25, 25.37]	3.51 ± 0.65
Woman	2117	51.59 [49.10, 54.08]	644	24.81 [22.15, 27.48]	3.61 ± 0.68
Nonbinary, Trans, or Other	35	1.09 [0.29, 1.90]	17	27.65 [4.34, 50.97]	3.66 ± 0.82
F statistic, *P*				$\chi^2 = 0.70$; $p = 0.493$	$F = 20.94$; $p < 0.001$
Age					
18-24	1143	14.16 [12.91, 15.41]	361	26.64 [22.85, 30.42]	3.65 ± 0.67
25-44	1511	42.94 [40.53, 45.35]	492	29.18 [26.14, 32.23]	3.65 ± 0.67
45-64	559	28.88 [26.47, 31.29]	106	17.92 [14.00, 21.84]	3.41 ± 0.62
65 and older	252	14.02 [11.92, 16.13]	43	16.17 [10.04, 22.30]	3.54 ± 0.73
F statistic, *P*				$\chi^2 = 8.72$; $p < 0.001$	$F = 37.33$; $p < 0.001$
Household Income					
Less than $25,000	689	14.35 [12.60, 16.10]	218	26.13 [20.52, 31.74]	3.61 ± 0.72
$25,000-$49,999	696	13.39 [12.01, 14.77]	211	24.82 [20.35, 29.28]	3.58 ± 0.64
$50,000-$74,999	538	14.26 [12.64, 15.88]	159	27.36 [21.78, 32.93]	3.51 ± 0.70
$75,000-$99,999	443	12.47 [10.88, 14.06]	122	24.26 [18.27, 30.24]	3.60 ± 0.63
$100,000 and above	1057	45.53 [43.00, 48.06]	282	21.27 [18.25, 24.29]	3.56 ± 0.68
F statistic, *P*				$\chi^2 = 1.39$; $p = 0.235$	$F = 0.96$; $p = 0.430$
Education					
HS, GED, or less than HS	529	20.08 [17.77, 22.38]	152	25.73 [19.90, 31.56]	3.56 ± 0.69

Some college	793	9.46 [8.47, 10.45]	321	22.07 [18.23, 25.91]	3.58 ± 0.67

Table 4. Sample characteristics and bivariate subgroup analyses by discrimination and COVID-related collective racism (*n* = 3,478; continued)

Correlate Subgroup	Overall		Discrimination		COVID-Related Collective Racism
	n	Weighted % [95% CI]	*n*	Weighted % [95% CI]	*M* ± *SD*
Technical or Associate's Degree	303	5.28 [4.44, 6.09]	87	24.91 [18.18, 31.63]	3.48 ± 0.61
Bachelor's Degree	1113	32.81 [30.60, 35.02]	328	23.91 [20.87, 26.96]	3.60 ± 0.71
Graduate Degree	712	32.38 [29.95, 34.82]	201	22.24 [18.54, 25.93]	3.55 ± 0.54
F statistic, *P*				$\chi^2 = 0.53$; $p = 0.676$	$F = 4.19$; $p = 0.002$
Years in the U.S.					
Entire life	1825	36.60 [34.37, 38.82]	574	26.26 [23.44, 29.09]	3.71 ± 0.65
15+ Years	1017	43.63 [41.11, 46.15]	239	19.89 [16.61, 23.18]	3.49 ± 0.69
5-14 Years	487	15.80 [13.98, 17.61]	151	27.72 [22.12, 33.32]	3.49 ± 0.66
Less than 5 Years	127	3.97 [3.08, 4.86]	37	28.52 [18.85, 38.19]	3.46 ± 0.58
F statistic, *P*				$\chi^2 = 4.03$; $p = 0.008$	$F = 27.96$; $p < 0.001$
Survey Language					
English	3002	83.96 [81.99, 85.93]	856	22.47 [20.38, 24.56]	3.57 ± 0.69
Asian Language	476	16.04 [14.07, 18.01]	148	29.76 [23.70, 35.82]	3.57 ± 0.58
F statistic, *P*				$\chi^2 = 5.75$; $p = 0.016$	$F = 15.08$; $p < 0.001$
U.S. Region					
Northeast	411	12.43 [10.83, 14.03]	128	24.38 [19.36, 29.40]	3.56 ± 0.69
Midwest	572	17.89 [15.98, 19.79]	150	20.80 [16.49, 25.10]	3.47 ± 0.67
South	642	21.92 [19.86, 23.99]	162	21.11 [17.11, 25.10]	3.45 ± 0.69
West	1850	47.76 [45.28, 50.24]	564	25.74 [22.59, 28.89]	3.66 ± 0.65
F statistic, *P*				$\chi^2 = 1.69$ $p = 0.167$	$F = 34.86$; $p < 0.001$

*$p < .05$; **$p < .01$; ***$p < .001$

[1] Other includes Thai, Indonesian, Laotian, Hmong, Bangladeshi, Burmese, Nepalese, Sri Lankan, Malaysian, Mongolian, Okinawan, and another ethnic identity.

[2] Multiethnic participants self-identified as two or more Asian ethnic groups, examples include Vietnamese-Chinese; Korean-Vietnamese.

[3] Multiracial participants self-identified as at least one Asian ethnic group and a non-Asian race.

Table 5. Logistic Regression Models of Discrimination for Asian American Sample (*n* = 3,478)

Correlate Subgroup	Model 1: Overall (n = 3,478)	Model 2: U.S. Born (n = 1,825)	Model 3: Foreign Born (n = 1,631)	Model 4: Women (n = 2,117)	Model 5: Men (n = 1,322)
	aOR (95% CI)	*aOR* (95% CI)	*aOR* (95% CI)	*aOR* (95% CI)	*aOR* (95% CI)
Ethnicity					
Chinese	Ref.	Ref.	Ref.	Ref.	Ref.
Filipino	0.55 (0.41, 0.74)***	0.67 (0.41, 1.09)	0.49 (0.34, 0.71)***	0.50 (0.34, 0.74)***	0.64 (0.40, 1.02)
Vietnamese	1.08 (0.79, 1.46)	1.19 (0.74, 1.90)	0.98 (0.64, 1.49)	0.79 (0.51, 1.21)	1.68 (1.05, 2.68)*
Korean	0.66 (0.46, 0.95)*	1.05 (0.56, 1.97)	0.55 (0.35, 0.88)*	0.56 (0.33, 0.92)*	0.75 (0.43, 1.32)
Indian	0.20 (0.14, 0.27)***	0.29 (0.17, 0.50)***	0.15 (0.10, 0.23)***	0.14 (0.08, 0.24)***	0.30 (0.19, 0.47)***
Pakistani	0.17 (0.07, 0.39)***	0.09 (0.01, 0.60)*	0.21 (0.08, 0.54)**	0.09 (0.02, 0.36)***	0.36 (0.12, 1.06)
Japanese	0.78 (0.49, 1.24)	0.59 (0.21, 1.64)	0.86 (0.49, 1.48)	0.19 (0.08, 0.45)***	1.24 (0.65, 2.37)
Cambodian	0.88 (0.54, 1.44)	1.23 (0.23, 6.49)	0.79 (0.46, 1.37)	0.55 (0.27, 1.12)	2.18 (1.03, 4.62)*
Other	0.82 (0.57, 1.20)	0.62 (0.30, 1.30)	0.86 (0.55, 1.34)	1.07 (0.63, 1.80)	0.51 (0.27, 0.97)*
Multiethnic	1.30 (0.79, 2.16)	1.41 (0.71, 2.28)	1.17 (0.54, 2.57)	1.02 (0.52, 1.97)	2.24 (0.98, 5.16)
Multiracial	0.61 (0.47, 0.80)***	0.64 (0.44, 0.95)*	0.65 (0.43, 0.98)*	0.66 (0.45, 0.95)*	0.62 (0.40, 0.97)*
Gender Identity					
Man	Ref.	Ref.	Ref.	--	--
Woman	1.10 (0.93, 1.30)	1.18 (0.89, 1.55)	1.12 (0.90, 1.39)	--	--
Nonbinary, Trans, or Other	1.11 (0.52, 2.34)	6.95 (1.67, 28.85)**	1.25 (0.40, 3.93)	--	--
Age					
18-24	2.26 (1.56, 3.28)***	4.11 (1.85, 9.14)***	1.81 (1.09, 3.00)*	1.20 (1.19, 3.31)**	2.62 (1.41, 4.89)**
25-44	2.35 (1.74, 3.18)***	4.72 (2.17, 10.28)***	1.97 (1.28, 2.80)***	1.46 (0.94, 2.25)	4.14 (2.51, 6.84)***
45-64	1.17 (0.86, 1.59)	3.08 (1.37, 6.93)**	0.87 (0.61, 1.23)	0.67 (0.43, 1.06)	2.64 (1.60, 4.37)***
65 and older	Ref.	Ref.	Ref.	Ref.	Ref.
Annual Household Income					
Less than $25,000	1.17 (0.88, 1.56)	1.27 (0.78, 2.07)	1.04 (0.72, 1.50)	0.74 (0.48, 1.12)	1.82 (1.18, 2.82)**
$25,000-$49,999	0.97 (0.74, 1.27)	1.28 (0.84, 1.94)	0.78 (0.54, 1.12)	1.34 (0.93, 1.92)	0.63 (0.41, 0.99)*
$50,000-$74,999	1.31 (1.02, 1.68)*	1.25 (0.85, 1.82)	1.24 (0.88, 1.75)	1.21 (0.85, 1.73)	1.36 (0.93, 1.97)
$75,000-$99,999	1.24 (0.95, 1.63)	1.16 (0.76, 1.76)	1.28 (0.90, 1.84)	1.30 (0.90, 1.90)	0.99 (0.67, 1.50)
$100,000 +	Ref.	Ref.	Ref.	Ref.	Ref.
Education					
HS, GED, or less than HS	0.80 (0.60, 1.07)	1.10 (0.66, 1.85)	0.74 (0.51, 1.07)	0.49 (0.32, 0.75)**	1.23 (0.79, 1.91)

Table 5. Logistic Regression Models of Discrimination for Asian American Sample (*n* = 3,478; continued)

Correlate Subgroup	Model 1: Overall (n = 3,478)	Model 2: U.S. Born (n = 1,825)	Model 3: Foreign Born (n = 1,631)	Model 4: Women (n = 2,117)	Model 5: Men (n = 1,322)
	aOR (95% CI)	*aOR* (95% CI)	*aOR* (95% CI)	*aOR* (95% CI)	*aOR* (95% CI)
Some college	0.65 (0.45, 0.92)*	0.85 (0.50, 1.42)	0.57 (0.34, 0.95)*	0.49 (0.30, 0.80)**	0.81 (0.46, 1.40)
Technical or Associate's Degree	0.80 (0.54, 1.18)	1.01 (0.51, 1.98)	0.67 (0.41, 1.10)	0.52 (0.30, 0.93)*	1.20 (0.67, 2.14)
Bachelor's Degree	0.83 (0.67, 1.03)	1.17 (0.83, 1.64)	0.66 (0.50, 0.88)**	0.62 (0.46, 0.83)**	1.17 (0.84, 1.63)
Graduate Degree	Ref.	Ref.	Ref.	Ref.	Ref.
Years in the U.S.					
Entire life	0.86 (0.55, 1.33)	--	--	0.96 (0.46, 2.00)	0.69 (0.38, 1.26)
15+ Years	0.76 (0.50, 1.18)	--	0.71 (0.45, 1.11)	1.03 (0.50, 2.14)	0.50 (0.27, 0.90)*
5-14 Years	0.92 (0.60, 1.43)	--	0.89 (0.57, 1.39)	1.03 (0.49, 2.14)	0.97 (0.54, 1.74)
Less than 5 Years	Ref.	--	Ref.	Ref.	Ref.
Survey Language					
English	Ref.	Ref.	Ref.	Ref.	Ref.
Asian Language	1.35 (1.04, 1.77)*	1.81 (0.84, 3.93)	1.38 (1.02, 1.86)*	2.01 (1.31, 3.07)**	1.23 (0.83, 1.81)
U.S. Region					
Northeast	Ref.	Ref.	Ref.	Ref.	Ref.
Midwest	0.96 (0.70, 1.33)	1.07 (0.61, 1.88)	0.90 (0.60, 1.33)	0.65 (0.41, 1.01)	1.39 (0.84, 2.31)
South	0.75 (0.55, 1.02)	0.87 (0.52, 1.46)	0.69 (0.47, 1.01)	0.52 (0.34, 0.79)**	1.19 (0.75, 1.89)
West	0.92 (0.70, 1.20)	1.00 (0.65, 1.54)	0.87 (0.61, 1.25)	0.75 (0.51, 1.10)	1.27 (0.83, 1.93)

*$p < .05$; **$p < .01$; ***$p < .001$

Note. *OR* = odds ratio; *CI* = confidence interval.

Table 6. Linear Regression Models of COVID-Related Collective Racism for Asian American Sample (*n* = 3,478)

Correlate Subgroup	Model 1: Overall (n = 3,478)		Model 2: U.S. Born (n = 1,825)		Model 3: Foreign Born (n = 1,631)		Model 4: Women (n = 2,117)		Model 5: Men (n = 1,322)	
	B	95% CI	B	95% CI	B	95% CI	B	95% CI	B	95% CI
Ethnicity										
Chinese	Reference Group		Reference Group		Reference Group		Reference Group		Reference Group	
Filipino	-0.21	-0.30,-0.12***	-0.14	-0.26,-0.02*	-0.25	-0.37,-0.13***	-0.35	-0.46,-0.24***	-0.09	-0.23, 0.05
Vietnamese	0.02	-0.08,0.13	0.13	0.02,0.24*	-0.06	-0.21,0.10	-0.10	-0.22, 0.01*	0.11	-0.06, 0.27
Korean	-0.12	-0.22,-0.03*	-0.02	-0.13,0.10	-0.18	-0.31,-0.05	-0.23	-0.36,-0.10***	-0.04	-0.18, 0.10
Indian	-0.62	-0.73,-0.51***	-0.66	-0.80,-0.52***	-0.61	-0.75,-0.47	-0.82	-0.94,-0.70***	-0.44	-0.60, -0.28***
Pakistani	-0.71	-0.85,-0.56***	-0.83	-1.08,0.58***	-0.65	-0.84,-0.47	-0.76	-0.96,-0.56***	-0.64	-0.85, -0.43***
Japanese	-0.12	-0.30,0.05	0.18	-0.13,0.49	-0.30	-0.52,-0.09	-0.46	-0.71,-0.22***	0.05	-0.21, 0.31
Cambodian	-0.02	-0.30,0.26	0.50	0.18,0.82**	-0.06	-0.37,0.24	-0.19	-0.52,0.14	-0.16	-0.31, 0.63
Other	-0.10	-0.24,0.03	-0.11	-0.34,0.11	-0.14	-0.30,0.02	-0.17	-0.36,0.03	-0.12	-0.30, 0.06
Multiethnic	0.14	0.01,0.26*	0.05	-0.07,0.18	0.28	0.07,0.49*	-0.06	-0.21,0.10	0.36	0.17, 0.56***
Multiracial	-0.20	-0.30,-0.09***	-0.12	-0.24,-0.01*	-0.31	-0.49,-0.12***	-0.30	-0.43,-0.18***	-0.10	-0.28, 0.08
Gender Identity										
Man	Reference Group		Reference Group		Reference Group					
Woman	0.07	0.01,0.13*	0.13	0.05,0.21**	0.03	-0.05,0.12	--	--	--	--
Nonbinary, Trans, or Other	0.12	-0.33,0.57	0.71	0.37,1.05***	0.21	-0.34,0.76	--	--	--	--
Age										
18-24	0.14	0.00,0.27	0.10	-0.09,0.29	0.24	0.05,0.43*	0.11	-0.06,0.28	0.12	-0.09, 0.34
25-44	0.14	0.01,0.26*	0.13	-0.05,0.32	0.21	0.05,0.36*	0.10	-0.04,0.24	0.16	-0.04, 0.36
45-64	-0.14	-0.28,-0.01*	-0.02	-0.22,0.18	-0.15	-0.30,0.01	-0.22	-0.37, -0.07**	-0.03	-0.24, 0.18
65 and older	Reference Group		Reference Group		Reference Group		Reference Group		Reference Group	
Annual Household Income										
Less than $25,000	0.04	-0.06,0.14	0.03	-0.11,0.17	0.02	-0.11,0.16	-0.13	-0.25, -0.02*	0.21	0.06, 0.36**
$25,000-$49,999	-0.01	-0.10,0.07	-0.03	-0.14,0.09	-0.04	-0.16,0.07	-0.06	-0.17, 0.04	0.01	-0.11, 0.14
$50,000-$74,999	-0.05	-0.14,0.05	0.02	-0.10,0.15	-0.12	-0.25,0.00	-0.07	-0.17, 0.04	-0.08	-0.23, 0.07
$75,000-$99,999	0.07	-0.02,0.16	0.05	-0.06,0.15	0.07	-0.06,0.19	0.10	-0.01, 0.21	-0.01	-0.14, 0.11
$100,000 +	Reference Group		Reference Group		Reference Group		Reference Group		Reference Group	

Table 6. Linear Regression Models of COVID-Related Collective Racism for Asian American Sample (*n* = 3,478; continued)

Correlate Subgroup	Model 1: Overall (n = 3,478)		Model 2: U.S. Born (n = 1,825)		Model 3: Foreign Born (n = 1,631)		Model 4: Women (n = 2,117)		Model 5: Men (n = 1,322)	
	B	95% CI	B	95% CI	B	Subgroup	B	95% CI	B	95% CI
Education										
HS, GED, or less than HS	-0.18	-0.29,-0.07*	-0.18	-0.36,0.00*	-0.12	-0.26,0.02	-0.18	-0.32, -0.04*	-0.16	-0.32, 0.01
Some college	-0.17	-0.28,-0.06*	-0.18	-0.32,-0.03*	-0.11	-0.28,0.06	-0.16	-0.29, -0.04*	-0.16	-0.34, 0.02
Technical or Associate's Degree	-0.18	-0.29,-0.07*	-0.21	-0.40,-0,03*	-0.14	-0.28,0.00	-0.25	-0.38, -0.12***	-0.12	-0.30, 0.06
Bachelor's Degree	-0.07	-0.14,0.00	-0.11	-0.21,-0.01*	-0.03	-0.12,0.07	-0.09	-0.18, 0.00	-0.04	-0.15, 0.08
Graduate Degree	Reference Group		Reference Group		Reference Group		Reference Group		Reference Group	
Years in the U.S.										
Entire life	0.15	0.00,0.29	--	--	--	--	0.20	-0.03, 0.43	0.07	-0.11, 0.24
15+ Years	0.03	-0.12,0.18	--	--	0.10	-0.06,0.25	0.10	-0.14, 0.33	-0.06	-0.24, 0.12
5-14 Years	-0.01	-0.15,0.14	--	--	0.02	-0.13,0.16	0.01	-0.22, 0.24	0.00	-0.17, 0.18
Less than 5 Years	Reference Group				Reference Group		Reference Group		Reference Group	
Survey Language										
English	Reference Group		Reference Group		Reference Group		Reference Group		Reference Group	
Asian Language	0.06	-0.05,0.16	-0.13	-0.29,0.03	0.11	-0.01,0.23	0.13	-0.02, 0.28	0.03	-0.12, 0.18
U.S. Region										
Northeast	Reference Group		Reference Group		Reference Group		Reference Group		Reference Group	
Midwest	-0.03	-0.14,0.09	0.01	-0.14,0.16	-0.02	-0.18,0.13	-0.12	-0.24, 0.00	0.10	-0.09, 0.28
South	-0.13	-0.24,-0.01*	-0.10	-0.25,0.05	-0.12	-0.27,0.04	-0.22	-0.35, -0.10***	0.01	-0.18, 0.19
West	0.02	-0.08,0.12	0.03	-0.08,0.15	0.12	-0.12,0.16	0.02	-0.09, 0.12	0.08	-0.08, 0.24

*p < .05; **p < .01; ***p < .001

Note. *CI* = confidence interval.

COVID-Related Collective Racism

The overall mean was 3.57 for COVID-related collective racism (*SD* = 0.67; range 1-5). According to bivariate analyses, COVID-related collective racism significantly differed by ethnicity, gender, age, education, number of years living in the U.S., survey language, and region. Chinese individuals reported significantly higher collective racism compared to Filipino, Indian, Pakistani, and multiracial individuals. Multiethnic AAs reported significantly higher collective racism compared to Chinese. Among U.S.-born AAs, Chinese reported less collective racism compared to Vietnamese and Cambodians. U.S.-born Chinese women additionally reported more collective racism compared to Japanese women. Overall, women reported more collective racism compared to men. Among U.S.-born AAs, nonbinary and trans individuals reported more collective racism compared to men. AAs aged 25-44 reported more collective racism compared to those aged 65 and older; this was particularly apparent for foreign-born AAs. Those aged 45-64, particularly women, reported less collective racism compared to those aged 65 and older. Lastly, foreign-born young adults (ages 18-24) reported more collective racism compared to foreign-born adults aged 65 and older. Collective racism did not differ by income, with the exception of men whose household earned less than $25,000 reporting more collective racism compared to the highest income earners. Generally, AAs with graduate degrees reported more collective racism compared to those with less education; this was particularly apparent among U.S.-born individuals and women. We found no difference in collective racism by number of years living in the U.S. or by survey language in the multiple linear regression model. For U.S. region, AAs living in the South—particularly women—reported less collective racism compared to those living in the Northeast.

Impact on Mental and Physical Health

Discrimination and COVID-related collective racism were independently associated with both mental and physical health. Specifically, experiences of discrimination and COVID-related collective racism were associated with increased psychological distress, above and beyond sociodemographic factors and other COVID-related stressors (see Table 7). In the case of physical health decline, both discrimination and COVID-related collective racism were associated with worse self-reported health, above and beyond sociodemographic factors and other COVID-related stressors (see Table 7). However, discrimination was not significantly associated with physical health once COVID-related collective racism was added to the regression model.

Interaction Effects

We found no interaction effects between discrimination and COVID-related collective racism for either psychological distress or health decline in the regression analysis. However, a simple two-group ANOVA showed AAs who experienced discrimination reported higher levels of COVID-related collective racism ($M = 4.11$) compared to AAs who did not experience discrimination ($M = 3.53$, $F(1, 3475) = 634.9$, $p < 0.001$).

Table 7. Nested Hierarchical Linear Regression Models of Psychological Distress and Physical Health Decline (N = 3,478)

	B	SE	*t* Value	95% CI	Fit	Difference
Psychological Distress						
Discrimination [Yes]	0.78	0.16	5.03	0.48, 1.09 ***		
					R^2 = 0.35 95% CI [0.33, 0.38]	
Discrimination [Yes]	0.60	0.16	3.62	0.28, 0.92***		
COVID-Related Collective Racism	0.42	0.13	3.34	0.17, 0.67***		
					R^2 = 0.36 95% CI [0.33, 0.38]	ΔR^2 = 0.01; $p < 0.001$
Discrimination [Yes]	0.63	0.18	3.41	0.27, 0.98***		
COVID-Related Collective Racism	0.45	0.14	3.14	0.17, 0.73**		
Discrimination X COVID-Related Collective Racism	-0.11	0.29	-0.39	-0.68, 0.46		
					R^2 = 0.36 95% CI [0.33, 0.38]	ΔR^2 = 0.00; p = 0.507
Health Decline						
Discrimination [Yes]	-0.12	0.05	-2.21	-0.23, -0.01*		
					R^2 = 0.10 95% CI [0.08, 0.12]	
Discrimination [Yes]	-0.07	0.06	-1.24	-0.18, 0.04		
COVID-Related Collective Racism	-0.12	0.04	-3.32	-0.19, -0.05***		
					R^2 = 0.10 95% CI [0.09, 0.12]	ΔR^2 = 0.00; $p < 0.001$
Discrimination [Yes]	-0.05	0.06	-0.82	-0.17, 0.07		
COVID-Related Collective Racism	-0.10	0.04	-2.83	-0.18, -0.03**		
Discrimination X COVID-Related Collective Racism	-0.08	0.10	-0.82	-0.28, 0.11		
					R^2 = 0.10 95% CI [0.09, 0.12]	ΔR^2 = 0.00; p = 0.120

*$p < .05$; **$p < .01$; ***$p < .001$
Note. *CI* = confidence interval. Coefficients for health decline are consistent with hypothesis: a negative health score indicates more health decline. Analyses controlled for ethnicity, gender identity, age, education, household income, number of years living in the U.S., survey language, U.S. geographical region, and the following COVID-19 stressors: physical health, mental health, finances, housing, transportation, caregiving, impact on work, impact on children, impact on community, impact on family, access to food, access to baby supplies, access to personal products, access to medical care including mental health, social distancing or being quarantined.

Discussion

Given that AAs comprise diverse groups across multiple domains, it is important to understand both the sociodemographic characteristics and contexts that increase individuals' risk of experiencing discrimination and COVID-related collective racism, and their links with mental and physical health. In the present study, we found that some AA subgroups are more likely to experience discrimination and COVID-related collective racism compared to other groups. These subgroups with increased risk are reflective of societal biases that stereotype AAs as perpetual foreigners (i.e., not *real* Americans, being from somewhere else) and blame AAs (specifically Chinese) for the COVID-19 pandemic. Additionally, findings confirm a large body of research indicating negative mental and physical health impacts of racism for AAs (Gee et al., 2007; S. Lee & Waters, 2021; C. Liu et al., 2021; Maglalang et al., 2021; Misra et al., 2020; Pan et al., 2021). Our findings also confirm that both discrimination and COVID-related collective racism are distinct forms of racism experienced by AAs (Harrell, 2000). These distinct forms of racism are associated with greater rates of psychological distress and physical health decline for AAs. Furthermore, our study fills a gap in the research literature with our finding that even non-direct forms of racism (i.e., COVID-related collective racism) can negatively impact physical health for AAs (Chen et al., 2020; Gee et al., 2007).

As hypothesized based on previous data (Yellow Horse et al., 2021), and the Sinophobic-emphasis of COVID-related anti-Asian racism, Chinese reported some of the highest rates of discrimination and scores of COVID-related collective racism. However, Cambodian and Vietnamese men reported greater rates of discrimination and multiethnic men reported more COVID-related collective racism compared to Chinese men. These unexpected findings warrant further investigation.

Although some studies found higher reporting of discrimination among women (Asian Pacific Policy & Planning Council & Chinese for Affirmative Action, 2020), our study is consistent with 2022 data from Momentive and AAPI Data (Momentive Inc., 2022): rates of discrimination are generally consistent for AA men and women. We did, however, find that women reported more COVID-related collective racism compared to men.

Other less researched sociodemographic factors seem to place individuals at risk for discrimination and COVID-related collective racism as well as increased negative mental and physical health symptoms. For example, younger participants (ages 18-24 and 25-44) experienced more discrimination and collective racism. Age differences in collective racism may be an effect of increased social media use by younger generations (Auxier & Anderson, 2021). Men with a lower income may be more likely to experience discrimination and collective racism; however, this is not the case for lower-income women. Women with a graduate degree experience less discrimination and collective racism compared to women with less education. Additionally, recent immigration for men and completing the survey in an Asian language—a proxy for English proficiency or preference—are associated with experiencing discrimination; xenophobia may have increased targeting of anti-Asian hate toward these groups. Lastly, similar to pre-COVID research which found AAs in the Northeast experienced more discrimination compared to those living in the West (Nadal et al., 2015), our study found that women living in the Northeast experienced more discrimination and collective racism compared to women living in the South.

Experiences of discrimination and COVID-related collective racism are distinct with separate risks pertaining to sociodemographic and contextual factors. For example, although we found no gender differences in discrimination, women reported more COVID-related collective

racism compared to men. Additionally, recent immigration and English proficiency/preference impacted discrimination risk but not collective racism.

Strengths, Limitations, and Future Research

The present study is the first, to our knowledge, to examine the unique contributions of discrimination and COVID-related collective racism on mental and physical health for AAs. Furthermore, we validated the recent Coronavirus Racial Bias Scale (CRBS) in an AA sample, a novel contribution to the literature.

Because we conducted secondary data analyses, however, we were limited by the measures we could incorporate into our analysis. For example, we used a one-item, binary question to measure discrimination, which may have contributed to the lower rate of discrimination we found overall for AAs. Future research should examine possible interactions between discrimination and COVID-related collective racism on psychological distress and physical health using a more robust, multi-item measure of discrimination. Additionally, our recruitment methods did not target all Asian ethnic groups; therefore, our subgroup findings are limited to the ethnic groups for which we had a large enough subsample. Future research should investigate ethnic differences in discrimination and COVID-related collective racism to further understand the experiences of various Asian ethnic groups. The present study is also limited in its cross-sectional view of racism's impact on mental and physical health; we cannot conclude longitudinal or causal relationships based on these data.

Future research that examines the long-term mental and physical health impacts of discrimination and COVID-related collective racism for AAs would be beneficial. Future research would also benefit from further understanding associations between discrimination and COVID-related collective racism on mental and physical health—and risk and protective factors

of these associations—for vulnerable AA subgroups identified in this study, such as Cambodian and Vietnamese men, multiethnic men, younger adults, women, low-income individuals, and foreign-born individuals.

Implications for Policy and Practice

By highlighting the diverse experiences of AAs during the COVID-19 pandemic, our findings point to the widespread nature of discrimination and collective racism and the serious consequences of racism on health and mental health. Although legislation such as the 2021 COVID-19 Hate Crimes Act signed into law by President Joseph Biden aims to improve reporting of hate crimes, multilevel policies are needed to address root causes of anti-Asian racism. For example, social and mass media can help reduce the racist messages that have perpetuated Sinophobic- and anti-Asian racism during COVID-19 and increase its representations of AAs in general. Increasing understanding of AA histories and communities in K-12 education is another important avenue to reduce racism towards AAs. Bystander trainings can help empower everyone—not just AAs—to take action to stop hate incidents. The current study's findings also point to high-risk subgroups for whom interventions to alleviate the mental and physical health impacts of racism may be targeted. Interventions such as the Healing Ethno and Racial Trauma (HEART) that focuses on helping Latinx individuals cope with ethno-racial trauma and resist systemic oppression may be adaptable for AA individuals (Chavez-Dueñas et al., 2019). Finally, development of new policies, practices, and research must be inclusive of the AA communities who are experiencing racism, as they possess critical culturally-grounded strengths and assets that can be harnessed for effective change.

Conclusions

Although the experiences of anti-Asian racism—both discrimination and COVID-related collective racism—are widespread, these experiences impact AAs differently based on sociodemographic factors, such as ethnic identity, gender, age, number of years living in the United States, and English proficiency/preference. Experiences of both discrimination and COVID-related collective racism are associated with negative mental and physical health impacts for AAs; therefore, understanding which subgroups of AAs may be most vulnerable to discrimination and COVID-related racism, can direct the efforts of policymakers, healthcare providers, and researchers to address the negative health impacts of racism and promote healing. Furthermore, we need change to policies and practices to better address racism as a public health threat.

Chapter 4. Profiles of a COVID-19 Syndemic: Anti-Asian Racism, Economic Challenges, and Mental and Physical Health

Rebecca McGarity-Palmer, MA & Anne Saw, PhD
DePaul University, Department of Psychology, Chicago, IL, USA

Aggie J. Yellow Horse, PhD
Arizona State University, School of Social Transformation, Tempe, AZ, USA

Stella S. Yi, PhD
Department of Population Health, NYU Grossman School of Medicine, New York, NY, USA

Janice Tsoh, PhD
Department of Psychiatry and Behavioral Sciences, University of California San Francisco, San Francisco, CA, USA

David Takeuchi, PhD
School of Social Work, University of Washington, Seattle, WA, USA

Abstract

Background: During the COVID-19 pandemic, Asian Americans (AAs) are experiencing co-occurring threats of anti-Asian racism, economic challenges, and negative mental and physical health symptoms. *Objectives*: Examine the co-occurrence of COVID-related anti-Asian discrimination and collective racism, economic stressors, and mental and physical health challenges for AAs during the COVID-19 pandemic. Examine AA subgroups associated with these threats. *Methods*: Nationally representative data from the 2021 Asian American and Native Hawaiian/Pacific Islander COVID-19 Needs Assessment Project (unweighted N = 3,508) were used to conduct a latent profile analysis to identify unique typologies of the co-occurrence of these threats. We also conducted chi-square analyses to investigate subgroup differences by latent profile. *Results*: We identified five distinct latent profiles: multi-threat impact, low impact, collective racism, health challenges, and economic/health challenges. Forty percent of AAs were in the multi-threat impact profile, indicating high levels on all COVID-related threats. Subgroup analyses revealed significant differences in profile membership. East Asians, U.S.-born AAs, and AAs aged 25-44 seemed to be particularly affected by the proposed syndemic; results also differed by income. *Conclusion*: AAs are experiencing co-occurring and interrelated threats during COVID-19 that suggest the presence of a syndemic. Results from our study point to vulnerable AA subgroups and the need for targeted public health efforts to address racism, health challenges, and economic challenges in the context of COVID-19.

Keywords: Asian Americans, COVID-19, syndemic, racism, health status, financial burden

Introduction

The COVID-19 pandemic has disproportionately impacted communities of color by exacerbating pre-existing structural and societal inequities that are rooted in and are symptoms of structural racism (Fisher et al., 2021a; S. R. Liu & Modir, 2020). Structural racism refers to the ways society has built racial discrimination into all its systems through overt (e.g., legalization of slavery, Jim Crow laws of racial discrimination; anti-immigration laws) and covert (e.g., race-blind policies that ignore racial disparities or imbalances, such as the G.I. bill) mechanisms (Bailey et al., 2017; Wingfield, 2017). These racially discriminatory systems (e.g., education, healthcare, employment, legal), in turn, reinforce discriminatory beliefs and practices (Bailey et al., 2017). For Asian Americans (AAs), the pandemic has resulted in the co-occurring and interrelated threats of anti-Asian racism, economic challenges, and negative mental and physical health symptoms (Chin et al., 2021; S. Lee & Waters, 2021; Saw et al., 2022), exacerbated by structural factors inherent in health data systems (e.g., poor representation of the lower income stratum, limited English proficient AA communities (Islam et al., 2010) and racialized stereotypes held against AAs in the U.S. (Yi et al., 2022b).

Anti-Asian Racism

Anti-Asian racism has occurred throughout U.S. history, notably enacted into laws such as the Chinese Exclusion Act of 1882 and taking root in the mainstream (White) American consciousness as associating AAs as perpetual foreigners and blaming AAs for diseases (e.g., "Yellow Peril" in the 19th century; SARS 2003 outbreak; (Chen et al., 2020; E. Lee, 2002; Power, 1995; Stevens, 2020). These patterns of anti-Asian racism have continued and increased during the COVID-19 pandemic (Center for the Study of Hate & Extremism, 2021a, 2021b), driven in part by government leaders and news media using anti-Asian rhetoric (Human Rights

Watch, 2020; Kelley, 2020; Marquardt & Hansler, 2020), and exemplified by increases in online hate and verbal, physical, and violent assaults against AAs (Brantley-Jones & Chen, 2021; Hahm et al., 2021; Y. Han, 2020; Nguyen et al., 2020; Tahmasbi et al., 2021; Yellow Horse et al., 2021).

Economic Challenges

AAs have been heavily impacted economically by the COVID-19 pandemic. Large proportions of AA businesses and workers are employed in industries such as food, hospitality, and retail, which were most negatively impacted by the pandemic (Cheng et al., 2021; Chin et al., 2021). Subsequently, unemployment rates for AAs increased dramatically, rising from 2.8% in 2019 to 15% in May of 2020 (Horsley, 2020). Compared to other racial/ethnic groups, AAs had the highest percentage decline in the number of frontline workers (Gemelas et al., 2021). Food businesses in Chinese ethnic neighborhoods closed at a higher rate compared to food businesses in other neighborhoods (Yi et al., 2022a). Additionally, AA-owned businesses faced obstacles obtaining Payment Protection Program (PPP) loans, meant to support small businesses and prevent closing, that resulted in many not receiving assistance (Cheng et al., 2021; Chin et al., 2021). Furthermore, less educated AAs experienced differential economic challenges. Compared to Whites of equal education levels, AAs with less education were more likely to lose employment during the pandemic (A. T. Kim et al., 2021a).

Mental and Physical Health Challenges

The COVID-19 pandemic has impacted the mental health of AAs. Due to isolation in lockdowns and worry for family members' and one's own health, many during the COVID-19 pandemic are experiencing higher rates of anxiety, depression, and distress (R. H. Han et al., 2020; S. Lee & Waters, 2021; Vahratian et al., 2021). This trend is true for AAs who are

experiencing increased rates of negative mental health symptoms (S. Lee & Waters, 2021; Quach et al., 2021; Wu et al., 2021).

AAs' physical health has also been impacted by the COVID-19 pandemic. Although AAs make up a small proportion of the U.S. population, AAs have 2.1 times higher percentage of deaths attributed to COVID-19 compared to non-Hispanic Whites (Yan et al., 2021). Data from the U.S. Census Bureau's Household Pulse Survey show AAs are slightly more likely to report poor health status compared to non-Hispanic Whites when adjusting for demographic covariates (H. Lee & Singh, 2021). Additionally, AAs are experiencing increased stress from the COVID-19 pandemic and decreased access to healthcare, both of which are associated with decreased physical health (Bambra et al., 2020; Lund, 2021; Office of Disease Prevention and Health Promotion, 2020).

Conceptual Framework

Influenced by Singer's syndemic approach (Singer, 2009), we use a Syndemic Framework to conceptualize these interrelated and interacting threats faced by AAs during the COVID-19 pandemic (Saw et al., 2022). Syndemic theory describes a synergy of co-occurring and compounding epidemics, examining the social, political, and/or ecological factors that may contribute to the co-occurrence of disease for a certain population group (Mendenhall, 2017; Mendenhall & Singer, 2020). The COVID-19 pandemic has brought attention to the clustering of anti-Asian racism, economic stress, and mental and physical health challenges in the AA population (Saw et al., 2022). We theorize these threats interact socially and psychologically, exacerbating the experience of any one single threat, and these conditions are clustered in the AA population due to structural racism (Yi et al., 2022b). Structural racism contributes to economic injustice through educational and occupational segregation to low-quality jobs, reduced salary

for same work, and reduced rate of promotion for marginalized racial groups (Bailey et al., 2017). Racism also impacts mental and physical health through economic injustice and social deprivation (e.g., social segregation within workplaces, healthcare), environmental health inequities (e.g., disproportionate exposures to hazards, location of toxic waste sites), psychosocial trauma, and inadequate health care (e.g., limited access to culturally and/or linguistically appropriate care, discriminatory care; Bailey et al., 2017; Gee & Ford, 2011; Yoo et al., 2009).

Variation among AAs

AAs are not meaningfully included in federal and state data collection practices and are often viewed as a homogenous group (Yi et al., 2022b). However, AAs are not a monolith but are a diverse group made up of many ethnicities and cultures, distinct histories of migration and settlement, and differential opportunities—shaped heavily by federal immigration policy and U.S. global politics. Individuals hold multiple identities in addition to race and ethnicity, such as gender, age, income, and immigration, that intersect and alter opportunities and treatment (Williams et al., 2019). Disaggregating data, therefore, and examining differences within AAs is important to further understand the impacts of health inequities, economic inequities, and racism (della Cava, 2020; Dinh et al., 2020; Marcello et al., 2020; H. Yan et al., 2020).

Present Study

Conventional news sources, social media platforms, researchers, and the general public showed an increased attention to AA communities during the pandemic, particularly when deleterious incidents against them occurred. However, there is a continued tendency to see AAs as having a homogenous response and experience to the pandemic and anti-Asian hate incidents despite the recognition of the heterogeneity among them. AAs can differ in their contexts and

environments that may make them more likely to be direct targets of anti-Asian hate attacks. They can also differ in their social, economic, and health conditions that make them disadvantaged, caused by the isolation and burden of the pandemic. This paper develops profiles to tease out the variability of the pandemic experience among AAs. We used latent profile analysis to examine the co-occurrence of COVID-related anti-Asian discrimination and collective racism, economic stressors, and mental and physical health challenges for AAs during the COVID-19 pandemic. Profiles are then compared across various groups within the AA category to better identify the heterogeneity within AA communities in response to the pandemic.

Method

Sample

Data for this study come from the Asian American and Native Hawaiian/Pacific Islander (AA & NH/PI) COVID-19 Needs Assessment Study (Grills et al., 2022). The AA & NH/PI COVID-19 Needs Assessment Study was conducted by the Asian American Psychological Association and examines AA and NH/PI experiences during the pandemic in areas such as mental health, discrimination, healthcare access, and economic impact.

The survey was designed in collaboration with national and community organizations and was offered in online, paper, and over the phone formats. AA and NH/PI individuals aged 18 years and older were recruited to participate. We targeted recruitment efforts toward five Asian ethnic groups: Chinese, Filipino, Korean, Vietnamese, and South Asian ethnicities (i.e., Indian, Bangladeshi, Nepalese, Pakistani, Sri Lankan, Bhutanese); however, we did not exclude individuals of other Asian ancestry from participation in the survey. The survey was offered in the following languages: Bangla, Chinese (traditional and simplified), English, Hindi, Khmer,

Korean, Tagalog, Urdu, and Vietnamese. Potential participants were recruited through community organization events and outreach (e.g., vaccination drives, food deliveries, email lists, flyers, word of mouth; 68% of participants) and through an online Qualtrics panel (32% of participants; offered only in English). Community organization recruitment was targeted in Honolulu, Los Angeles, Chicago, Houston, Portland, Seattle, and Jersey City. Ethics approval for this study was received from the Association of Asian Pacific Community Health Organizations (AAPCHO) Institutional Review Board. Informed consent was obtained from participants at the beginning of the survey, and participants were paid via $10 gift card or equivalent compensation for panel participants. Participants completed the survey from January 18 to April 9, 2021. A total of 3,508 respondents who self-identified as Asian for their race, including multiracial individuals, were included in analyses.

Measures

Mental Health

Participants responded to a modified version of the Patient Health Questionnaire-4 (PHQ-4; Centers for Disease Control and Prevention, 2021; U.S. Census Bureau, 2021), composed of the two-item Generalized Anxiety Disorder scale (GAD-2) and the two-item Patient Health Questionnaire-2 (PHQ-2; Staples et al., 2019), which both ask for symptoms over the last seven days (rather than 14 days). A sample question includes “Over the last 7 days, how often have you been bothered by the following problems: Feeling nervous, anxious, or on edge.” Response options included the following: *Not at all* (0), *Several days* (1), *More than half the days* (2), and *Nearly every day* (3). To measure psychological distress, we calculated summed scores from the four items.

Health

As a measure of health, participants responded to the following item from the Household Pulse Survey: "Currently, would you say your health in general is excellent, very good, good, fair, or poor?" Response options included (1) *Excellent*, (2) *Very good*, (3) *Good*, (4) *Fair*, and (5) *Poor* (U.S. Census Bureau, 2021).

Discrimination

Participants responded to the following multiple-choice item developed with community partners: "How has the COVID-19 pandemic impacted your family's life?" Participants were able to select *Yes* to as many options as they chose. One possible option was "Facing discrimination." Participants responded to a second similar multiple-choice item from the Environmental influences on Child Health Outcomes COVID-19 Questionnaire: "What have been your greatest sources of stress from the COVID-19 pandemic?" (Environmental Influences on Child Health Outcomes, 2020). Participants were able to select *Yes* to as many options as they chose. One possible option was "Discrimination due to my race/ethnicity." We used the selection of these two options as a measure of discrimination. We created a summed score ranging from 0 to 2, such that participants were given a score of 1 for each question to which they responded *Yes*.

Collective Racism

Participants responded to questions from the Coronavirus Racial Bias Scale (CRBS), which examines beliefs about how the COVID-19 pandemic has negatively affected people of one's race/ethnicity (Fisher et al., 2021b). For the present study, we used three CRBS items to approximate participants' COVID-related collective racism. These items include the following: "Has the U.S. become more physically dangerous for people in your racial/ethnic group because

of fear of COVID-19?"; "Since COVID-19, have you seen a change in the amount of cyberbullying of people of your race/ethnicity?"; and "How much does what politicians say (i.e., political rhetoric) about COVID-19 create bias against people of your racial/ethnic group?" Participants responded to items on a 5-point scale, where a higher score indicates more negative impact or racial bias (i.e., 1 = *Much more positive*; 5 = *Much more negative*). We used a summed score of the three CRBS items for the present study.

COVID Economic Stressors

Participants responded to questions regarding how the COVID-19 pandemic had impacted them economically. Four of these items are included in the current study, and they include the following: Loss of employment income–"Have you, or has anyone in your household experienced a loss of employment income since the COVID-19 pandemic since March 13, 2020?" (U.S. Census Bureau, 2021); Unable to afford food– "Why did you not have enough to eat (or not what you wanted to eat)? - Could not afford to buy more food." (U.S. Census Bureau, 2021); Financial stress– "What have been your greatest sources of stress from the COVID-19 pandemic? - Financial concerns." (Environmental Influences on Child Health Outcomes, 2020); Confidence in Paying Housing– "How confident are you that your household will be able to pay your next rent or mortgage payment on time?" (U.S. Census Bureau, 2021). Response options for the first three items were dichotomous — Yes/checked option; No/did not check option. Options for Pay housing confidence included (1) *No confidence*, (2) *Slight confidence*, (3) *Moderate confidence*, (4) *High confidence*, and (5) *Payment is/will be deferred*. Responses were dichotomized into high confidence (options 3, 4, 5, and participants who did not have a monthly housing payment) and low confidence (options 1 and 2). To measure economic challenges, we

created a summed score of the four items with a range from 0 to 4, such that participants received a score of 1 for each *Yes*/*Low confidence* response.

Demographic Variables

Participants responded to a variety of demographic questions, including ethnic identity (East Asian, South Asian, Southeast Asian, Multiracial, & Multiethnic), gender identity (man, woman, nonbinary/trans/another gender identity), age (18-24, 25-44, 45-64, 65+ years), household income (< $25,000, $25,000-$49,999, $50,000-$74,999, $75,000-$99,999, and > $100,000), and nativity (U.S. born, foreign born). We categorized respondents who identified with more than one racial group as multiracial. Participants who identified with more than one ethnic group were categorized as multiethnic.

Data Analysis

We used the ranking method to create sample weights matching the Asian population estimates from the 2019 U.S. Census American Community Survey (ACS) 1-Year estimates (U.S. Census Bureau, 2022a). Sample weights reflect the representative AA population in the United States as of 2019 and account for multiracial AAs. Data weights were created based on the following variables: Asian ethnicity, nativity (foreign born vs U.S. born), education, household income, gender identity, and age. All analyses used weighted data.

Missing data for demographic and key variables were assessed. There were less than 1.3% missing values in the five key variables included in the latent profile model estimation. We used Mplus to impute missing data into the five key indicators using full information maximum likelihood. Among the demographic variables, household income had the highest number of missing values (n=62; 1.8% missing). To generate the correct parameter estimates in the

subgroup analyses, we conducted multiple imputation by chained equations in R, creating 25 imputed datasets (van Buuren et al., 2021).

We conducted latent profile analysis to examine clustering on the following indicators: psychological distress, physical health, discrimination, collective racism, and economic challenges. We then conducted chi-square tests of independence for each subgroup to determine if sociodemographic factors were associated with latent profile membership. We conducted post-hoc analyses using adjusted residuals. Larger residuals indicate greater contribution to the significant chi-square result (Sharpe, 2015); and we applied a Bonferroni correction to adjust the standardized residuals for the total number of cells (Pritchard, 2021).

Analyses were conducted in R (v4.0.3 in RStudio v1.4.1106) using the 'stats' (v. 4.0.3), 'dplyr' (v1.0.7), 'survey' (v4.1-1), 'mice' (v3.14.0), and 'nnet' (v7.3-17) packages and Mplus (Lumley, 2020; Muthén & Muthén, 1998; R Core Team, 2020; Ripley & Venables, 2022; van Buuren et al., 2021; Wickham et al., 2021).

Results

Latent Profile Analysis

We first tested a variety of latent profile models with two to six latent classes. We used fit indices and interpretability of the profiles to determine the best latent profile model (see Table 8; Weller et al., 2020). Although, the 6-class latent model had the lowest AIC, BIC, and SABIC, the smallest profile included only 4 individuals, which disqualified this model as a solution. Based on the Lo-Mendell-Rubin likelihood ratio test, the 2-class model had the best fit, but lacked nuance in its interpretability. Therefore, we selected the 5-class model as the best latent profile model as it had the lowest AIC, BIC, and SABIC (excluding the disqualified 6-class model) and its interpretability best fit our conceptual framework. The average posterior

Table 8. Fit indices for latent profile analysis models

Number of Classes	AIC	BIC	SABIC	Entropy	Lo-Mendell-Rubin Adjusted LRT Test Value	p-value
2	55709.55	55808.16	55757.32	0.972	3051.95	0.000
3	55497.48	55633.06	55563.16	0.867	219.59	0.0898
4	55426.53	55599.09	55510.12	0.868	81.290	0.4024
5	**55378.81**	**55588.34**	**55480.31**	**0.742**	**58.529**	**0.4887**
6	55325.40	55571.91	55444.81	0.775	64.103	0.3125

Note. AIC = Akaike's Information Criterion; BIC = Bayesian Information Criteria; SABIC = Sample-size adjusted BIC; LRT = Likelihood ratio test.

Table 9. Classification table for 5-profile solution

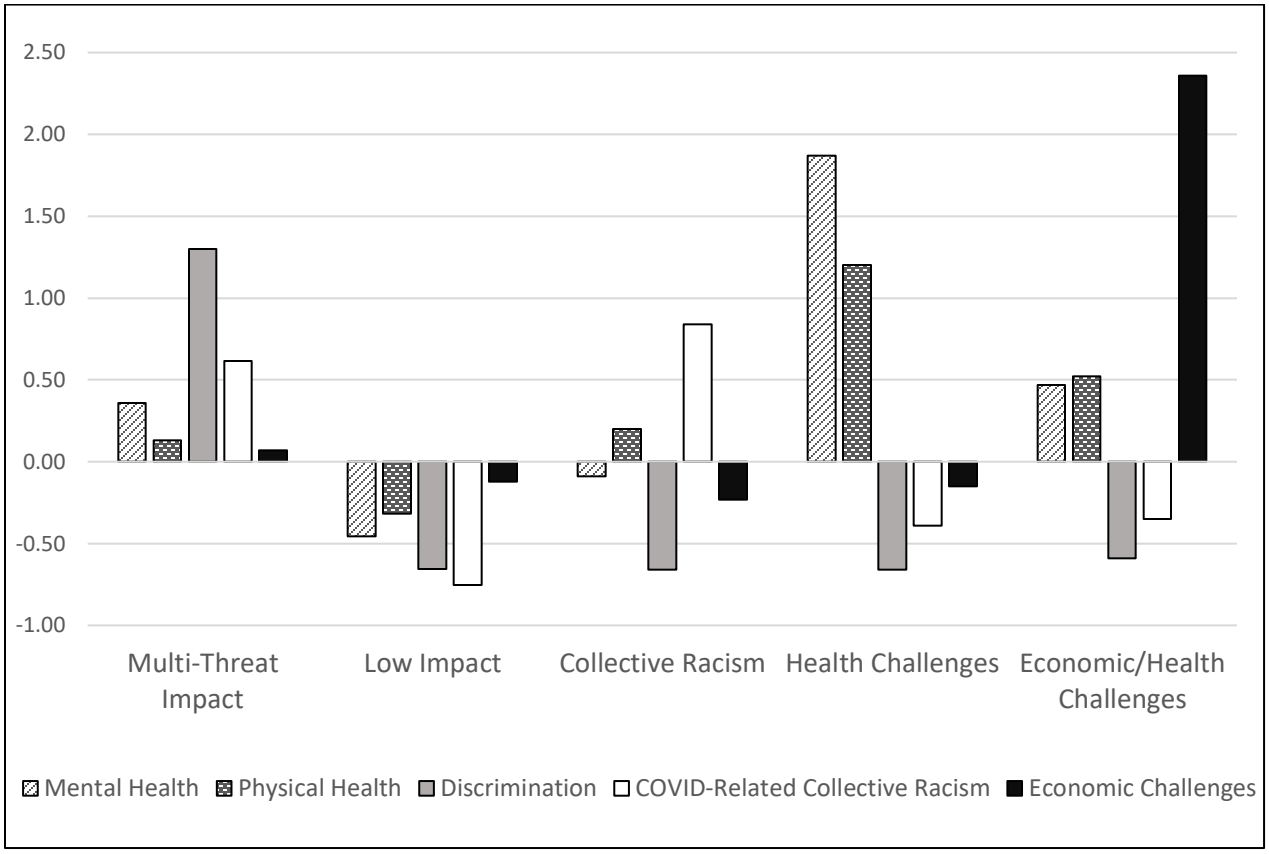
		Average posterior probability associated with each profile				
Profile	*n*	Multi-Threat Impact	Low Impact	Collective Racism	Health Challenges	Economic/ Health Challenges
Multi-Threat Impact	1438	**0.997**	0.002	0.000	0.000	0.001
Low Impact	1201	0.011	**0.856**	0.108	0.012	0.012
Collective Racism	602	0.009	0.363	**0.592**	0.025	0.011
Health Challenges	161	0.028	0.162	0.139	**0.633**	0.039
Economic/ Health Challenges	106	0.028	0.219	0.146	0.070	**0.538**

Note. Values in bold represent the average posterior probability associated with the profile to which participants were assigned.

probability associated with each latent profile is presented in Table 9 for the final 5-profile solution.

We then interpreted the five profiles based on each profile's mean scores on the key indicators (see Figure 2).

Figure 2. *Standardized means for the indicators by latent profile*



The first profile included the largest number of AAs (41%); individuals categorized into this profile shared above-average scores on all five indicators. We labeled this profile "multi-threat impact" to describe participants dealing with multi-faceted threats of negative mental and physical health symptoms, economic challenges, and anti-Asian discrimination and collective racism. The second profile included 34% of AAs and was characterized by below-average scores on all five indicators. We labeled this profile "low impact" to describe AAs who were relatively

least impacted by negative health symptoms, economic challenges, and discrimination and collective racism. The third profile grouped together AAs (17%) with high scores on COVID-related collective racism, and average to below-average scores on discrimination, mental and physical health, and economic indicators. We labeled this profile collective racism, indicating this group mainly experienced collective racism without the other four indicators during the COVID-19 pandemic. The fourth profile was labeled "health challenges," as AAs categorized into this profile (5%) exhibited high scores on both mental and physical health and below-average scores on the other three indicators. Only 3% of AAs were categorized into the fifth profile, showing the highest scores on economic challenges and relatively high scores on mental and physical health, with below-average scores on discrimination and collective racism. We labeled this profile "economic/health challenges."

Subgroup Analysis

We conducted subgroup analyses to examine the relationship between sociodemographic factors and each profile. Table 10 presents descriptive statistics on the demographic factors and key indicators for the overall sample and each latent profile. Chi-square statistics are also presented for each sociodemographic factor. The following sociodemographic factors were significantly related to latent profile membership: ethnicity, age, income, and nativity status. Gender was not differentially related to latent profile membership.

Using adjusted residuals, we further investigated which sociodemographic subgroups were most likely to have membership in the five latent profiles. The multi-threat impact profile was characterized by overrepresented membership for East Asians and multiethnic AAs, AAs aged 25-44, and U.S.-born AAs. South Asians, AAs aged 45-64, and foreign-born AAs were

Table 10. Unweighted frequencies, weighted proportions, and weighted means and standard errors for demographic and key indicator variables by latent profiles.

Variables	Overall, *n* (Weighted %) N = 3,508	Multi-Threat Impact, *n* (Weighted %) 1438 (40.99%)	Low Impact, *n* (Weighted %) 1201 (34.24%)	Collective Racism, *n* (Weighted%) 602 (17.16%)	Health Challenges, *n* (Weighted %) 161 (4.59%)	Economic/Health Challenges, *n* (Weighted %) 106 (3.02%)
Ethnicity						
East Asian	1371 (29.31%)	641 (37.20%) $^{+}$	407 (24.17%) $^{-}$	246 (31.00%)	45 (21.53%)	32 (16.01%) $^{-}$
South Asian	463 (22.41%)	65 (8.83%) $^{-}$	293 (35.74%) $^{+}$	47 (13.58%) $^{-}$	37 (28.08%)	21 (25.87%)
Southeast Asian	1174 (28.45%)	495 (31.05%)	381 (25.88%)	209 (28.07%)	54 (28.87%)	35 (37.38%)
Multiracial	272 (16.69%)	96 (16.91%)	82 (12.87%) $^{-}$	61 (24.53%) $^{+}$	17 (19.96%)	16 (20.17%)
Multiethnic	228 (3.14%)	141 (6.01%) $^{+}$	38 (1.35%) $^{-}$	39 (2.82%)	8 (1.56%)	2 (0.58%)
Chi-Square				$F(13.32) = 12.3$, $p < 0.001$		
Gender Identity						
Man	1328 (47.11%)	473 (44.21%)	538 (51.28%)	218 (43.37%)	54 (36.06%)	45 (56.15%)
Woman	2139 (51.80%)	945 (54.81%)	655 (47.77%)	378 (55.81%)	100 (58.58%)	61 (43.85%)
Nonbinary, Trans, Other	36 (1.09%)	20 (0.99%)	3 (0.95%)	6 (0.82%)	7 (5.36%)	0 (0.00%)
Chi-Square				$F(4.21) = 2.09$, $p = 0.076$		
Age						
18-24	1151 (14.01%)	527 (15.35%)	294 (11.18%) $^{-}$	219 (13.79%)	81 (33.96%) $^{+}$	30 (17.38%)
25-44	1515 (42.35%)	677 (51.19%) $^{+}$	496 (37.87%) $^{-}$	244 (42.91%)	47 (27.47%) $^{-}$	51 (36.52%)
45-64	560 (28.51%)	161 (22.96%) $^{-}$	267 (34.82%) $^{+}$	96 (28.01%)	18 (19.40%)	18 (24.06%)
65 and older	263 (14.30%)	67 (10.50%) $^{-}$	132 (16.13%)	43 (15.29%)	14 (19.17%)	7 (22.05%)
Chi-Square				$F(9.98) = 5.26$, $p < 0.001$		
Income						
Less than $25,000	700 (14.10%)	291 (14.35%)	218 (12.89%)	118 (11.65%)	40 (24.74%) $^{+}$	33 (36.21%) $^{+}$
$25,000 to $49,999	703 (13.18%)	293 (12.83%)	247 (14.31%)	87 (7.64%) $^{-}$	37 (21.24%)	39 (29.33%) $^{+}$
$50,000 to $74,999	540 (13.91%)	229 (15.33%)	189 (14.24%)	80 (12.02%)	27 (14.32%)	15 (13.07%)
$75,000 to $99,999	444 (12.27%)	186 (14.06%)	156 (12.15%)	73 (11.74%)	20 (10.80%)	9 (7.34%)
$100,000 and above	1059 (44.55%)	419 (43.43%)	363 (46.42%)	234 (56.96%) $^{+}$	35 (28.90%) $^{-}$	8 (14.05%) $^{-}$
Chi-Square				$F(14.77) = 4.93$, $p < 0.001$		

Table 10. Unweighted frequencies, weighted proportions, and weighted means and standard errors for demographic and key indicator variables by latent profiles. (continued)

Variables	Overall, *n* (Weighted %) N = 3,508	Multi-Threat Impact, *n* (Weighted %) 1438 (40.99%)	Low Impact, *n* (Weighted %) 1201 (34.24%)	Collective Racism, *n* (Weighted%) 602 (17.16%)	Health Challenges, *n* (Weighted %) 161 (4.59%)	Economic/Health Challenges, *n* (Weighted %) 106 (3.02%)
Nativity						
US Born	1835 (36.41%)	849 (41.97%) $^{+}$	475 (27.54%) $^{-}$	365 (46.60%) $^{+}$	91 (41.41%)	55 (34.69%)
Foreign Born	1647 (63.59%)	585 (58.03%) $^{-}$	708 (72.46%) $^{+}$	235 (53.40%) $^{-}$	69 (58.59%)	50 (65.31%)
Chi-Square				$F(3.99) = 12.49$, $p < 0.001$		
Psychological Distress $M \pm$ SD (Range 0-12)	3.45 ± 3.16	4.58 ± 0.14	2.01 ± 0.09	3.17 ± 0.16	9.37 ± 0.21	4.93 ± 0.34
Self-rated health $M \pm$ SD (Range 1-5)	2.68 ± 1.01	2.81 ± 0.05	2.36 ± 0.04	2.88 ± 0.06	3.89 ± 0.09	3.21 ± 0.14
Discrimination $M \pm$ SD (Range 0-2)	0.48 ± 0.73	1.43 ± 0.02	0.00 ± 0.00	0.00 ± 0.00	0.00 ± 0.00	0.05 ± 0.02
COVID-Related Vicarious Racism $M \pm$ SD (Range 3-15)	11.53 ± 2.18	12.87 ± 0.08	9.89 ± 0.06	13.36 ± 0.06	10.69 ± 0.21	10.76 ± 0.18
Economic Challenges $M \pm$ SD (Range 0-4)	1.08 ± 0.74	1.13 ± 0.03	0.99 ± 0.02	0.91 ± 0.04	0.97 ± 0.09	2.83 ± 0.08

Note. Raw numbers are unweighted. Weighted percentages are column percentages. Means and standard errors are weighted.

$^{+}$ indicates subgroup was significantly overrepresented in the latent profile.

$^{-}$ indicates subgroup was significantly underrepresented in the latent profile.

most likely to have membership in the low impact profile. The collective racism profile was characterized by increased membership of multiracial AAs, AAs earning a household income of $100,000 or more, and U.S.-born AAs. The health challenges profile included larger proportions of young adults (aged 18-24) and AAs earning a household income less than $25,000. Overrepresented membership in the economic/health challenges profile included AAs earning a household income less than $50,000.

Discussion

In the present study, we confirm that AAs are facing multiple threats of anti-Asian discrimination and COVID-related collective racism, economic stressors, and negative mental and physical health challenges. We identified five latent profiles that describe the co-occurrence of these multiple threats: the multi-threat profile, describing high levels of all five threats; low impact profile, with low levels on all five indicators; collective racism profile; health challenges profile; and economic/health challenges profile. We also identified AA subgroups associated with the co-occurring threats as described in each profile.

The Sinophobic emphasis of COVID-related anti-Asian racism may explain why East Asians were the most likely ethnic group to experience the multi-threat profile (Borja et al., 2020), which described AAs who experienced high levels on all five threats. Chinese and, as an extension, East Asians have generally experienced the brunt of COVID-related anti-Asian racism (Stop AAPI Hate, 2022)—including discrimination, collective racism, and economic losses—as government leaders and media have inaccurately paired and implicitly (and explicitly) blamed COVID-19 on China and Chinese (Cheng et al., 2021; Kelley, 2020; S. Lee & Waters, 2021; Marquardt & Hansler, 2020). Multiethnic AAs also had significant high proportions of membership in the multi-threat profile. Not enough current research exists to understand why

this might be the case; we encourage more research to further understand multiethnic AAs' experiences of anti-Asian racism, economic stressors, and health challenges during the COVID-19 pandemic. The membership of South Asians in the low impact profile, conversely, should not be interpreted as there being no experiences of discrimination in this group during the COVID-19 pandemic. These results must also be interpreted against the backdrop of the historical discrimination towards South Asians and Muslim communities (i.e., Islamophobia). Finally, multiracial AAs were most represented in the collective racism profile, which described an experience with high levels of COVID-related collective racism and below average levels for the other four indicators. There is emerging research examining the mental health, sense of belonging, and racial identities of multiracial AAs (Chan, 2018; Franco et al., 2021; Sarkar, 2021). We encourage this emerging research to further understand the varied experiences of multiracial AAs.

Contrary to much of the previous literature, we found no differences in latent profile membership by gender. Gender differences have been shown to exist in mental health symptoms (Misra et al., 2020), reporting of anti-Asian hate incidents (Asian Pacific Policy & Planning Council & Chinese for Affirmative Action, 2020), and pandemic-related stress (Zhang et al., 2021). However, some studies have found no gender differences in loss of employment rates during COVID-19 (A. T. Kim et al., 2021a), or levels of psychological distress across all Asian subgroups (Park et al., 2020). We still encourage future research to include gender as a potential factor of difference in experiences, particularly because of the intersectionality of being AA and a woman often means hyper-sexualization and violence (e.g., the Atlanta spa shootings in 2021; Hwang & Parreñas, 2021). Additionally, the evidence for gender disparities in mental and

physical health as well as economic status is well documented (Kent et al., 2012; Ortiz-Ospina & Roser, 2018; World Health Organization and Calouste Gulbenkian Foundation, 2014).

Lower income individuals were more likely to experience economic challenges as well as mental and physical health challenges. Membership in both the economic/health challenges profile and the health challenges profile was associated with AAs from lower income households. In the general U.S. population, lower income is a significant factor associated with increased anxiety and depression symptoms (Guerrini et al., 2021). This is also true for AAs: those with less income are additionally experiencing negative mental and physical health symptoms. Furthermore, data from the 2011/2012 California Health Interview Survey (CHIS) show that unemployed AAs or those looking for employment had higher rates of psychological distress (Park et al., 2020). Similarly, simulations run with National Institute of Mental Health and Social Security Administration data show that increases in employment correlated with mental health improvements (Alegria et al., 2017).

Previous research has found that younger AAs are more vulnerable to increased negative mental health symptoms (Misra et al., 2020). Our study confirms these findings. Younger AAs (aged 18-24 years) were the most represented age group in the health challenges profile, indicating they experienced the highest levels of negative mental and physical health symptoms. AAs aged 25-44 were the most represented in the multi-threat profile, indicating relatively high levels of negative mental and physical health symptoms in addition to high levels on the other three indicators. More research is needed to understand why this middle age group was most vulnerable to experiencing all five threats.

U.S.-born AAs were significantly more likely to have membership in the multi-threat profile compared to foreign-born AAs. In accordance with data from the 2002/2003 National

Latino and Asian American Study (NLAAS; Sue et al., 2012), U.S.-born AAs experienced high levels of negative mental health symptoms in addition to high levels on all five threat indicators.

We propose that AAs during the COVID-19 pandemic are facing a syndemic composed of anti-Asian hate, health challenges, and economic stressors. Syndemic theory states that syndemics must include the following: (1) two or more diseases clustering together within a population, (2) interaction of these diseases that leads to worse outcomes, and (3) large-scale social forces that explain the clustering of the diseases (Mendenhall & Singer, 2020). We have established through this paper that many AAs are experiencing co-occurring threats of anti-Asian discrimination and collective racism, mental and physical health challenges, and economic stressors. These threats co-occur among AAs due to structural racism and an increase in anti-Chinese political rhetoric. We did not, however, examine interactions of these threats and how such interactions may worsen long-term outcomes.

Limitations and Future Research

This study is the first, to our knowledge, to examine the co-occurrence of anti-Asian hate, health challenges, and economic stressors within the AA community during the COVID-19 pandemic. We used weighted data from a large national study that increases the generalizability of our findings. However, we note a few limitations. Although our dataset was robust enough to allow for subgroup analyses, we did not account for intersectionality. Intersectionality theory argues that individuals hold multiple identities that interact to shape their experiences, particularly structuring experiences of oppression (Crenshaw, 2006). We acknowledge that intersectionality is essential to understanding AAs' experiences of these multiple threats. Because individuals hold multiple identities, these sociodemographic subgroups likely interact, which may mean that additional subgroups are at greater risk of these threats. For example, it is

possible we would have found gender differences using a more intersectional approach. However, we were limited in our quantitative approach. Future research will benefit from the use of qualitative methods, which are generally best suited to exploring issues of intersectionality. Additionally, as stated previously, we did not examine interactions between the co-occurring threats facing AAs. We encourage future research that investigates the interactions of these threats, examining potential downstream effects of the proposed syndemic, such as chronic health conditions (e.g., diabetes), community and interpersonal violence, and poverty.

Conclusion

We propose a syndemic is occurring among AAs that encompasses anti-Asian discrimination and collective racism, mental and physical health challenges, and economic stressors. We have established that AAs are facing these co-occurring threats and that these threats vary by and are associated with certain AA subgroups. AA communities would benefit from additional health and economic resources, particularly directed toward East Asians, multiethnic, middle-aged (25-44 years), U.S.-born, and lower-income AAs. It is also necessary to confront the anti-Asian racism present in the United States, for example through education that targets anti-Asian myths and through changes in policies that better protect AA employees.

Chapter 5. Discussion

Using a large, nationally representative dataset, the three current studies document high rates of mental and physical health challenges, anti-Asian racism, and economic stressors among Asian Americans from January to April 2021 amid the COVID-19 pandemic. In our studies, we identified variation in the extent of these COVID-related threats and the interrelated clustering of these threats by sociodemographic subgroups. Together, these results can inform targeting of public health and other social policies and resources toward vulnerable groups.

Study 1 found unusually high mental health needs among Asian Americans during the COVID-19 pandemic. Whereas epidemiological studies conducted pre-pandemic found prevalence rates of psychological distress for Asian Americans around 9% (Office of Minority Health, 2021), we found that 33% of Asian Americans were experiencing current psychological distress between January and April 2021—equivalent to 7.92 million Asian Americans (U.S. Census Bureau, 2022b). Of those experiencing psychological distress, 4 out of 10 Asian Americans had unmet mental health needs; this is over 3.5 times higher compared to national estimates of the general population's unmet mental health needs (Vahratian et al., 2021). Importantly, mental health needs varied among Asian American subgroups. Rates of psychological distress, for example, varied by ethnicity, gender, age, household income, education, number of years living in the United States, and geographical region.

In Study 2, we found that nearly a quarter of Asian Americans—6 million individuals—reported experiencing discrimination as an impact of the COVID-19 pandemic. Rates of discrimination varied by ethnicity, age, number of years living in the United States, and survey language. In addition to experiencing anti-Asian discrimination personally, many Asian Americans are impacted by collective racism—the "experiences of racism at the collective or

group level" (Harrell, 2000, p. 46). In Study 2, we found that Asian Americans overall are experiencing negative impacts of collective anti-Asian racism, with significant variation by ethnicity, gender, age, education, number of years living in the United States, survey language, and geographical region.

Study 2 findings also confirm a large body of research indicating that racism negatively impacts both mental and physical health for Asian Americans (Gee et al., 2007; S. Lee & Waters, 2021; C. Liu et al., 2021; Maglalang et al., 2021; Misra et al., 2020; Pan et al., 2021). These negative health impacts hold true for both personally experienced discrimination and collective racism, confirming that these are two distinct forms of racism experienced by Asian Americans (Harrell, 2000). Our study fills a gap in the research literature with our finding that even non-direct forms of racism (i.e., COVID-related collective racism) negatively impact physical health for Asian Americans (Chen et al., 2020; Gee et al., 2007).

Mental health needs and experiences of anti-Asian racism co-occur with other challenges. In Study 3, we identified distinct latent profiles that describe the co-occurrence of COVID-related anti-Asian discrimination and collective racism, mental and physical health challenges, and economic stressors for Asian Americans during the COVID-19 pandemic. More than 40% of Asian Americans experienced relatively high rates on all COVID-related threats. This group of Asian Americans (i.e., the multi-threat profile) seemed to be the most negatively impacted by the proposed COVID-related syndemic. Findings from Study 3 provide some initial evidence of a syndemic impacting distinct Asian American groups and inform the need for comprehensive policy solutions to mitigate the long-term negative impacts of the pandemic on Asian Americans.

Despite often not being meaningfully or accurately included in health equity discussions or in national-level health surveys (Kim et al., 2021b; Yi et al., 2022b), in synthesizing these

three studies, we have documented profound needs and impacts on Asian Americans due to the COVID-19 pandemic. These studies show widespread impact, including increased negative mental health symptoms and unmet mental health needs, negative mental and physical health impacts of COVID-related discrimination and collective racism, and the co-occurrence of these impacts with economic stressors. Moreover, these studies point to vulnerable subgroups of Asian Americans and support the need for researchers and policymakers to understand that the Asian American population is not a monolith, but rather composed of groups with distinct ethnicities, histories of migration and settlement, and differential experiences with structural inequities.

Strengths

The three studies in this dissertation incorporated methodological strengths and novel contributions to the literature. All three studies used a large, nationally representative dataset, making it possible to generalize findings to the Asian American population at-large. These data were collected through partnerships with community organizations and in English and multiple Asian languages, increasing the proportion of non-English-speaking community members and difficult-to-reach groups (e.g., older adults, recent immigrants). Study 2 is the first to our knowledge to validate the Coronavirus Racial Bias Scale (CRBS) with an Asian American sample. Study 3 is the first to test portions of the proposed syndemic of anti-Asian racism, mental and physical health impacts, and economic stressors during COVID. Specifically, our examination of the co-occurrence of these key COVID-related threats lays the groundwork for further systems-lensed research that seeks to understand the intertwining of these threats for Asian Americans.

Furthermore, all three studies investigated subgroup differences within the Asian American population. Subgroup analyses are particularly important to fill the lack of equitable

representation of Asian Americans in federal and state data that inform general knowledge of health and economic inequities within the United States (Dinh et al., 2020; Yi et al., 2022b). By using a large, nationally representative dataset we make a substantial contribution to the research literature in understanding more about the differences in Asian American subgroups. For example, we confirm that U.S.-born Asian Americans experienced more negative mental health symptoms compared to foreign-born Asian Americans (Alegría et al., 2008), younger Asian Americans report more symptoms of psychological distress (Park et al., 2020), Asian Americans with lower incomes are more likely to be impacted by economic stressors and increased negative mental health symptoms (Guerrini et al., 2021), and East Asians are the ethnic group most impacted by these COVID-related threats (Borja et al., 2020). We also found novel subgroup differences. For example, in addition to increased mental health symptoms, younger Asian Americans are also more likely to report more anti-Asian discrimination and collective racism. Contrary to research that finds higher reporting of discrimination among women (Horsley, 2020), we find that for lower-income Asian Americans, men reported more discrimination than women. Not only do U.S.-born Asian Americans report higher rates of psychological distress, this group also experienced higher levels on all COVID-related threats compared to foreign-born Asian Americans. Finally, we found that, in addition to East Asians being most impacted by these COVID-related threats, multiethnic Asians were also overrepresented in the latent profile with high scores on all threats.

Limitations and Future Directions

While these studies come from large and purposefully collected datasets of Asian Americans, we were limited especially in our examination of subgroup differences. Research targeting additional groups to understand further ethnic differences would be beneficial. We also

encourage research examining COVID-related experiences for multiracial and multiethnic Asian Americans. Some subgroups may need to be oversampled in future research; for example, we found a few subgroup differences for nonbinary and trans Asian Americans, but additional research is needed to better understand these individuals' experiences. Additionally, when designing research studies to target specific subgroups, researchers should focus on accessibility of data collection to these groups; for example, offering data collection in preferred languages and accessible formats (e.g., digital, paper, over the phone).

Although our data were robust enough for many subgroup analyses, we were limited in our examination of intersectionality. Intersectionality theory argues that individuals hold multiple identities that interact to shape their experiences, particularly structuring experiences of oppression (Crenshaw, 2006). We acknowledge that intersectionality is essential to understanding Asian Americans' experiences. Because individuals hold multiple identities, the various sociodemographic subgroups we examined likely interact, which may mean that additional subgroups are at greater risk of these COVID-related threats. In Studies 1 and 2, we examined subgroup models (i.e., U.S.-born vs foreign-born; men vs women) along with our overall logistic and linear regression models.

In these three studies, we established two of the three requirements for a syndemic: there are multiple, co-occurring conditions within a specific population; and the co-occurrence of these conditions is driven by structural racism and specifically anti-Asian racism, an underlying social force (Mendenhall & Singer, 2020). However, we did not examine interactions of these co-occurring threats and how such interactions may worsen long-term outcomes. We therefore encourage future research that investigates and tests the proposed syndemic for Asian Americans, specifically testing the interactions of these threats and examining potential

downstream effects of the proposed syndemic (e.g., chronic health conditions, poverty, and community and interpersonal violence). Furthermore, these studies are all cross-sectional and conducted in four months of a rapidly changing, ongoing pandemic. Therefore, findings must be contextualized within the data collection period of January to April 2021. Longitudinal research that examines the long-term mental and physical health impacts of discrimination and collective racism would be beneficial. We also encourage future research that examines risk and protective factors concerning the proposed syndemic, and specifically social and structural factors that drive elements of the proposed syndemic.

Together, our study findings suggest a need for community-led comprehensive research and policy changes. We also recommend that research and policy center the experiences of Asian American communities. Our studies demonstrate that partnerships with community-based organizations are fruitful; they facilitate inquiry that reflects community concerns, access to segments of the Asian American population who are typically excluded, and analyses that appropriately disaggregate data on Asian Americans. Given the breadth and co-occurrence of the challenges identified in these studies, we argue that rather than addressing specific challenges in isolation, utilizing a systemic lens can best help policymakers tackle the underlying drivers of structural oppression and anti-Asian hate and the interrelatedness of social and health challenges.

Structural factors, although not directly measured in the three studies, nonetheless shape the health, mental health, and economic challenges faced by Asian Americans. The need for social, health, and mental health services identified in the current set of studies (as well as in our larger dataset) suggest that there are significant barriers to access that must be overcome for Asian American communities to recover from the pandemic. Contextualizing our findings in the histories of migration and settlement of distinct Asian American communities, structural factors

have driven the overrepresentation of Filipinx essential workers in healthcare systems and thus their associated increased risks for COVID infection; the disproportionate impacts of job and income loss faced by low-income and less-educated Asian Americans; and the disproportionate mental health impacts faced by Southeast Asian Americans, specifically Vietnamese and Cambodians, to name just a few examples. Attention to structural oppression and contextualization within distinct communities in policymaking is needed to address not only the current but also the long-term impacts of the pandemic on Asian Americans. Thus, we must improve access to needed services for Asian Americans, and also the immigration, refugee resettlement, housing, economic and other policies that are currently leaving segments of Asian Americans vulnerable to disproportionate long-term impacts.

Conclusion

Asian Americans are facing the co-occurring threats of mental and physical health symptoms, anti-Asian discrimination and collective racism, and economic stressors. The high rates of mental health needs and experiences of discrimination amongst Asian Americans are unprecedented. Furthermore, direct and indirect forms of anti-Asian racism negatively impact both mental and physical health. This dissertation identified vulnerable Asian American subgroups toward which public health and economic policies can direct resources and interventions. Important work also needs to be done in confronting the anti-Asian racism present in the United States, for example through education that targets anti-Asian myths and through changes in policies that better protect Asian American employees.

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Appendix A: Adapted Coronavirus Racial Bias Scale (CRBS) Items

Please answer the following questions on your beliefs about how COVID-19 is affecting people of your race/ethnicity.

1. Has the U.S. become more physically dangerous for people in your racial/ethnic group because of fear of COVID-19? (*reverse coded*)

(1) Much more dangerous

(2) Slightly more dangerous

(3) Not more dangerous

(4) Slightly less dangerous

(5) Much less dangerous

2. Because of COVID-19, how likely are people of your race/ethnicity to lose their jobs? (*reverse coded*)

(1) Much more likely

(2) Slightly more likely

(3) Not more likely

(4) Slightly less likely

(5) Much less likely

3. How often do you worry about people thinking you have COVID-19 simply because of your race/ethnicity? (*reverse coded*)

(1) Constantly

(2) Very often

(3) Somewhat often

(4) Rarely

(5) Never

4. How much do social and mass media reports about COVID-19 change attitudes against people of your racial/ethnic group?

(1) Much more positive

(2) Slightly more positive

(3) No change

(4) Slightly more negative

(5) Much more negative

5. Compared to other groups, what is the risk of getting COVID-19 for people of your race/ethnicity? (*reverse coded*)

(1) Much more likely

(2) Slightly more likely

(3) Not more likely

(4) Slightly less likely

(5) Much less likely

6. Compared to other groups, how is the quality of COVID-19 healthcare for people of your race/ethnicity?

(1) Much better

(2) Slightly better

(3) Not better/the same

(4) Slightly worse

(5) Much worse

7. Due to COVID-19, how often have you been cyberbullied because of your race/ethnicity?

(1) Never

(2) One or two times

(3) Two or three times a month

(4) Once a week

(5) Nearly every day

8. Since COVID-19, have you seen a change in the amount of cyberbullying of people of your race/ethnicity? (*reverse coded*)

(1) Greatly increased

(2) Slightly increased

(3) No change

(4) Slightly decreased

(5) Greatly decreased

9. How much does what politicians say (i.e., political rhetoric) about COVID-19 create bias against people of your racial/ethnic group? (*reverse coded*)

(1) Strongly increase bias

(2) Slightly increase bias

(3) No effect

(4) Slightly decrease bias

(5) Strongly decrease bias