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Exploring the development of digital mental health platforms by identifying unmet mental health needs and current well-being practices among Asian American students.

Author

Lopez, Janine V.

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Exploring the development of digital mental health platforms by identifying unmet mental health needs and current well-being practices among Asian American students.

A Thesis submitted in partial satisfaction of the requirements for the
Master's Degree

in

Public Health

by

Janine Viray Lopez

Committee in charge:

Professor Elizabeth Eikey, Chair

Professor Cinnamon Bloss

Professor Suzi Hong

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This thesis of Janine Viray Lopez is approved, and it is acceptable in quality and form for publication on microfilm and electronically:

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TABLE OF CONTENTS

LIST OF ARTIFACTS

LIST OF FIGURES

LIST OF TABLES

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ABSTRACT OF THE THESIS

Exploring the development of digital mental health platforms by identifying unmet mental health needs and current well-being practices among Asian American students.

by

Janine Viray Lopez

Master's Degree in Public Health

University of California San Diego, 2022

Professor Elizabeth Eikey, Chair

Objective: Asian Americans have the lowest mental health help-seeking rate of any racial-ethnic group. This study aimed to better understand the mental health needs, barriers, and experiences of the Asian American student community and explored the co-design of a digital platform.

Methods: This study examined the mental health experiences of Asian American college/university students through a multi-phased approach. The study included a secondary analysis of a needs assessment survey and preliminary human-centered design interviews, which included both interview questions and a co-design process. Descriptive statistics are reported for survey data, which informed the development of the human-centered design interviews. Preliminary thematic analysis was conducted to assess the interview transcripts.

Results: Seventy-five Asian American participants (n=75) between 18-27 years old (mean: 21.99; SD: 4.14) completed the survey. While only 13.33% (10/75) currently used professional services, both offered by their college/university and outside of it, the most commonly desired resource was mental health resources and services offered outside of their college/university (50.67%, 38/75) and by their college/university (49.33%, 37/75). Potential barriers included not knowing where to access professional services, perceptions of self and others if utilizing professional services, and lack of cultural or ethnic representation and tailoring. Four individuals who identify as Asian American (n=4) individually completed human-centered design interviews. These preliminary interviews begin to shed light on the importance of cultural considerations and potential of a digital platform to curate relevant resources.

Conclusion: This thesis suggests that students would like to utilize professional mental health services but often times they do not impart due to cultural influences. We recognized that ability to find culturally tailored resources is a barrier and there is a potential for a digital platform to curate culturally-appropriate resources for this community.

CHAPTER 1: INTRODUCTION

The Asian American population is considered the fastest-growing racial group in the United States and comprises nearly 50 different ethnic groups with more than 100 spoken languages and from the following ethnic backgrounds Chinese, Japanese, Filipino, Indian, Vietnamese, Korean, and Hawaiian (NAMI, 2020). However, the Asian American community has the lowest mental health help-seeking rate of any racial or ethnic group. They are three times less likely to seek mental health services than other Americans, while only 23.3% of Asian American adults living with mental illness receive treatment (NAMI, 2019). Based on the SAMHSA's National Survey on Drug Use and Health, major depressive episodes among Asian American youth ages 12-17 increased from 10% to 13.6%, 8.9% to 10.1% in young adults 18-25, and 3.2% to 5% in the 26-49 age range between 2015 and 2018 (SAMHSA, 2018). In addition, according to a 2019 study of 223 Asian Americans, the prevalence of General Anxiety Disorder (GAD) was 12%, respectively, compared to 2.7% for the general US population (AMSA, 2020).

Mental health issues are the leading impediment to academic success and can influence students' motivation, concentration, and social interactions (Son et al., 2020). College students indicated increased stress and anxiety due to the COVID-19 pandemic (Son et al., 2020). Stressors were identified that contributed to increased stress, anxiety, and depressive thoughts among students (Son et al., 2020). Specifically, for Asian Americans between the ages of 15-24, the act of suicide was the leading cause of death in 2019 (Minority Health, 2021). Asian American males in grades 9-12 were 30% more likely to consider attempting suicide than non-Hispanic white male students. Despite alarming suicide rates within this community, issues of depression, anxiety, Post-Traumatic Stress Disorder (PTSD), and other adverse mental health symptoms continue to be ignored. Despite the prevalence of mental health concerns, the lack of

research focusing on mental health experiences and wellness needs for Asian American students is of concern. These low help-seeking rates may be due to systemic barriers to accessing mental health care and treatment quality. Furthermore, stigma, shame, lack of culturally tailored care, and gaps in the literature also drive this disparity.

Based on an article by Wong et al. (2022), the mental health of Asian American individuals has been plagued by three primary failings: gaps in research, limitation of cultural concordant mental health diagnosis and treatment paradigms, and the shortage in allocation of public health resources for Asian American communities. For decades, research on mental health among Asian American communities and healthcare utilization have been riddled with data gathering limitations and failure to reflect the intersectionality of diverse Asian American subgroups. Moreover, the marginalization of Asian Americans as the "invisible minority" leads to the under-allocation of public health resources.

A cross-sectional study in 2019 found that between 1992-2018, only 529 clinical research initiatives funded by the US National Institutes of Health (NIH) prioritized the Asian American population (Lan et al, 2019). It is composed of only 0.17% of the total NIH budget, with the proportion of the total NIH budget increasing from 0.12% in 2000 to 0.18% after 2000 (Lan et al., 2019). These findings suggest that overall research-specific investment focusing on the Asian American population is extremely low and impacts the underrepresentation of Asian American-specific mental health resources. The insufficient research on this population can create an inaccurate picture of the mental health needs and experiences of these communities.

It is important to note that when national health surveys are conducted, the Asian American and Pacific Islander (AAPI) race and ethnicity are aggregated (Holland et al., 2015). This aggregation may mask the differences across Asian American subgroups (as well as

differences among Asian American subgroups and Pacific Islanders) (Gordon et al., 2019). For this thesis, we will be focusing on Asian Americans, but the national survey data we obtain are often based on Asian American and Pacific Islander populations.

1.1 Cultural Norms & Influences

Asian American cultures place a great emphasis on family. There are key cultural influences within their health belief system that impact the treatment and perception of mental health disorders (Kramer et al, 2002). While there is remarkable variability and heterogeneity among Asian American groups, there are differing effects of certain cultural norms and influences that depend on an individual's degree of acculturation, socioeconomic status, and immigration status (Kramer et al., 2002). It is important to note that there are systemic issues contributing to mental health disparities and we are not saying acculturation is "right" by any means.

Key Cultural Influences

Language: Fluency in English is one of the most significant factors impacting access to care. Forty-two percent (42%) of Vietnamese Americans, 41% of Korean Americans, and 40% of Chinese American households are linguistically isolated. This isolation signifies that there is no one in the household over 14 years of age who speaks English fluently (Kramer et al., 2002).

Traditional beliefs about mental health: In many Asian American cultures, adverse mental health is believed to be caused by a lack of harmony of the emotions and often is correlated to evil spirits. For example, in Buddhism, it is believed that the problems in this life are most likely related to wrongdoings committed in the past life (Kramer et al., 2002).

Age: Historically, individuals who migrate when they are young have better adaptability to living in the West (Kramer et al., 2002). This suggests the younger generation of Asian Americans may be more open to western practices (i.e., seeking mental health care).

Mental health symptoms and illnesses are seldom discussed among the average Asian American family (NAMI, 2019). Within the Chinese, Japanese, Korean and Filipino cultures, to name a few, mental illness equals weakness and a sign of poor parenting. It can be seen as a source of shame to both the person and their entire household. Furthermore, some Asian American parents do not believe the truth behind mental illness (Kramer et al., 2012). The notion of shame and "loss of face" is imperative in understanding the gaps in service use among Asian American people.

1.2 Mental Health Services

Seeking mental health services such as meeting with a therapist, counselor, or another mental health professional is uncommon within the Asian American community. For example, a study conducted at the University of Maryland investigated the needs of young Asian American adults and learned that their participants faced a range of pressures and issues that discouraged them from seeking help for mental health concerns (Lee et al., 2009). Shame and stigma influence low mental health service utilization in Asian American communities (Lee et al., 2009). In the United States, research shows that Asian Americans tend to underutilize mental health services relative to the severity of their symptoms (Naito et al., 2020).

1.3 Digital Mental Health Resources

There is a potential for digital mental health platforms, such as websites, social media, or smartphone applications that curate or offer resources and educational content related to mental health content, to be a helpful tool for the Asian American community, especially Asian

American college and university students. Digital platforms may improve the user's anonymity and the accessibility of their services. Findings from a study suggest that digital mental health tools may help ensure greater anonymity than face-to-face interactions, reducing stigma and shame (Wies et al., 2020). Therefore, the development and distribution of a digital mental health tool that curates resources and prioritizes Asian American communities may be beneficial in overcoming the cultural influences and negative stigma by allowing for the opportunity to access these platforms anonymously and privately. Although there are a number of studies exploring the design and use of digital platforms that curate or offer mental health resources, few focuses specifically on Asian American communities (Lee et al., 2012). However, there are organizations that exist that focus on Asian American mental health, such as Asian American Psychological Association (AAPA), The Asian Mental Health Collective, National Alliance of Mental Illness (NAMI), and the Asian American Health Initiative (AAHI) (Race and Mental Health Article, 2021).

1.4 Study Objective

This study aims to identify unmet needs and current/desired practices and resources for mental health and well-being among Asian American university/college students in order to inform the early stages of development of a digital mental health resource platform. As part of this, we first seek to understand current and desired mental health practices and resources, as well as barriers to accessing mental health resources. Then we investigated how Asian American students' culture and upbringing influence their perceptions of mental health and mental health help-seeking behavior, in order to co-create a way to curate resources in ways they identify as appropriate and relevant. Findings from this study shed light on the potential for a digital mental health resource platform tailored to Asian American university/college students.

CHAPTER 2: METHODS

2.1 Study Design

This multi-method study examined the mental health experiences of Asian American college/university students ages 18 years or older through a two-phased approach, which included a survey (phase 1) and preliminary human-centered design (HCD) interviews (phase 2). The survey aimed to get a broader understanding regarding mental health status, access to internet/WiFi, interest in seeking mental health resources both on-campus and off-campus and overall mental health perception. The HCD interviews focused primarily on understanding the influences of culture and background on mental health awareness and resource-seeking behavior and informing the early stages of platform design.

To uphold the UC San Diego code of ethics, we ensured participant information and data were properly de-identified by replacing personal identifiers with numerical values for confidentiality. Precautions were taken in storing data using password-protected services, and research records will be kept confidential to the extent allowed by law. Further, to warrant the safety of participants, we provided available mental health resources, if needed, depending on the nature of the concern. The study received approval from the UC San Diego Institutional Review Board (IRB) Committee on Human Research. All participants provided verbal and Qualtrics signed informed consent based on the documents approved by the UC San Diego IRB.

2.2 Phase 1: Survey

2.2.1 Recruitment

Convenience and snowball sampling were used to recruit survey participants. Survey recruitment was conducted using social media (such as Facebook, Slack, Instagram, Reddit, Twitter), listservs (as permitted), connecting with student organizations and wellness services,

and fliers to promote the study. The study team also reached out to local, UC San Diego, and other organizations who might be interested in the initiative. In addition, due to differences in perspectives across individuals, efforts were taken to recruit diverse participants. This survey had a lottery incentive: $50 gift cards were randomly awarded to three participants. It was administered from March 26, 2021 to January 16, 2022.

Inclusion Criteria:

- Ability to read in English
- Age at enrollment 18 years or older
- Currently enrolled in a college or university in the US

2.2.2 Survey Design and Measures

A more extensive needs assessment survey was developed to assess college/university students' mental health needs and barriers to care. The students' needs assessment survey was administered using Qualtrics, an online software platform used to distribute web-based questionnaires. Participants completed this 15-20-minute survey independently. For this thesis study, data from Asian American students were analyzed. The following questions guided the survey development:

- What practices do university/college students engage in and want to engage in to support their mental health and well-being?
- What barriers do students face in getting mental health support?
- What are students' attitudes toward mental health stigma?
- How confident are students in finding information about mental illness?

Demographic Measures. Demographics captured included age, gender, student status, race/ethnicity, and acculturation: the survey questions utilized open-ended, multiple-choice,

multiple answers, and Likert scales. The age, gender, and race/ethnicity questions were open-ended to allow for participants to self-identify. Student status was inquired using multiple choice options that allowed participants to choose undergraduate, master's, or doctorate with an opportunity provided to elaborate on program. Acculturation was assessed by adapting the Vancouver Index of Acculturation (VIA) scale (Paulhus, 2013). Participants were asked to identify their heritage culture (other than American/United States) using an open-ended question and then asked to rate the extent to which they agreed with identifying with their heritage culture and American/United States culture, on a Likert scale from 1-Strongly Disagree to 5-Strongly Agree.

Measures of Technology Use & Access. In order to better understand participants' access to technology, the survey included questions surrounding the types of devices used, location for accessing internet, access to mobile data plans, and access to WiFi. The inquiry concerning consistent access to WiFi and the most often location for internet access were multiple-choice, device access (use of their own/shared/public laptop/desktop, their own/shared smartphone, or their own/shared cellphone) was asked using a multiple answer response, and access to a mobile data plan had answer options of (1) Yes, (2) No, and (3) I'm not sure.

Mental Health Measures. In order to better understand participants' mental health experiences and perceptions, they were asked both open-ended, multiple-choice, and Likert scale questions. Participants were surveyed about their self-identified mental health status, mental health terms that resonate, mental health challenges terms that resonate, and racism and COVID-19 impact on mental health. Participants were asked about their mental health status using a multiple-choice question; answer options included: (1) Yes, I have been diagnosed, (2) Yes, I experience [mental

health concerns][1] but have not been diagnosed by a professional, (3) No, I do not experience [mental health concerns], (4) Other (please specify), and (5) I prefer not to answer. The impact of racism and COVID-19 on participants was measured using a Likert Scale, 1-Strongly Disagree to 5-Strongly Agree. Further, to understand what terms resonate to refer to mental health, participants were asked to select one option in a multiple-choice question: (1) mental health, (2) well-being, (3) wellness, (4) emotional health, or (5) psychological health.

Barriers to care. In order to recognize what may stop, delay, or discourage people from getting professional mental health care or continuing to receive assistance, the survey used the Barriers to Access to Care Evaluation scale (BACE) as a measurement (Clement et al., 2012). This scale allowed for assessing barriers to care-seeking behavior, care avoidance, and the prevalence of stigma. For the purposes of this thesis study, we focused on two items from the BACE scale. The two items focused on barriers to finding professional mental health resources. Using a Likert scale, participants could select 0-Not at All, 2-A Little, 3-Quite a Lot, 4-A Lot, or Not Applicable. Further, we used one item from the Mental Health Literacy Scale (MHLS) to assess participants' confidence in seeking mental health resources, using a Likert Scale, 1-Strongly Disagree to 5-Strongly Agree (O'Connor et al., 2015).

2.2.2 Survey Analysis

The study team utilized the statistical software JASP and Excel to perform descriptive analysis. The Likert Scale questions were reported by the sum values of each selection option and then were collapsed into 3 categories (e.g., Agree which included Strongly Agree and Agree responses, Neither Agree nor Disagree, and Disagree which included Strongly Disagree and Agree responses). The open-ended questions of this survey were used to garner participants'

[1] Please note the phrasing shown to survey participants was based on their answers to terms about mental health that resonated with them. Therefore, this phrase varied based on participant response.

thoughts in their own words; we aggregated the same responses within questions but left participants' responses intact. The multiple-choice questions and multiple-answer questions were handled by the sum values of each selection option to indicate frequencies. This analysis approach helped describe the patterns within the data.

2.3 Phase 2: Preliminary Human Centered Design (HCD) Interviews

2.3.1 Recruitment

Participants were recruited using convenience and snowball sampling methods, including sharing information by word of mouth, posting fliers (i.e., on local college campuses, coffee shops frequented by undergraduate students), and utilizing social media advertisements using the following platforms: Facebook (i.e., UCSD Specific Pages), Instagram (i.e., personal Instagram accounts), and Reddit (i.e., r/ucsd, r/sdsu, r/sandiego, r/samplesize) between February and April 2022.

Inclusion Criteria:

- Identifies as an Asian American and/or Pacific Islander[2]
- Current undergraduate student at a local San Diego college or university
- At least 18 years old
- Ability to read/write in English

2.3.2 Preliminary HCD Interview Measures

The Human Centered Design (HCD) approach is a valuable approach in global heath equity and human-computer interaction by supporting community collaboration and design (Holeman et al., 2019). Preliminary HCD interviews were 2-hours long and administered by the

[2] The needs assessment survey and the HCD interview only captured Asian American students even though the study aims to explore Asian American and Pacific Islander students' perceptions and experiences. To date, there were no participants who identified as Pacific Islander; however, results are preliminary and data collection is still on-going.

graduate researcher. The interviews were conducted individually with 4 Asian American college students in San Diego via Zoom Conference Call in May 2022. These individual sessions accommodated the students' schedules and created an environment where participants felt comfortable in sharing information about their mental health experiences. Interviews were audio recorded. Participants were compensated for their time with a $10 e-gift card. The structure of the interviews was as follows:

Informed Consent. The informed consent was reviewed with participants at the start of the interview. Their consent to the audio recording of the session was verbally obtained. The participants were informed that their participation was entirely voluntary, and they could leave at any time. We reviewed the timeline of the interviews, compensation, and risks associated with the study.

Warm-Up & Rapport Building. Warm-up questions regarding the participants' education and hobbies were asked to build rapport. The warm-up and rapport building were to enhance the comfortability of participants as the potential emotional toll of speaking about personal mental health experiences.

Pre-Questions. Essential questions were asked to learn about the participants' mental health beliefs, how cultural upbringing influenced their perspectives on mental health and other sociocultural factors that may have impacted their approach to accessing and using mental health care and resources. This environment enabled us to obtain rich and detailed information from our participants that were not captured using our survey. We utilized the Social Cognitive Theory (SCT) framework to develop the pre-questions for the interviews (Table 1) (Bandura, 1986). The following constructs were used as a foundation of the interview questions:

- Self-efficacy: The belief that an individual has control over and can execute a behavior.

- Behavioral capability: Understanding and having the skill to perform a behavior.
- Expectations: Determining the outcomes of behavior.
- Expectancies: Assigning a value to the outcomes of behavior.
- Observational learning: Watching and observing outcomes of others performing or modeling the desired behavior.

We chose this theoretical framework because of its emphasis on individual influences, the actions of others, and environmental factors on individual health behaviors (Bandura, 1986). In addition, this theory provides a solid foundation for developing thought-provoking questions to understand the perceptions of mental health and wellness among Asian American college students.

Card Sorting Activity using Jamboard. Participants were asked to categorize and rank mental health resources that are important to them and/or are tailored to their culture. We utilized Google Jamboard, a digital interactive whiteboard, to collaborate. The card sorting activity was separated into Part A and Part B. For Part A, individuals were asked to group mental health strategies and resources they discussed during the pre-questions and allowed them to also add others. They were advised to have and name as many categories as they wanted. In addition, they were asked to provide as many or as few strategies as listed under each category. Once this was completed, the participants explained their reasoning and a screenshot of their Jamboard was acquired. For Part B, participants were asked to rank the categories mentioned above from most important to least important by moving the categories around the Jamboard. The categories they deemed most important were placed at the top; categories at the bottom were noted as least important. The goal of this activity was to identify the most important mental health and wellness resources and strategies used or desired by participants.

Design Activity. Participants were then asked to try their best to create, draw, or design how they might want this platform to look by incorporating the categories and subsequent strategies they listed during the Card Sorting Activity. The goal was to collaborate with participants to co-design the features, materials, sub-sections, and resources of a digital platform that can best support this population.

2.3.3 Data Analysis

The audio recorded files were transcribed using the Zoom transcription option and then the audio was replayed to check transcripts for accuracy. Preliminary themes were identified based on the participants' responses to the pre-questions, card sorting activity, and design activity. A full thematic analysis will be performed after additional data are collected. In addition, participant artifacts (Artifacts 1, 2, 3, 4) obtained from the interviews were assessed for similarities and differences regarding cultural influences on mental health, help-seeking behavior, and wellness practices.

CHAPTER 3: RESULTS

3.1 Phase 1: Survey Results

There was a total of 365 responses; 22 were removed due to poor data quality based on a check question in the survey. There were 216 incomplete surveys. Of the 127 complete responses, 75 responses were from Asian American students.

Demographics

Seventy-five Asian American participants (n=75) between 18-27 years old (mean: 21.99; SD: 4.14) completed the survey. Given the open-ended gender question, we report the ways participants identified: 50 females, 19 males, 4 women, 1 transgender male, and 1-non-binary. Table 2 shows the ethnic breakdown of the Asian American participants in the survey. Twenty-five (25) individuals identified as Asian, 10 Filipino, 6 Vietnamese, 6 who identified as a mixed-race of white and Asian, 5 Korean, 4 Chinese, 4 Indian, 3 South Asian, 3 Kurdish, 2 Taiwanese, 2 Arab, 1 Han Nationality, 1 Palestinian, 1 Japanese, 1 Pakistani, and 1 Bengali. Furthermore, the student status of the participants was as follows: 57 Undergraduates, 7 Master's students, 3 Medical students, 2 PhD students, and 6 Other.

As shown in Table 3, 72% (54/75) at least agreed that they identify with their heritage culture. Twenty percent (20%, 15/75) neither agreed nor disagreed while 8% (6/75) disagreed. In terms of American/United States culture, 75.67% (56/75) at least agreed that they identify with American/United States culture. Sixteen percent (16%, 12/75) neither agreed nor disagreed while 9.33% (7/75) at least disagreed.

Contextual Factors: Technology Use and Access

Devices used

The findings of this survey infer that Asian American college students have access to mobile and digital devices. As shown in Figure 1, 94.67% (71/75) use their own smartphone,

97.33% (73/75) use their own laptop or desktop, 8% (6/75) share a laptop or desktop, 8% (6/75) use their own mobile phone or cellphone (not a smartphone), and 2.67% (2/75) use a public desktop or laptop.

Primary internet access location

Figure 2 outlines the main internet access location for the participants. The majority of participants, 89.33% (67/75), primarily access the internet at home while only 10.67% (8/75) of individuals' primary access is on-campus internet. This finding suggests that many participants have access within their homes.

WiFi access

The majority of participants (93.33%, 70/75) reported having consistent access to WiFi. Four percent (4%, 3/75) of individuals noted that they do not have consistent WiFi, and 2.67% (2/75) said they were unsure.

Mobile data plan and data plan concerns

It was found that 100% (75/75) of participants have a mobile data plan. However, although participants were found to have access to a mobile data plan, 30.67% (23/75) individuals stated they had concerns about their data plans (while 6.67%, 5/75 were unsure). In contrast, 56% (42/75) of participants reported not having concerns over their data plans.

Mental Health Experiences and Needs

Individuals were surveyed about their self-identified mental health status. Figure 3 shows 44% (33/75) experience mental health symptoms but have not been diagnosed by a professional, 34.67% (26/75) do not experience any mental health symptoms, 18.67% (14/75) were diagnosed by professional, 1.33% (1/75) preferred not to answer, and 1.33% (1/75) were not sure. Therefore, it can be inferred that the number of participants experiencing adverse mental health

is relatively high: 62.67% (47/75) reported experiencing mental health symptoms, and 70.21% of the 47 participants who reported experiencing mental health symptoms have not diagnosed.

To best understand the terms that resonate with participants, they were asked to answer the mental health term that resonates with them the most. It was found that 60% (45/75) of participants chose mental health, 8% (6/75) chose emotional health, 2.67% (2/75) chose psychological health, 18.67% (14/75) chose well-being, and 10.67% (8/75) chose wellness.

Figure 4 displays the self-identified mental health issues experienced by the participants. This particular question allowed participants to choose more than one option. The four most common mental health symptoms listed were anxiety (50.67%, 38/75), stress (54.67%, 41/75), depression (40%, 30/75), and loneliness (33.33%, 25/75).

Figure 5 showcases the negative impact of COVID-19 on the participants' mental health. The majority (66%, 50/75) at least agreed that COVID-19 has had a negative impact on their mental health. The breakdown is as follows 22.67% (17/75) strongly agree, 44% (33/75) agree, 24% (18/75) neither agree nor disagree, 8% (6/75) disagree, 1.33% (1/75) strongly disagree. The impact of racism experienced on participants' mental health was also assessed using a Likert Scale. The majority (70.67%, 53/75) also at least agreed that racism has had a negative impact on their mental health. The breakdown is as follows: 22.67% (17/75) strongly agreed, 48% (36/75) agreed, 20% (15/75) neither agreed nor disagreed, 6.67% (5/75) disagreed, 2.67% (2/75) strongly disagreed.

Barriers to Mental Health Resources

Knowing where to find resources and information

Using two items from the BACE scale, we investigated barriers related to perceptions of finding professional care. We found that 80% (60/75) reported being at least "a little" deterred

from or delayed seeking or continuing to seek professional care due to being unsure where to get professional care: 32% (24/75) reported "a little", 30.67% (23/75) reported "a lot", and 17.33% (13/75) reported "quite a lot". Fewer (57.33%, 43/75) reported being at least "a little" deterred from or delayed seeking or continuing to seek professional care due to having a hard time finding resources at my university/college (29.33%, 22/75 "a little"; 16%, 12/75 "a lot"; 12%, 9/75 "quite a lot"). Interestingly, from the one item from the MHLS, we found most (54.67%, 41/75) at least agreed they were confident in finding information about mental illness while only 12% (9/75) disagreed, suggesting differences between access to information broadly versus professional care.

Perceptions of self and others

Using two additional items from the BACE scale, we investigated barriers related to perceptions of self and others. Approximately 74.67% (56/75) of participants reported being at least "a little" deterred from or delayed seeking or continuing to seek professional care due to concern they might be seen as weak for having a mental health problem (30.66%, 23/75 "a little"; 26.66%, 20/75 "a lot"; 17.33%, 13/75 "quite a lot"). In addition, 82.67% (62/75) of participants reported being at least "a little" deterred from or delayed seeking or continuing to seek professional care due to concern about what their family might think, say, do or feel (42.66%, 32/75 "a lot"; 18.66%, 14/75 "a little"; 21.33%, 16/75 "quite a lot").

Lack of cultural or ethnic representation

Using one BACE item, we investigated cultural or ethnic representation as a barrier. We found 52% (39/75) of participants reported being at least "a little" deterred from or delayed seeking or continuing to seek professional care due to professionals from their own ethnic or

cultural group not being available (18.66%, 14/75 "a little"; 17.33%, 13/75 "quite a lot"; 16%, 12/75 "a lot").

Current and Desired Mental Health Resources

As outlined in Table 4, the participants' desired and current mental health resources were assessed. The most commonly used mental health resource was informal support such as talking with or spending time with family, friends, partners, and religious leaders (82.67%, 62/75) followed by activities like drawing, writing, painting, listening to or making music (64%, 48/75). Only 13.33% (10/75) currently used professional services both offered by their college/university and outside of it. However, the most commonly desired resource was mental health resources and services offered outside of their college/university (50.67%, 38/75) and by their college/university (49.33%, 37/75). Forty-four percent (44%, 33/75) do not want to connect with mental health professionals using telehealth or telemedicine while 17.33% (13/75) currently use telehealth and 38.67% (29/75) would like to use telehealth to connect with mental health professionals.

Cultural Respect / Relevancy of Utilized Mental Health Resources

Fifty (50) participants responded to the optional open-ended question that focused on cultural respect and the relevancy of mental health resources. While many responses were short, the key takeaways were that whether or not a resource is culturally respectful or relevant depends on the resources, and there is heterogeneity in the resource's participants seek. For example, one participant stated, *"Sometimes yes, sometimes no. I think a lot of resources, especially if made by white people, don't understand how certain things are for Asian people."*

Some individuals seem to be more comfortable seeking informal support (i.e., venting to friends and family with similar backgrounds) and reported the culture respect of interacting with

these people as social support resources as high. However, some noted that not all resources were culturally respectful, and stigma may play a role (e.g., mental health help-seeking being frowned upon or perceived to be a weakness in their culture). Professional mental health services may not be as culturally aligned due to lack of Asian therapists, which makes it challenging to connect with mental health professionals who may not understand their Asian culture. For instance, one participant said, *"I find the lack of Asian therapists (I'm Asian) a bit difficult, since many of my problems are due to cultural reasons."*

3.2 Key Takeaways that Informed the HCD Interviews

Based on the culmination of the survey results we analyzed, we noticed that technology access was high. For example, participants reported access to devices and internet. Similarly, our observations of the barriers and needs revealed by the aforementioned survey responses found issues in finding relevant resources, especially professional resources. Although limited, there were also data to suggest differences in which resources are culturally responsive. These results informed the development of the preliminary HCD interviews by showing potential for a digital platform to curate resources and importance of diving deeper into cultural considerations. We aimed to collaborate with local Asian American students to understand the cultural influence on mental health and care-seeking behavior and explore their viewpoints on what they wanted to see in a digital mental health platform to curate desired resources.

3.2 Phase 2: Preliminary Human-Centered Design Interview Results

Participants

To date, four (4) Asian American students completed the HCD interviews. Three participants reported their ethnic background as Chinese, and one was Filipino. All were between 18-27 years old from San Diego State University and UC San Diego.

Preliminary Themes from Pre-Questions

The initial themes emerging from the pre-questions as part of the HCD interviews were little mental health support from family and the importance of culturally relevant resources.

Although preliminary, participants disclosed that growing up within their Asian American households did not allow for much communication regarding mental health. For example, one participant noted that both parents dismissed their concerns for their mental well-being in high school: *"I tried to talk to my mom about it, but she said I can overcome it myself."* Another participant stated that due to his gender, he was not allowed to show any emotional weakness, which hindered his mental wellness at the time. Furthermore, seeking mental health care and services was considered "weird" and uncommon. For instance, one participant stated, *"It would be weird to my parents if I went to a therapist."* Despite this, two (2) of the 4 participants stated they decided to seek mental health resources independently without knowledge from their parents in high school. One of the individuals mentioned, *"I wasn't sure where to go so I just googled mental health to learn more."*

Collectively, participants divulged the importance of culturally tailored mental health care and expressed the value of a provider who truly understands their experiences. For example, a participant noted, *"If I could see someone who looked like me and understood where I was coming from culturally. It would be so much better because I know they actually understand."*

Types of Resources

For the card sorting activity, participants categorized (Part A) and ranked (Part B) essential wellness strategies and resources they implemented on the Google Jam board (Artifact 1 and Artifact 2). Each participant was advised to design and organize their Jam board however they liked, which elicited variances in their categories' organization and layout. It was observed

that 3 of the 4 participants categorized their behaviors by independent activities (i.e., taking walks, listening to music, reading a book, videogames) and activities that require social interactions (i.e., talking to friends, talking with family, mental health sites with free interaction features such as Blahtherapy). However, each contributor ranked their categories differently. For example, their wellness hobbies differed in type and focus. Some individuals mentioned hiking while others preferred cooking or reading at home. Furthermore, certain people prioritized time for themselves while others focused on conversing with friends/family.

There were a few similar activities cited during the HCD interviews. For instance, talking to friends and family was common. Engaging in personal hobbies was similar for all participants. Videogames and digital mental health use were standard for two individuals. Participants noted the importance of informal resources (e.g., talking to friends/family) as well as wellness activities (e.g., hiking, walking, photography) in supporting their mental health. Some participants specified that talking to friends who understand their experiences helps them best. For others, listening to music, taking walks, reading books, baking, videogames, playing board games, and social media breaks were the most helpful. An individual also noted that helping and supporting others provides her with mental wellness. Some participants also mentioned digital resources, such as online mental health accounts on YouTube (MedCircle, Pscyh2go), mental health websites (7 Cup, Blahtherapy), and telehealth.

Design Activity

The categories and resources mentioned in the Card Sorting Activity were used to develop a low-fidelity prototype of a digital mental health resource platform. Participants were advised to design their prototype however they liked as long as it resonated with them. There were 3 participants that chose to design a smartphone app while 1 designed a mental health

website. All participants varied in the ways they designed their digital platform. Artifacts 3 and 4 are examples of their creations. Similarities centered around some of the hobbies they chose to include in their app or website. However, how this platform worked varied. Thus, more data collection is warranted.

CHAPTER 4: DISCUSSION

4.1 Why is this important?

Mental health is significant in influencing the overall health of an individual. Health is more than the physical; it is an equal balance of mind and body. It is important to note that disparities within the mental health resources that prioritize the Asian American community impact this balance. Findings from the survey and HCD interviews indicate that Asian American students use and are interested in mental health resources expand beyond professional care to include informal support and hobbies. This thesis reveals a critical gap between the desire for participants to seek professional mental health care and the actual utilization of this care. This gap seems to be partly influenced by barriers related to not knowing where to find relevant resources, stigma (e.g., perceptions of self and others), and lack of cultural considerations (e.g., cultural and ethnic representation of mental health professionals, culturally-tailored resources, family perceptions). Whether cultural influences or familial upbringing, a better understanding of this gap is vital in ensuring this community is not left behind in the progress of mental health advancements.

Based on the needs assessment survey findings, the COVID-19 pandemic is suggested to have worsened the adverse mental health symptoms of Asian American students. These results are similar to the conclusions drawn by another research initiative that showcased how anxiety symptoms have worsened in Asian American students since the start of COVID-19 (Son et al., 2020). This hints at the increasing adverse mental health symptoms in this particular population, which can continue to worsen if not addressed properly. Further, Asian American students also reported an adverse effect of racism on their mental health. In addition to the focus on cultural

considerations, findings suggest the need for mental health resources that also address the impact of the pandemic and racism.

This thesis emphasized the impact of cultural influence on mental health perception and mental health-seeking behavior. Preliminary results from this thesis study are aligned with prior research; in a study done by researchers from the University of Hong Kong and the University of Macau, cultural factors such as face concern (upholding the family name), religion, and familial beliefs contributed to the stigmatizing behavior and attitudes toward mental illness and mental health professionals (Ran et al., 2021). This emphasizes the need to identify and curate culturally-tailored and holistic mental health resources.

One possible way to tackle barriers related to finding professional mental health services that align with cultural needs is to create a digital platform that curates those types of resources. The needs assessment survey findings show that all participants have access to either their own smartphone or laptop/desktop. In addition, most have consistent access to the internet, indicating that a digital mental health resource platform may be an appropriate tool to develop for this prioritized population. A study conducted in 2017 found that technological innovations through the smartphone, serious gaming, avatars, augmented reality, and virtual reality will give further possibilities to increase the effects of mental health-related treatments (Cuijpers et al., 2017). However, stigma surrounding mental illness among Asian Americans still needs to be addressed in order to make the most of these digital platforms and culturally-tailored resources.

4.2 Limitations

Although the study team worked diligently, this initiative was limited in time to move beyond preliminary HCD interviews, which means the sample size for the interviews is too small to make claims. Thus, this thesis reports early findings from the interviews; however, additional

recruitment and data collection are needed to increase the sample size and include perspectives that represent the diversity among those who make up the Asian American population. In addition, the current COVID-19 pandemic and class schedules, may have influenced the small sample size.

Cultural differences in perceptions and conceptualizations of mental health may also play a role in who not only identified as experiencing mental health concerns, but also who chose to participate in either the survey or HCD interviews. Another study limitation is that while the survey was aimed at university/college students across the US, our sample primarily evaluated UC San Diego (UCSD) college students. Although the HCD interviews intended to focus on the San Diego region, to date, most participants were only from UC San Diego (UCSD) or San Diego State University (SDSU). Therefore, data do not represent perspectives of students from the other neighboring universities and colleges in San Diego. Expanding the recruitment to reach other colleges in San Diego is warranted.

Lastly, the data represented in this thesis only captured individuals who identified as Asian American. Unfortunately, we did not have survey or HCD participants who identified as Pacific Islander. Thus, more research is needed that focuses specifically on the Pacific Islander community and their perspectives on mental health and wellness. While our study provides important insights into Asian American students, it is important to reiterate that Asian Americans as a population actually represent many diverse perspectives and cultures. Thus, more research is needed to understand different subgroups' needs, perceptions, and experiences of mental health and mental health resources.

4.3 Future Work

A prototype of the co-created platform ideas obtained from the HCD interviews will be developed after conducting more interviews. Once a working prototype is developed, think-aloud exercises will be conducted to focus on assessing the feasibility and acceptability of using this platform for Asian American students and to discuss and make iterative changes and improvements. Future work will also have to consider additional ways to address stigma when actually accessing mental health care beyond a platform that curate resources.

Additional participants for the survey and the HCD with better representation of the Pacific Islander population are needed to further explore the range of mental health needs of this community. Finally, the disaggregation of Asian Americans may be needed to capture the heterogeneity of this population. Thus, future studies may wish to investigate needs and experiences around specific cultures.

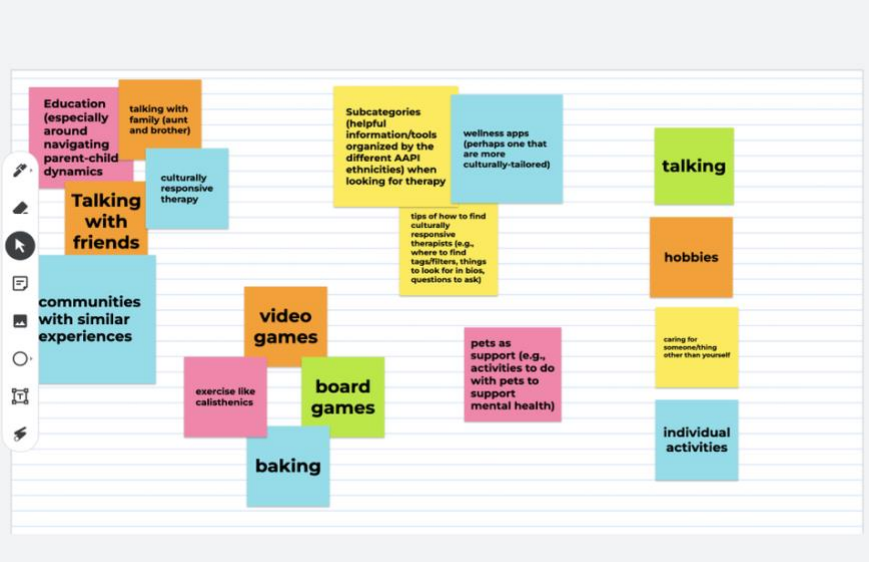
4.4 Conclusion

Although considered the "model minority," addressing the mental health issues and systemic disparities within the Asian American community is still critical. More is to be explored about this population's adverse mental health issues. With that said, with the growth of technological advancements, this thesis contributes to the literature on connecting digital platforms that curate mental health resources in ways aligned with Asian American students' needs and cultural considerations. There is potential for a digital platform to serve as a gateway to accessing culturally relevant mental health resources for Asian American students.

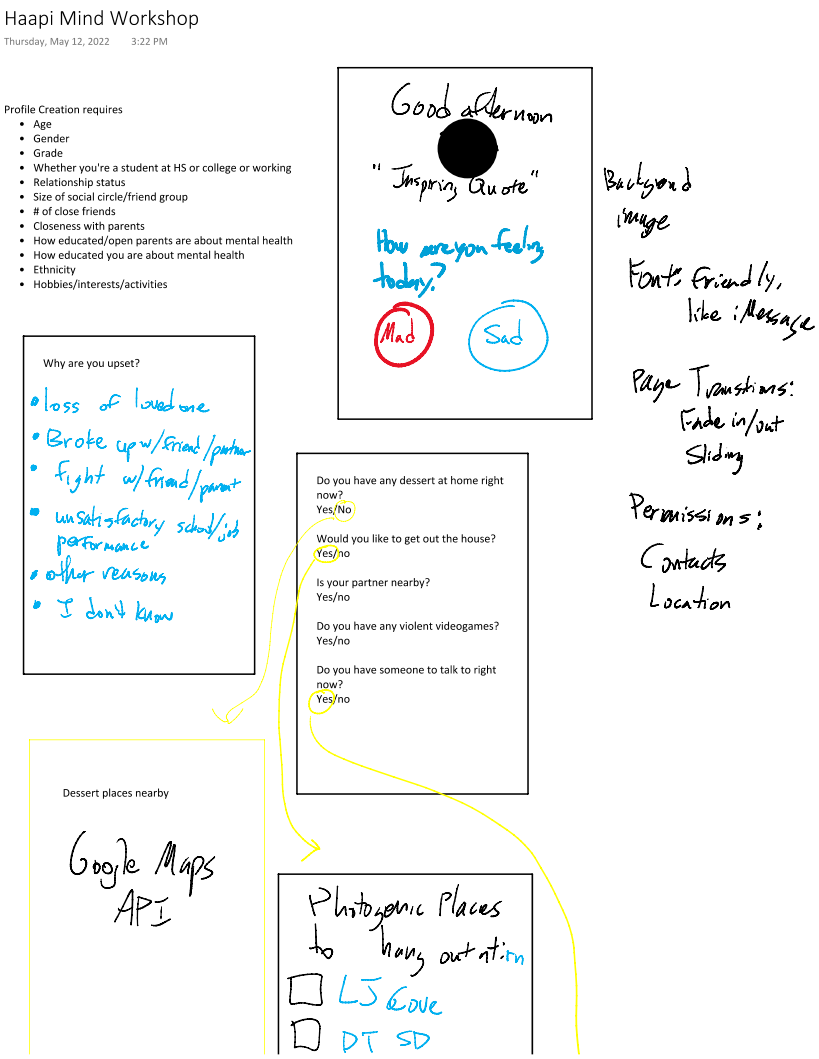
APPENDIX

Artifacts and Figures

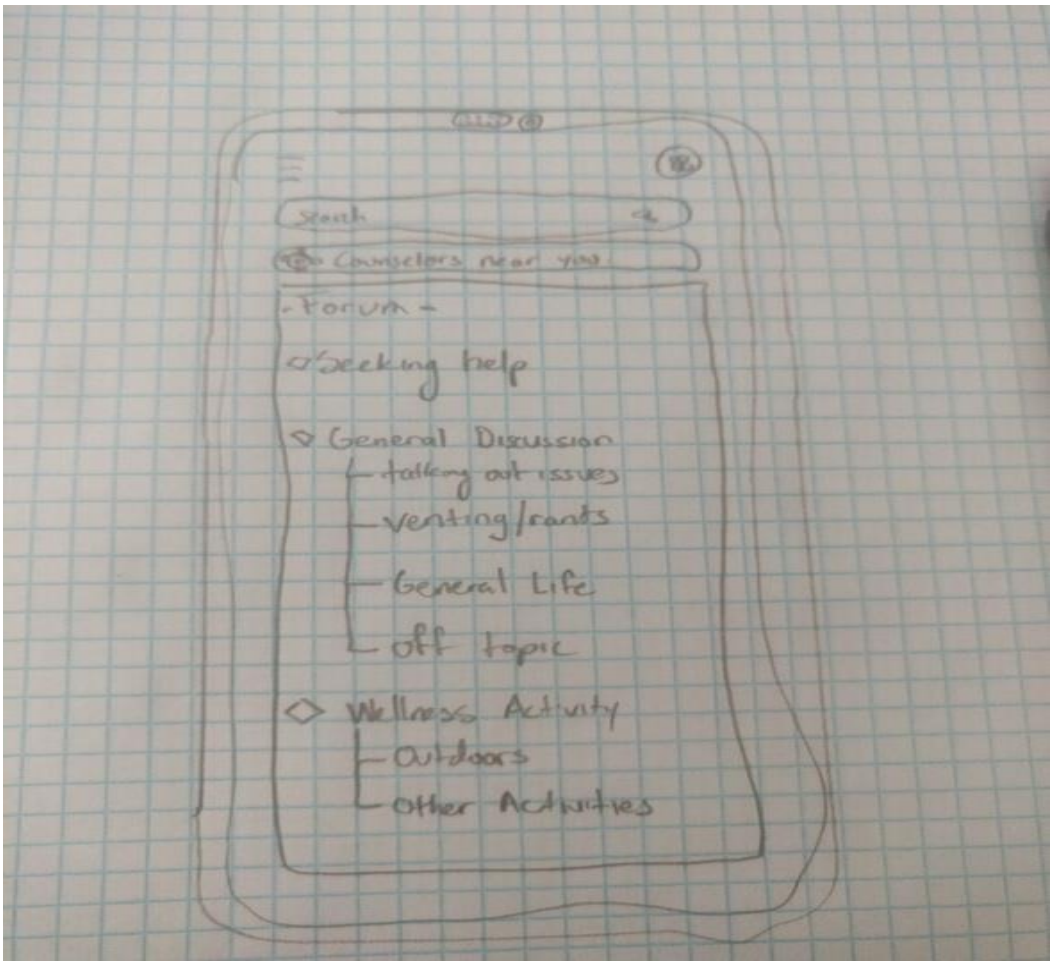
Artifact 1: Part A of Card Sorting Activity (Categorizing)



Artifact 2: Part B of Card Sorting Activity (Ranking)



Artifact 3: Digital Website Prototype



Artifact 4: Digital Smartphone App Prototype

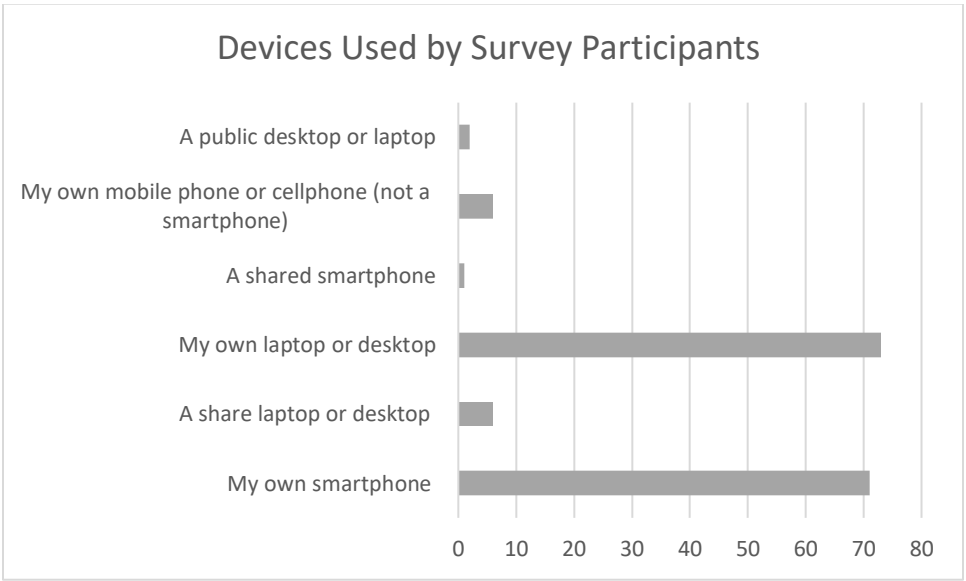


Figure 1: The technological devices participants have access to and use.

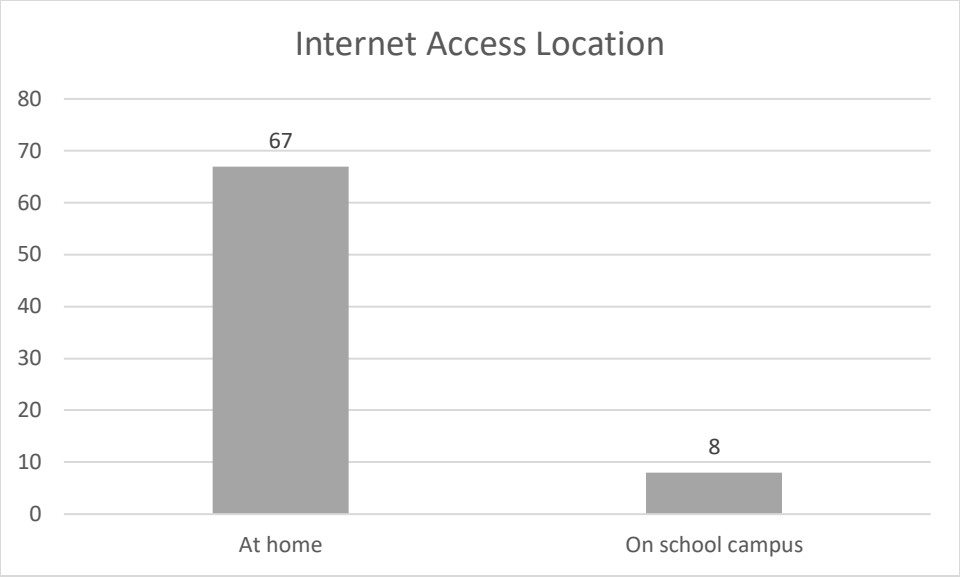


Figure 2: Locations in which participants have internet access.

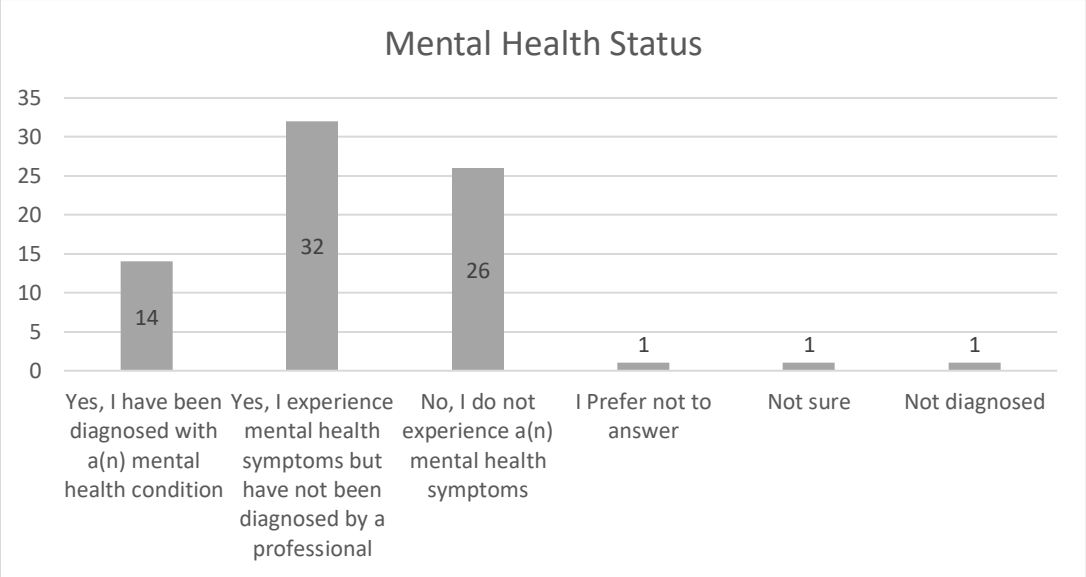


Figure 3: The mental health statuses of the participants

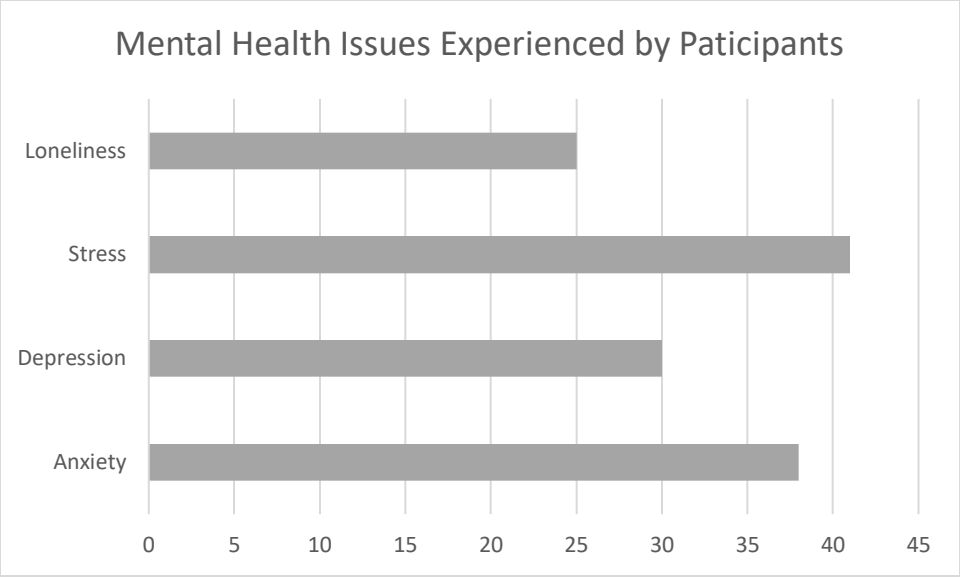


Figure 4: Mental Health symptoms experienced by the Asian American participants of the survey.

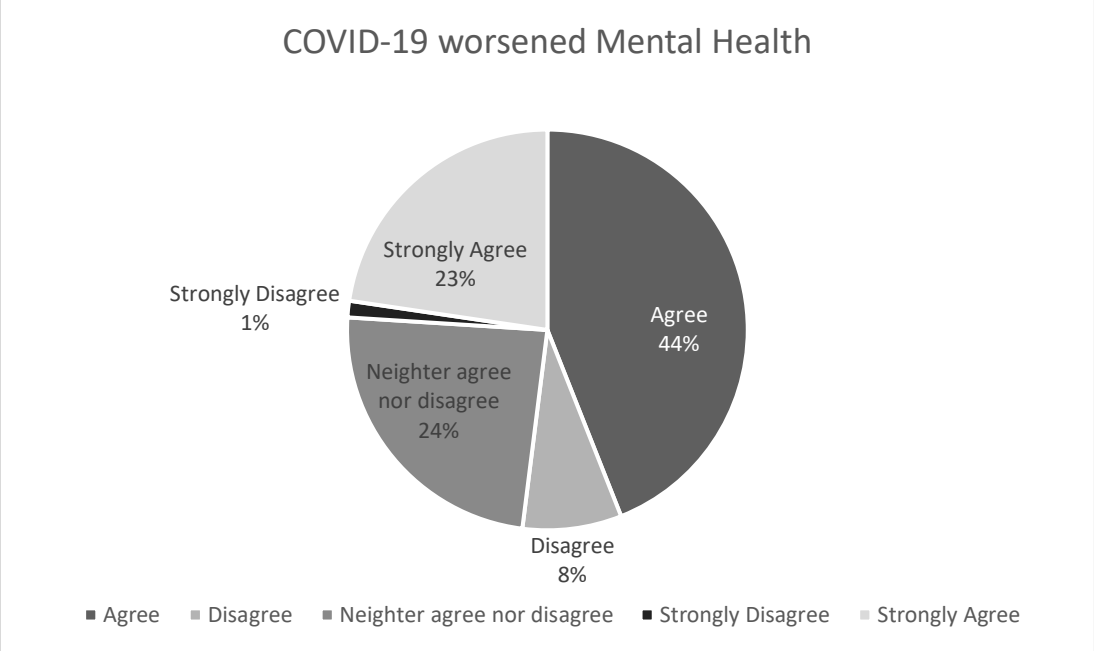


Figure 5: The participants were asked if COVID-19 worsened their mental health. Their responses were captured using a Likert Scale.

Tables

Table 1: Social Cognitive Theory (SCT) framework used to develop HCD interview questions

Research Questions	Constructs from SCT	Questions Given to Participants
What are current mental health needs and current/desired practices among Asian American students in San Diego?	Self-efficacy	What resources or strategies, if any, do you use to support your well-being and mental health?
Understand how Asian American culture and upbringing influence mental health seeking behavior among Asian American students.	Observational Learning	How, if at all, does seeing students from the Asian American community represented in advertisements for mental health resources impact your perceptions of that resource / willingness to use that resource?
	Behavioral Capability	What, if any, challenges do you face in **finding** mental health resources that understand and are tailored to your culture?
	Expectations	How if at all, would being able to find mental health resources that understand and are tailored to you culture impact your mental health and well-being?
	Expectancies	How, if at all, would being able to **find** mental health resources that understand and are tailored to your culture impact your mental health and well-being in a positive, negative, or neutral ways?

Table 2: Race/Ethnicity of Phase I: Survey Participants

Ethnicity	Count
Asian	25
Chinese	4
Japanese	1
Korean	5
Filipino	10
Taiwanese	2
Vietnamese	6
Han Nationality	1
South Asian	3
Indian	4
Palestinian	1
Asian/White	6

Table 3: Acculturation

I identify with my heritage culture	Frequency
Agree	40
Disagree	6
Neither agree or disagree	15
Strongly disagree	0
Strongly agree	14
I identify with American/United States culture	**Frequency**
Agree	41
Disagree	3
Neither agree or disagree	12
Strongly disagree	4
Strongly agree	15

Table 4: Digital Mental Health Resources (Desired and/or currently using)

Informal support, such as talking with or spending time with family, friends, partner, religious leader, etc.	Frequency	Percentage
I currently use this resource.	62	82.667
I don't use this resource and I don't want to.	4	5.333
I would like to use this resource.	9	12

Mental health professional services offered by my college/university (examples: counseling with psychologist, clinical social worker, therapist, psychiatrist)	Frequency	Percentage
I currently use this resource.	10	13.333
I don't use this resource and I don't want to.	28	37.333
I would like to use this resource.	37	49.333

Mental health professional services outside of my college/university (examples: counseling with psychologist, clinical social worker, therapist, psychiatrist)	Frequency	Percentage
I currently use this resource.	10	13.333
I don't use this resource and I don't want to.	27	36
I would like to use this resource.	38	50.667

Telehealth or telemedicine to connect with mental health professionals	Frequency	Percentage
I currently use this resource.	13	17.333
I don't use this resource and I don't want to.	33	44
I would like to use this resource.	29	38.667

Mental health apps (examples: 7 Cups, Headspace, Moodpath)	Frequency	Percentage
I currently use this resource.	19	25.333
I don't use this resource and I don't want to.	34	45.333
I would like to use this resource.	22	29.333

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