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Hazardous Drinking, Alcohol Use Disorders, and Need for Treatment Among Pacific Islander Young Adults

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Abstract

Pacific Islander (PI) young adults are suspected to bear heavy risk for hazardous drinking, alcohol use disorders (AUD), and alcohol-related harms. Yet, PIs remain among the most understudied racial groups in the United States—creating a lack of empirical data documenting their alcohol use problems and treatment needs. The present study presents the first known data on PI young adults' hazardous drinking, possible AUDs, alcohol-related harms, and treatment needs. Survey data were collected from 156 community-dwelling PI young adults (40% women, age 18–30 years) in 2 large PI communities: Los Angeles County and Northwest Arkansas. We screened participants for alcohol, cigarette, and marijuana use, hazardous drinking, possible AUD, alcohol-related harms, and past-year need for mental health and substance use disorder (SUD) treatment. Logistic regressions examined whether experiencing possible AUD and alcohol-related harms were associated with past-year need for treatment. PI young adults reported 78% lifetime rate of alcohol use with 56% screening positive for hazardous drinking, 49% for any possible AUD, and 40% experiencing significant alcohol-related harm (e.g., health, finances). Yet, just 25% of participants reported past-year need for SUD treatment. Although having possible AUD was not associated with perceived SUD treatment need, experiencing any alcohol-related harm associated with 4.7–13.2 times greater adjusted odds for needing treatment. Therefore, despite having low

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self-perceived treatment need, PI young adults experience excessive burden of hazardous drinking and alcohol-related harms. Given the profound negative social and health effects of AUDs, culturally grounded interventions should be designed to reduce PI young adults' elevated rates of hazardous drinking and alcohol-related harms.

Keywords

alcohol-related harm; alcohol use disorder; Native Hawaiian and Pacific Islander; treatment need

Little is known about the alcohol use patterns, problems, and treatment needs affecting Pacific Islanders (PI), who comprise one of only six federally designated U.S. racial groups. Paralleling indigenous American Indians, PIs have endured extensive adverse colonization and historical trauma that have contributed to a multitude of mental and physical health disparities (e.g., depression, diabetes, cardiovascular disease; Crabbe, 1998; Empowering Pacific Islander Communities and Asian Americans Advancing Justice, 2014; Mau, Sinclair, Saito, Baumhofer, & Kaholokula, 2009; Subica, Agarwal, Sullivan, & Link, 2017)—experiences that likely increase PIs' risk for hazardous drinking, alcohol use disorders (AUD), and alcohol-related harms.

Unfortunately, we know less about PIs' alcohol use and associated problems than other major U.S. racial groups because PIs have been minimally investigated in substance use/misuse research (Wu & Blazer, 2015). This may be attributable to PIs' smaller population sizes and mistaken aggregation in health data with Asian Americans—who have among the lowest substance use rates in the United States (Wu & Blazer, 2015). These factors have persistently masked the alcohol problems and needs that impact PI communities, preventing the development of effective alcohol prevention and treatment services for this neglected population.

Given the dearth of U.S. substance use/misuse research on PIs, we must infer from international data showing high rates of PI hazardous drinking and related harms (Howard, Ali, & Robins, 2011; Teevale et al., 2012) that U.S. PIs bear a similarly heavy, underexamined burden of hazardous drinking and harms. For instance, in New Zealand (Ministry of Health, 2009), despite 61.2% of PIs (vs. 87.0% of non-PIs) consuming alcohol during the prior year, 24.5% of PIs (vs. 20.1% of non-PIs) engaged in heavy episodic drinking (i.e., binge drinking). Per year, PIs consumed an average of 21 L of alcohol versus 11 L for non-PIs, with 33% of PIs (vs. only 9% of non-PIs) becoming heavily intoxicated and greater proportions of PIs versus non-PIs experiencing alcohol-related violence, injury, and social problems (Huakau et al., 2005; Ministry of Health, 2009). In the United States, the few existing studies of Native Hawaiian youth have identified the most severe alcohol problems of all Hawaii's youth. These include high rates of alcohol use, heavy episodic drinking, and chronic drinking (Klingle & Miller, 1999; Nishimura, Goebert, Ramisetty-Mikler, & Caetano, 2005), which are associated with increased risk of suicide (Nishimura et al., 2005), violence (Goebert, Park, & Nishimura, 2004), and risky sexual behavior (Ramisetty-Mikler, Goebert, Nishimura, & Caetano, 2006). Similarly, data from the Hawaii State Alcohol and Drug Abuse Division indicate that Native Hawaiian adults reported higher

age-adjusted rates of 30-day heavy episodic drinking than White adults for every examined year between 2011 to 2017 (Hawai'i State Epidemiological Outcomes Workgroup, 2018).

When expanding beyond the Hawaii context to examining the sparse existing U.S. epidemiological data on PI alcohol use, both disaggregated Native Hawaiian *and* PI adult populations in the 1999–2002 National Survey on Drug Use and Health (NSDUH) data reported greater prevalence of alcohol dependence than their White counterparts (Sakai, Wang, & Price, 2010). Additionally, 25 years of U.S. Youth Risk Behavior Survey data indicated that PI youth had among the highest prevalence of preteen alcohol use (30.3%) and heavy episodic drinking (27.5%) of all U.S. racial groups (Subica & Wu, 2018), whereas PI adults reported AUDs at four times the national rate in a prior community study (Subica, Aitaoto, Link, et al., 2019).

Yet, despite PIs' potentially heavy alcohol burden, PIs rarely engage in formal treatment services (Masson et al., 2013). In national treatment data (Substance Abuse and Mental Health Services Administration, 2013), PIs combined with Asian Americans sought substance use disorder (SUD) treatment at half the rate of other racial groups (5.3% vs. 10.4% national rate). In treatment data from Los Angeles County (Harder, 2015)—one of this study's target areas with a population of more than 65,000 PIs—fewer PIs enter public SUD treatment each year (0.09% in 2011, 0.08% in 2013, 0.07% in 2015). However, no studies have examined the need for SUD treatment within PI communities, an empirical gap this study sought to address.

For this exploratory study, we chose to investigate alcohol use problems among PI young adults (18 to 30 years old) for two reasons. First, in the general substance use/misuse literature, young adults experience the greatest increases in rates of hazardous drinking, AUDs, and alcohol-related harms as a result of increased new freedoms (e.g., reduced informal social controls, increased access to money and alcohol) and life stressors (e.g., balancing greater work–academic demands with social pressures, such as contributing financially to the family; Arnett, 2005; Bachman, Wadsworth, O'Malley, Johnston, & Schulenberg, 2013; Maggs & Schulenberg, 2005; White et al., 2006). Second, unpublished reports from several PI communities to our team suggested that young adults may bear PI communities' heaviest alcohol-related risks and harms, resulting in significant community-wide harm through alcohol-related drunk driving, battery, property damage, interpersonal violence, and suicide.

In developing the first study funded by the National Institute of Alcohol Abuse and Alcoholism to examine alcohol use in PI communities, our exploratory study had several goals. The first was to determine the scope of alcohol use, hazardous drinking, possible AUDs, alcohol-related harms, and need for SUD treatment among PI young adults. Because of the strong correlation of alcohol use with other substance use, we also explored co-occurring alcohol use with cigarettes and marijuana as they constitute the nation's three most commonly used substances (Schulenberg et al., 2017). Lastly, given that (a) PIs rarely seek behavioral health treatment services and (b) self-perceived need for treatment is the first step in promoting minority behavioral health treatment-seeking behavior (Cauce et al., 2002; Eiraldi, Mazzuca, Clarke, & Power, 2006), we sought to identify whether PI young

adults' alcohol use would influence their perceived need for behavioral health treatment to better understand how to engage this treatment-averse population in care. Drawing from the sparse substance use/misuse literature on PIs, we hypothesized that for PI young adults, screened rates of hazardous drinking, possible AUDs, and alcohol-related harms would be high, leading to high perceived need for mental health and SUD treatment but also high levels of not receiving needed treatment (Substance Abuse and Mental Health Services Administration, 2013).

Method

Study Sample and Recruitment

Study protocols were approved by the University of California, Riverside IRB. A total of 156 PI participants aged 18 to 30 years old were recruited between May and November 2019 from two large U.S. PI communities: Samoans in urban Los Angeles County, California (the largest PI community in the continental United States) and Marshallese in rural Northwest Arkansas (the fastest growing PI community in the United States; U.S. Census, 2010). We targeted PI populations living on the continental United States because the majority of extant research has focused on examining substance use among PI populations living in Hawaii. This has created a sizable substance use knowledge gap involving PI communities on the continental United States "as more than half of these communities" grew at a rate of 50% or greater grew at a rate of 50% or greater from 2000 to 2010 (Hixson, Hepler, & Kim, 2012). Following established best practices for engaging hard-to-reach minority populations (Alvarez, Vasquez, Mayorga, Feaster, & Mitrani, 2006; Breland-Noble & AAKOMA, 2012), trained PI-heritage staff from local community-based organizations conducted study recruitment and survey administration.

To obtain a representative cross-section of PI young adult alcohol-related perspectives and experiences, we employed a non-probabilistic respondent-driven sampling approach (Mays & Pope, 1995). Using a planned enrollment table stratifying residents by sex and age (18–20, 21–25, 26–30 years), staff purposively recruited participants (a) in-person from diverse community institutions frequented by PI young adults (e.g., cultural organizations, recreational centers) and (b) through direct outreach via social media and online groups/forums. Participants completed informed consent and self-administered surveys in English in 30–45 min, receiving $20.

Measures

Demographics and health.—Study demographic variables were sex, age, and education. Participant mental and physical health were assessed using the 12-item Short-Form Health Survey (SF-12; Ware, Kosinski, & Keller, 1996), a well-established measure that provides composite mental health and physical health status scores. Lower composite scores indicate lower health status, with a general population score of 50.0 used as reference (Ware et al., 1996).

Alcohol use, hazardous drinking, and possible AUD.—Alcohol use, hazardous drinking, and possible AUD were determined via Alcohol Use Disorders Identification Test-

Concise (AUDIT-C; Bush, Kivlahan, McDonell, Fihn, & Bradley, 1998). To assess alcohol use, hazardous drinking, and possible AUD, the AUDIT-C queries: (a) "How often did you have a drink containing alcohol in the past year?" (b) "How many drinks did you have on a typical day when you were drinking in the past year?" and (3) "How often did you have six or more drinks on one occasion?" This widely used and validated brief screening tool has been determined more effective in detecting hazardous drinking than well-established alcohol screening laboratory tests including AST/ALT ratio (aspartate transaminase/alanine transaminase) and MCV (mean corpuscular volume; Fujii et al., 2016). On the AUDIT-C, higher cumulative scores indicate higher levels of hazardous drinking or severity of AUD. To identify hazardous drinking behavior, the AUDIT-C uses a cumulative cutoff score of ≥4 for men and ≥3 for women (scoring range = 0–12; Bush et al., 1998), yielding excellent screening performance across diverse racial groups (Frank et al., 2008). Additionally, the AUDIT-C has been repeatedly shown to effectively screen for the presence of possible AUD (Bush et al., 1998; Dawson, Grant, Stinson, & Zhou, 2005; Rubinsky, Dawson, Williams, Kivlahan, & Bradley, 2013; Rubinsky, Kivlahan, Volk, Maynard, & Bradley, 2010), with an updated *Diagnostic and Statistical Manual of Mental Disorders*, fifth edition (*DSM–5*) AUD diagnostic cutoff score of ≥4 for men and women indicating moderate AUD (endorsement of 2–3 *DSM–5* criteria) and ≥5 indicating severe AUD (endorsement of ≥4 *DSM–5* criteria; Dawson, Smith, Saha, Rubinsky, & Grant, 2012). These updated AUD diagnostic cutoff scores possess excellent sensitivity, specificity, positive predictive values, and area under the curve scores (Dawson et al., 2012). In our study, to differentiate between any possible AUD versus moderate AUD versus severe AUD in our sample, aligning with established *DSM–5* AUD diagnostic severity cutoff score guidelines (Dawson et al., 2012), we set the diagnostic cutoff score for (a) any possible AUD (i.e., moderate or severe AUD) ≥ 4, (b) moderate AUD = 4, and (c) severe AUD ≥5.

Cigarette and marijuana use.—Cigarette and marijuana use were assessed to analyze their use in the context of Pacific Islander young adults' alcohol use. Lifetime cigarette use was measured by positive response to the question: "Have you smoked at least 100 cigarettes in your entire life?" Current cigarette use was determined by responding *Some days* or *Every day* to: "Do you smoke cigarettes every day, some days, or not at all?" Lifetime marijuana use was defined by positive response to: "Have you ever, even once, tried marijuana or hashish in any form?" Current marijuana use was defined as any nonzero response to the question: "During the past 30 days, on how many days did you use marijuana, hashish, or another THC product?"

Alcohol-related harms.—Alcohol-related harms were assessed using the reliable Alcohol-Related Harm scale (test–retest $\kappa = 0.72$; Bondy & Lange, 2000), which asked participants to answer *yes* or *no* if they felt "your alcohol use had a harmful effect on your: (a) friendships or social life; (b) physical health; (c) home life or marriage; (d) work, studies, or employment opportunities; and (e) finances." The scale demonstrated good internal consistency ($\alpha = .82$).

Perceived need for treatment.—Past-year perceived need for mental health and SUD treatment were assessed using validated items from the Agency for Healthcare Research and

Quality's Medical Expenditure Panel Survey (Agency for Healthcare Research and Quality, 2011), which stated: "In the past 12 months, was there a time when you wanted to talk with or seek help about (a) stress, depression, or problems with emotions?" and (b) "problems with alcohol, tobacco, marijuana, pain medication, or any other type of substance?" To determine whether participants' received needed mental health and SUD treatment, follow-up questions were asked: "Did you delay or not get the care you thought you needed?"

Data Analyses

We conducted analyses in SPSS v.24 (IBM Corporation, 2016). Descriptive statistics generated frequencies, means, and standard deviations. Chi-square and independent *t* tests identified significant sex differences in variable frequencies and mean scores, respectively. To explore whether key alcohol-related variables (i.e., AUD and the five alcohol-related harms) associated with participants' perceived need for treatment (the first step in the minority treatment-seeking pathway; Eiraldi et al., 2006), we conducted two sets of logistic regression models with past-year need for mental health treatment and past-year need for SUD treatment the respective dependent variables for each set. Independent variables consistent across all models were: (a) demographics of sex, age, education, and PI ethnicity (Samoan, Marshallese); (b) mental health and physical health status; and (c) screened presence of possible AUD. Additionally, we separately included each of the five alcohol-related harms as independent variables—generating five unique harm models per dependent variable—to isolate which alcohol-related harms may most contribute to perceived treatment need (and thus be ideal intervention targets for increasing PI young adults' perceived treatment need).

Results

Sample Characteristics and Use of Alcohol, Cigarettes, and Marijuana

Participant characteristics including frequencies of alcohol, cigarette, and marijuana use are detailed in Table 1. Among PI participants ($N = 156$), 60% were men and 66% were of Marshallese heritage, with an average age of 23.7 years.

Seventy-eight percent of participants reported lifetime alcohol use, 53% reported lifetime cigarette use, and 54% reported lifetime marijuana use, with significantly more PI men than women reporting lifetime use of alcohol ($p < .01$) and cigarettes ($p < .05$). Additionally, 52% and 49% of participants reported current use of cigarettes and marijuana, respectively —only slightly lower than the lifetime rates—with significantly more men reporting current cigarette use ($p < .01$). Lifetime rates of using multiple substances were high with 47% ($n = 73$) of participants reporting dual alcohol-cigarette use and 30% ($n = 47$) of participants reporting lifetime alcohol-cigarette-marijuana use.

Rates of Hazardous Drinking, Possible, Moderate, and Severe AUD, and Alcohol-Related Harms

Among participants, 56% screened positive for hazardous drinking (AUDIT-C score of ≥4 for men and ≥3 for women) with 60% of PI men and 50% of PI women meeting thresholds indicating hazardous drinking. Similarly, 44% ($n = 68$) of all participants reported having six

or more drinks—that is, heavy episodic drinking—at least once per month, and 33% (n = 51) described consuming five or more drinks on a typical drinking day. Forty-nine percent of participants met the diagnostic cutoff for any possible AUD—that is, possessing moderate or severe AUD (AUDIT-C score ≥4; Dawson et al., 2012)—with 8% meeting the diagnostic cutoff for moderate AUD (AUDIT-C score = 4) and 42% meeting the diagnostic cutoff for severe AUD (AUDIT = C ≥ 5).

Forty percent reported that alcohol use had a harmful effect on their lives. Of the five major alcohol-related harms, the most commonly endorsed harms stemming from alcohol use were harm to physical health (22%), social life and friendships (21%), finances (21%), and work, studies, or employment opportunities (21%).

Perceived Treatment Need

Aligning with our hypothesis of high levels of both PI perceived treatment need and high levels of not receiving needed treatment, 45% of participants perceived needing past-year mental health treatment with 30% of all participants reporting not receiving needed treatment. However, just one quarter of participants perceived a need for past-year SUD treatment with 17% of all participants reporting not receiving needed SUD treatment. Among participants with AUD, only 30% (n = 23) perceived the need for past-year SUD treatment.

Logistic Regressions of Perceived Mental Health and SUD Treatment Need by Alcohol-Related Harm

To examine whether demographics, health status, AUD, and alcohol-related harms were associated with PI participants' perceived past-year need for mental health and SUD treatment, we conducted two sets of logistic regressions.

For the logistic models of perceived past-year need for mental health treatment regressed by the individual alcohol-related harms (see Table 2), for each harm model (excluding the *harm to work/studies* model), Samoan participants were 3.1–3.4 times more likely to perceive past-year need for mental health treatment versus Marshallese participants (p < .05), whereas a 1-point decrease in mental health status associated with 0.9 times greater likelihood of perceiving past-year need (p < .05). For alcohol-related harms, experiencing *harm to physical health, harm to home life*, and *harm to work/studies* associated with 3.2, 4.6, and 2.9 times greater likelihood of perceiving past-year mental health treatment need (p < .05). Notably, screened presence of possible AUD did not significantly predict past-year need in any model.

For the logistic models of perceived past-year need for SUD treatment regressed by the individual alcohol-related harms (see Table 3), in all five harm models, a 1-point decrease in mental health status associated with 0.9–1.0 times greater likelihood of perceiving past-year SUD treatment need (p < .05). Similarly, every alcohol-related harm in our five models associated with significantly greater likelihood for perceiving past-year SUD treatment need (p < .05) ranging from 4.7 times greater likelihood of *harm to work/studies* up to 13.2 times greater likelihood of *harm to home life*. Screened presence of possible AUD did not significantly predict past-year SUD treatment need in any model.

Discussion

The current exploratory study is among the first to detail the alcohol use patterns, harms, and associated need for treatment present within U.S. PI communities. We specifically investigated alcohol use among PI young adults because unconfirmed community reports combined with the general substance use literature suggested they bear the heaviest community risk for hazardous drinking, AUDs, and alcohol-related harms. Yet, despite their heavy risk, prior to this study, PI young adults were notably absent from existing substance use/misuse literature.

Accordingly, our novel findings revealed that a startling 56% of PI young adults screened positive for hazardous drinking and 49% met diagnostic thresholds for possible AUD based on the current AUDIT-C *DSM–5* diagnostic cutoffs for moderate and severe AUD (Dawson et al., 2012). These rates of possible AUD were more than eight times the national AUD rate (NSDUH, 2015) and more than two times the reported AUD rate for PI adults (Subica, Aitaoto, Link, et al., 2019). Additionally, six in 10 PI young adults who had ever used alcohol screened positive for hazardous drinking, and nearly half of all participants reported heavy episodic drinking of at least six drinks monthly or more.

Because heavy episodic drinking is associated with increased risk for multiple life harms (Rehm, Taylor, & Patra, 2006; Room, Babor, & Rehm, 2005), it is therefore unsurprising that 40% of PI participants reported their drinking had adversely affected their social life, physical health, home life, work/studies, or finances. This substantially exceeds the 4% to 9% general population rate, and 21.5% rate for high-risk young adults found in non-U.S. national samples (Giesbrecht & Thomas, 2010; Room, Bondy, & Ferris, 1995). Collectively, our results confirm our hypothesis that hazardous drinking, possible AUDs, and alcohol-related harms are pervasive among PI young adults, even matching or surpassing those reported for indigenous American Indian populations—the racial group with the highest prevalence of AUDs and alcohol-related deaths in the current literature (Ehlers, Stouffer, & Gilder, 2014; Falk, Yi, & Hiller-Sturmhöfel, 2006).

Given PI young adults' high rates of hazardous drinking and possible AUDs, we further hypothesized that a large proportion of participants would endorse a need for mental health and SUD treatment but that most would report not receiving needed treatment. As expected, nearly half of participants reported past-year need for mental health treatment, with 67% of these participants not receiving needed mental health treatment. Unexpectedly, only 25% of participants reported perceiving a past-year need for SUD treatment—despite nearly half of all participants screening positive for possible AUD—with 69% of these participants not receiving needed SUD treatment, for reasons that are unclear. Therefore, PI young adults may possess both high *unrecognized* SUD treatment need (evidenced by participants' low perceived SUD need) and *unmet* treatment need (evidenced by participants' high rates of not receiving needed SUD treatment), placing these community PIs at elevated risk for experiencing alcohol-related harm.

Based on the glaring discrepancy between participants' high rates of hazardous drinking and possible AUDs but low perceived SUD treatment need—suggesting poor problem

recognition, the first step in the minority treatment-seeking pathway (Cauce et al., 2002; Eiraldi et al., 2006)—we next sought to identify whether alcohol-related harms and presence of possible AUD predicted perceived treatment need (i.e., problem recognition). After controlling for participant demographics and health status, having a possible AUD had no association with participants' perceived need for SUD treatment. This finding extends earlier research that found no relationship between PIs' increased hazardous drinking and perceived need for mental health treatment (Subica, Aitaoto, Link, et al., 2019), but had failed to examine this relationship with regard to SUD treatment. Based on our study results, it appears that educating PI young adults experiencing AUDs about their AUDs would be unlikely to increase their recognition that formal treatment is needed (Cauce et al., 2002). Instead, our finding that experiencing alcohol-related harms associated with four to 13 times greater likelihood for perceiving a need for SUD treatment—after controlling for possible AUD—suggests a more effective strategy for increasing PIs' perceived need may be to emphasize the negative social, health, and financial ramifications of their hazardous drinking.

Accounting for our unanticipated finding of PI young adults' pervasive hazardous drinking and possible AUDs but low perceived need for SUD treatment may be the unique social role of alcohol in PI cultures (Huakau et al., 2005). Mirroring food, alcohol is typically consumed in groups with PIs expected to (a) offer large quantities of alcohol to group members to demonstrate generosity and kinship and (b) consume all offered alcohol until finished (Alcohol Advisory Council of New Zealand, 1997; 2003). As a result of this culturally sanctioned role of alcohol in bringing PI adults together (Huakau et al., 2005), U.S. PI young adults may be perceiving hazardous drinking and resulting AUDs as culturally normative social activities rather than problematic behaviors necessitating treatment.

Unfortunately, this cultural normalization of heavy episodic drinking and AUDs may have profound health consequences for PI young adults as even occasional heavy episodic drinking is associated with heightened risk for negative health outcomes such as greater alcohol dependence (Greenfield et al., 2014), injuries (Brewer & Swahn, 2005), and chronic disease and death (Chikritzhs, Jonas, Stockwell, Heale, & Dietze, 2001; Roerecke et al., 2011). Because PIs already experience myriad health disparities (e.g., diabetes, heart disease, cancer)—for example, our young adult participants received substantially lower mean physical health scores compared with the general population—reducing PI young adults' rates of hazardous drinking and AUDs may have important repercussions for improving the health and longevity of this vulnerable racial population. To design interventions to achieve this goal, further research is now needed to identify the major factors driving PIs' increased risk for hazardous drinking, AUDs, and alcohol-related harms such as permissive cultural/peer heavy drinking norms and alcohol's cheaper availability in the United States versus the Pacific.

Limitations

Several limitations are present in this unique community study. First, nonprobability sampling may have introduced bias and restricted generalizability. To account for this,

we recruited participants from two highly divergent PI communities on the continental United States and an array of community/social media settings using a planned enrollment table—an established approach for capturing representative cross-sections of hard-to-reach community PIs for similar research (Subica, Aitaoto, Link, et al., 2019; Subica, Aitaoto, Sullivan, et al., 2019). Also, given the scarcity of PI alcohol data and high degree of hazardous alcohol use and harms found in this study, even with some bias these problems are likely to remain much higher for U.S. PI young adults (PIs) versus the general population. In fact, owing to the frequent minimization of substance use among minority populations (Mensch & Kandel, 1988) and our use of self-report data, it is more likely underreporting rather than overreporting may have occurred—leading to underestimation of PI young adults' true rates of alcohol problems and needs. Similarly, as the first study to directly assess PI alcohol use, hazardous drinking, possible AUDs, and related harms within hard-to-reach PI communities using community-based outreach and engagement practices, our sample size—although sufficient to power our analyses—could not support large-scale population-based epidemiological analyses. Having now identified the potentially large scope of alcohol misuse and harms affecting PI young adults, future studies should more closely examine the alcohol needs and problems of this vulnerable population using larger population-based samples via epidemiological approaches. Finally, although this survey study identified high levels of unmet treatment need in PI young adults, it did not explore the underlying factors driving this unmet need such as (a) cultural and community factors that prevent PIs from seeking formal treatment (e.g., stigma, confidentiality concerns, lack of treatment knowledge; Subica & Brown, 2020) and (b) systems-level factors such as poor availability and proximity of SUD services or lack of culturally responsive providers. Further in-depth qualitative research may now provide important insights into the key forces (e.g., cultural, community, service system) contributing to PI young adults' high unmet treatment need, facilitating the design of effective interventions to better engage this high-risk population in care.

Conclusion

Considering the negative social and health impact of untreated hazardous drinking and AUDs, our findings of high levels of hazardous drinking, possible AUDs, and alcohol-related harms, yet low levels of perceived SUD treatment need, among U.S. PI young adults underscores the importance of (a) conducting larger-scale epidemiological surveys to clearly identify PIs' patterns of alcohol and other substance use—such as rates of high-intensity versus heavy episodic drinking (Linden-Carmichael, Vasilenko, Lanza, & Maggs, 2017)—and better understand their treatment needs and risk for alcohol-related harms (e.g., violence, injury, cancer), and then (b) addressing this risk through the development of targeted alcohol-focused interventions. This may include designing culturally grounded prevention interventions (Okamoto et al., 2014) to prevent PI young adults from developing AUDs in the first place or creating culturally tailored approaches to encourage treatment engagement among PI young adults currently affected by AUDs. Through these culturally tailored prevention and intervention efforts, health professionals may start to alleviate the hidden alcohol burden in PI communities and improve health outcomes for this underserved and neglected racial population.

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References

Agency for Healthcare Research and Quality. (2011). Medical expenditure panel survey questionnaires. Rockville, MD: Author. http://www.meps.ahrq.gov/mepsweb/survey_comp/survey.jsp#Questionnaires

Alcohol Advisory Council of New Zealand. (1997). The place of alcohol in the lives of people from Tokelau, Fiji, Niue, Tonga, Cook Islands and Samoa living in New Zealand: An overview. ALAC Research Monograph Series, No. 2, Wellington, NZ: Author.

Alcohol Advisory Council of New Zealand. (2003). Alcohol and other drugs: A training resource for educators of mental health support workers. Wellington, NZ: Author.

Alvarez RA, Vasquez E, Mayorga CC, Feaster DJ, & Mitrani VB (2006). Increasing minority research participation through community organization outreach. Western Journal of Nursing Research, 28, 541–560. 10.1177/0193945906287215 [PubMed: 16829637]

Arnett JJ (2005). The developmental context of substance use in emerging adulthood. Journal of Drug Issues, 35, 235–254. 10.1177/002204260503500202

Bachman JG, Wadsworth KN, O'Malley PM, Johnston LD, & Schulenberg JE (2013). Smoking, drinking, and drug use in young adulthood: The impacts of new freedoms and new responsibilities. New York, NY: Psychology Press. 10.4324/9780203763797

Bondy SJ, & Lange P (2000). Measuring alcohol-related harm: test-retest reliability of a popular measure. Substance Use & Misuse, 35, 1263–1275. [PubMed: 11349684]

Breland-Noble AM, & the AAKOMA Project Adult Advisory Board. (2012). Community and treatment engagement for depressed African American youth: The AAKOMA FLOA pilot. Journal of Clinical Psychology in Medical Settings, 19, 41–48. 10.1007/s10880-011-9281-0 [PubMed: 22354616]

Brewer RD, & Swahn MH (2005). Binge drinking and violence. Journal of the American Medical Association, 294, 616–618. 10.1001/jama.294.5.616 [PubMed: 16077057]

Bush K, Kivlahan DR, McDonell MB, Fihn SD, & Bradley KA (1998). The AUDIT alcohol consumption questions (AUDIT-C): An effective brief screening test for problem drinking. Ambulatory Care Quality Improvement Project (ACQUIP). Alcohol Use Disorders Identification Test. Archives of Internal Medicine, 158, 1789–1795. 10.1001/archinte.158.16.1789 [PubMed: 9738608]

Cauce AM, Domenech-Rodríguez M, Paradise M, Cochran BN, Shea JM, Srebnik D, & Baydar N (2002). Cultural and contextual influences in mental health help seeking: A focus on ethnic minority youth. Journal of Consulting and Clinical Psychology, 70, 44–55. 10.1037/0022-006X.70.U44 [PubMed: 11860055]

Chikritzhs TN, Jonas HA, Stockwell TR, Heale PF, & Dietze PM (2001). Mortality and life-years lost due to alcohol: A comparison of acute and chronic causes. The Medical Journal of Australia, 174, 281–284. 10.5694/j.1326-5377.2001.tb143269.x [PubMed: 11297115]

Crabbe KM (1998). Etiology of depression among Native Hawai'ians. Pacific Health Dialog, 5, 341–345.

Dawson DA, Grant BF, Stinson FS, & Zhou Y (2005). Effectiveness of the derived Alcohol Use Disorders Identification Test (AUDIT-C) in screening for alcohol use disorders and risk drinking in the U.S. general population. Alcoholism: Clinical and Experimental Research, 29, 844–854. 10.1097/01.ALC.0000164374.32229.A2

Dawson DA, Smith SM, Saha TD, Rubinsky AD, & Grant BF (2012). Comparative performance of the AUDIT-C in screening for *DSM–IV* and *DSM–5* alcohol use disorders. Drug and Alcohol Dependence, 126, 384–388. 10.1016/j.drugalcdep.2012.05.029 [PubMed: 22728044]

Ehlers CL, Stouffer GM, & Gilder DA (2014). Associations between a history of binge drinking during adolescence and self-reported responses to alcohol in young adult Native and Mexican Americans. Alcoholism: Clinical and Experimental Research, 38, 2039–2047. 10.1111/acer.12466

Eiraldi RB, Mazzuca LB, Clarke AT, & Power TJ (2006). Service Utilization among ethnic minority children with ADHD: A model of help-seeking behavior. Administration and Policy in Mental Health Services Research, 33, 607–622. 10.1007/s10488-006-0063-1

Empowering Pacific Islander Communities and Asian Americans Advancing Justice. (2014). Native Hawaiians and Pacific Islanders: A community of contrasts in California. Los Angeles, CA: Author.

Falk DE, Yi HY, & Hiller-Sturmhöfel S (2006). An epidemiologic analysis of co-occurring alcohol and tobacco use and disorders: Findings from the National Epidemiologic Survey on Alcohol and Related Conditions. Alcohol Research & Health, 29, 162–171. [PubMed: 17373404]

Frank D, DeBenedetti AF, Volk RJ, Williams EC, Kivlahan DR, & Bradley KA (2008). Effectiveness of the AUDIT-C as a screening test for alcohol misuse in three race/ethnic groups. Journal of General Internal Medicine, 23, 781–787. 10.1007/s11606-008-0594-0 [PubMed: 18421511]

Fujii H, Nishimoto N, Yamaguchi S, Kurai O, Miyano M, Ueda W, … Okawa K (2016). The Alcohol Use Disorders Identification Test for Consumption (AUDIT-C) is more useful than pre-existing laboratory tests for predicting hazardous drinking: A cross-sectional study. BMC Public Health, 16, 379. 10.1186/s12889-016-3053-6 [PubMed: 27165437]

Giesbrecht N, & Thomas G (2010). A Complex Picture: Trends in alcohol consumption, harms and policy: Canada 1990–2010. NAT Nordisk alkohol & narkotikatidskrift, 27, 515–538. 10.1177/145507251002700507

Goebert D, Park C, & Nishimura S (2004). The co-occurrence of alcohol abuse in alcohol dependence among a treatment sample of Asian/Pacific Islanders. Addictive Disorders & Their Treatment, 61, 891–896. [PubMed: 20563282]

Greenfield TK, Ye Y, Bond J, Kerr WC, Nayak MB, Kaskutas LA, … Kranzler HR (2014). Risks of alcohol use disorders related to drinking patterns in the U.S. general population. Journal of Studies on Alcohol and Drugs, 75, 319–327. 10.15288/jsad.2014.75.319 [PubMed: 24650826]

Harder and Company, Los Angeles County Department of Mental Health, Health Services Research Center, University of Southern California School of Social Work. (2014). County of Los Angeles MHSA Innovations Program Annual Report. Los Angeles, CA: Los Angeles County Department of Mental Health.

Hawai'i State Epidemiological Outcomes Workgroup. (2018). 2018 state epidemiologic profile: Selected youth and adult alcohol indicators. Honolulu, HI: Author.

Hixson LK, Hepler BB, & Kim MO (2012). The Native Hawaiian and other Pacific Islander population: 2010. Washington, DC: U. S. Department of Commerce, Economics and Statistics Administration, U.S. Census Bureau.

Howard J, Ali H, & Robins L (2011). Alcohol, cannabis and amphetamine-type stimulants use among young Pacific Islanders. Drug and Alcohol Review, 30, 104–110. 10.1111/j.1465-3362.2010.00272.x [PubMed: 21219505]

Huakau J, Asiasiga L, Ford M, Pledger M, Casswell S, SuaaliiSauni T, & Lima I (2005). New Zealand Pacific peoples' drinking style: Too much or nothing at all? [online]. The New Zealand Medical Journal, 118, U1491. [PubMed: 15937526]

IBM Corporation. (2016). SPSS, (Version 24) [Computer software]. Armonk, NY: Author.

Klingle RS, & Miller MD (1999). Hawaii student alcohol and drug use study. Honolulu, HI: State of Hawaii Department of Health, Alcohol, and Drug Abuse Division.

Linden-Carmichael AN, Vasilenko SA, Lanza ST, & Maggs JL (2017). High-intensity drinking versus heavy episodic drinking: Prevalence rates and relative odds of alcohol use disorder across adulthood. Alcoholism: Clinical and Experimental Research, 41, 1754–1759. 10.1111/acer.13475

Maggs JL, & Schulenberg JE (2005). Initiation and course of alcohol consumption among adolescents and young adults. In Galanter M, Lowman C, Boyd GM, Faden VB, Witt E, & Lagressa D (Eds.), Recent developments in alcoholism (pp. 29–47). Boston, MA: Springer. 10.1007/0-306-48626-1_2

Masson CL, Shopshire MS, Sen S, Hoffman KA, Hengl NS, Bartolome J, … Iguchi MY (2013). Possible barriers to enrollment in substance abuse treatment among a diverse sample of Asian Americans and Pacific Islanders: Opinions of treatment clients. Journal of Substance Abuse Treatment, 44, 309–315. 10.1016/j.jsat.2012.08.005 [PubMed: 22985677]

Mau MK, Sinclair K, Saito EP, Baumhofer KN, & Kaholokula JKA (2009). Cardiometabolic health disparities in native Hawaiians and other Pacific Islanders. Epidemiologic Reviews, 31, 113–129. 10.1093/ajerev/mxp004 [PubMed: 19531765]

Mays N, & Pope C (1995). Qualitative research: Observational methods in health care settings. British Medical Journal, 311, 182–184. 10.1136/bmj.311.6998.182 [PubMed: 7613435]

Mensch BS, & Kandel DB (1988). Underreporting of substance use in a national longitudinal youth cohort: Individual and interviewer effects. Public Opinion Quarterly, 52, 100–124. 10.1086/269084

Ministry of Health. (2009). Alcohol use in New Zealand: Key results of the 2007/2008 New Zealand Alcohol and Drug Use Survey. Wellington, NZ: New Zealand Health Information Service, Ministry of Health.

Nishimura ST, Goebert DA, Ramisetty-Mikler S, & Caetano R (2005). Adolescent alcohol use and suicide indicators among adolescents in Hawaii. Cultural Diversity and Ethnic Minority Psychology, 11, 309–320. 10.1037/1099-9809.11.4309 [PubMed: 16478351]

Okamoto SK, Helm S, Pel S, McClain LL, Hill AP, & Hayashida JK (2014). Developing empirically based, culturally grounded drug prevention interventions for indigenous youth populations. The Journal of Behavioral Health Services & Research, 41, 8–19. 10.1007/s11414-012-9304-0 [PubMed: 23188485]

Ramisetty-Mikler S, Goebert D, Nishimura S, & Caetano R (2006). Dating violence victimization: Associated drinking and sexual risk behaviors of Asian, Native Hawaiian, and Caucasian high school students in Hawaii. The Journal of School Health, 76, 423–429. 10.1111/j.1746-1561.2006.00136.x [PubMed: 16978166]

Rehm J, Taylor B, & Patra J (2006). Volume of alcohol consumption, patterns of drinking and burden of disease in the European region 2002. Addiction, 101, 1086–1095. 10.1111/j.1360-0443.2006.01491.x [PubMed: 16869838]

Roerecke M, Greenfield TK, Kerr WC, Bondy S, Cohen J, & Rehm J (2011). Heavy drinking occasions in relation to ischaemic heart disease mortality— An 11–22 year follow-up of the 1984 and 1995 U.S. National Alcohol Surveys. International Journal of Epidemiology, 40, 1401–1410. 10.1093/ije/dyr129 [PubMed: 22039198]

Room R, Babor T, & Rehm J (2005). Alcohol and public health. The Lancet, 365, 519–530. 10.1016/S0140-6736(05)17870-2

Room R, Bondy SJ, & Ferris J (1995). The risk of harm to oneself from drinking, Canada 1989. Addiction, 90, 499–513. 10.1111/j.1360-0443.1995.tb02185.x [PubMed: 7773113]

Rubinsky AD, Dawson DA, Williams EC, Kivlahan DR, & Bradley KA (2013). AUDIT-C scores as a scaled marker of mean daily drinking, alcohol use disorder severity, and probability of alcohol dependence in a U.S. general population sample of drinkers. Alcoholism: Clinical and Experimental Research, 37, 1380–1390. 10.1111/acer.12092

Rubinsky AD, Kivlahan DR, Volk RJ, Maynard C, & Bradley KA (2010). Estimating risk of alcohol dependence using alcohol screening scores. Drug and Alcohol Dependence, 108, 29–36. 10.1016/j.drugalcdep.2009.11.009 [PubMed: 20042299]

Sakai JT, Wang C, & Price RK (2010). Substance use and dependence among Native Hawaiians, Other Pacific Islanders, and Asian ethnic groups in the United States: Contrasting multiple-race and singlerace prevalence rates from a national survey. Journal of Ethnicity in Substance Abuse, 9, 173–185. 10.1080/15332640.2010.500582 [PubMed: 20737344]

Schulenberg JE, Johnston LD, O'Malley PM, Bachman JG, Miech RA, & Patrick ME (2017). Monitoring the Future national survey results on drug use, 1975–2016: Volume II, college students and adults ages 19–55. Ann Arbor, MI: Institute for Social Research, University of Michigan.

Subica AM, Agarwal N, Sullivan JG, & Link BG (2017). Obesity and associated health disparities among understudied multiracial, Pacific Islander, and American Indian adults. Obesity, 25, 2128–2136. 10.1002/oby.21954 [PubMed: 29071803]

Subica AM, Aitaoto N, Link BG, Yamada AM, Henwood BF, & Sullivan G (2019). Mental health status, need, and unmet need for mental health services among U.S. Pacific Islanders. *Psychiatric Services*, 70, 578–585. 10.1176/appi.ps.201800455 [PubMed: 30991907]

Subica AM, Aitaoto N, Sullivan JG, Henwood BF, Yamada AM, & Link BG (2019). Mental illness stigma among Pacific Islanders. Psychiatry Research, 273, 578–585. 10.1016/j.psychres.2019.01.077 [PubMed: 30716597]

Subica AM, & Brown BJ (2020). Addressing health disparities through deliberative methods: Citizens' panels for health equity. American Journal of Public Health, 110, 166–173. 10.2105/AJPH.2019.305450 [PubMed: 31855474]

Subica AM, & Wu LT (2018). Substance use and suicide in Pacific Islander, American Indian, and multiracial youth. American Journal of Preventive Medicine, 54, 795–805. [PubMed: 29656915]

Substance Abuse and Mental Health Services Administration. (2013). Need for and receipt of substance use treatment among Asian Americans and Pacific Islanders. Rockville, MD: Author.

Teevale T, Robinson E, Duffy S, Utter J, Nosa V, Clark T, … Ameratunga S (2012). Binge drinking and alcohol-related behaviours amongst Pacific youth: A national survey of secondary school students. The New Zealand Medical Journal, 125, 60–70.

U.S. Census Bureau. (2010). American Factfinder. Retrieved from http://factfinder.census.gov/

Ware J Jr., Kosinski M, & Keller SD (1996). A 12-Item Short-Form Health Survey: Construction of scales and preliminary tests of reliability and validity. Medical Care, 34, 220–233. 10.1097/00005650-199603000-00003 [PubMed: 8628042]

White HR, McMorris BJ, Catalano RF, Fleming CB, Haggerty KP, & Abbott RD (2006). Increases in alcohol and marijuana use during the transition out of high school into emerging adulthood: The effects of leaving home, going to college, and high school protective factors. Journal of Studies on Alcohol, 67, 810–822. 10.15288/jsa.2006.67.810 [PubMed: 17060997]

Wu LT, & Blazer DG (2015). Substance use disorders and comorbidities among Asian Americans and Native Hawaiians/Pacific Islanders. Psychological Medicine, 45, 481–494. 10.1017/S0033291714001330 [PubMed: 25066115]

Public Policy Relevance Statement

We know little about the scope of alcohol use, hazardous drinking, and treatment need among Pacific Islanders young adults, who are hypothesized to carry high risk for alcohol use problems partially because of their exposure to extensive U.S. colonization and historical traumatization. As expected, screened prevalence of hazardous drinking, possible alcohol use disorders, and significant alcohol-related harms were exceedingly high among Pacific Islander young adults, yet perceived need for substance use treatment was low. Our findings are among the first to empirically confirm the heavy burden of alcohol use disorders and harm affecting understudied Pacific Islander young adults and support the need for designing tailored interventions to reduce their alcohol misuse and increase their engagement in treatment.

Table 1.

Characteristics and Descriptive Statistics for Native Hawaiian and Pacific Islander (NHPI) Participant Sample

Variable	Total sample *N* = 156		Men *n* = 94		Women *n* = 61			
	%	*n*	%	*n*	%	*n*	χ^2 or *t* between women versus men	*p* value
Formal education								
<High school	19	29	20	19	16	10		
High school	52	81	52	49	52	32		
Some college	21	32	19	18	23	14		
≥College	5	8	4	4	7	4		
Lifetime alcohol use	78	121	85**	80	67	41	$\chi^2(1, N = 155) = 6.92$	$p < .01$
Hazardous drinking (AUDIT-C ≥ 4 for men and ≥ 3 for women)	56	87	60	56	51	31		
Any AUD (AUDIT-C ≥ 4)	49	77	60**	56	34	21	$\chi^2(1, N = 149) = 8.14$	$p < .01$
Moderate AUD (AUDIT-C = 4)	8	12	9	8	7	4		
Severe AUD (AUDIT-C ≥ 5)	41	65	51**	48	28	17	$\chi^2(1, N = 137) = 8.19$	$p < .01$
Lifetime cigarette use	53	82	63*	59	38	23	$\chi^2(1, N = 153) = 10.55$	$p < .05$
Current cigarette use	52	81	63**	59	38	23	$\chi^2(1, N = 141) = 12.44$	$p < .01$
Lifetime marijuana use	52	81	53	50	51	31		
Current marijuana use	49	77	43	41	28	17		
Alcohol-related harms								
Harm friendships	21	33	29**	27	10	6	$\chi^2(1, N = 152) = 7.56$	$p < .01$
Harm health	22	34	24	23	18	11		
Harm home life	11	17	14	13	7	4		
Harm work	21	32	24	23	15	9		
Harm finances	21	33	23	22	18	11		
Needed MH care (past year)	45	70	40	38	52	32		
Avoided/Delayed MH care	30	47	32	30	28	17		
Needed SUD care (past year)	25	39	30	28	18	11		
Avoided/Delayed SUD care	17	27	19	18	15	9		
	M	SD	M	SD	M	SD		

Variable	Total sample N = 156		Men n = 94		Women n = 61			
	%	*n*	%	*n*	%	*n*	χ^2 or *t* between women versus men	*p* value
Age	23.70	4.20	24.15	4.29	22.96	3.98		
AUDIT-C score	4.31	3.28	5.02**	3.28	3.23	2.99	$t(147) = 3.36$	$p < .01$
Marijuana days used (past 30)	4.51	8.81	6.70**	10.65	4.69	8.48	$t(134) = 1.66$	$p < .01$
Health status								
Mental health	47.20	9.84	47.77	9.96	46.67	9.43		
Physical health	45.93	8.51	45.60	8.47	46.44	8.69		

Note. AUD = alcohol use disorder; AUDIT-C = Alcohol Use Disorders Identification Test – Concise; MH = mental health; SUD = substance use disorder.

*Significant difference at .05 level between male and female participants.

**Significant difference at .01 level between male and female participants.

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Table 2.

Logistic Regressions for Perceived Need for Mental Health Treatment in Past Year by Alcohol-Related Harms

Variable	DV = Perceived need for mental health treatment									
	AOR	95% CI	AOR	95% CI	AOR	95% CI	AOR	95% CI	AOR	95% CI
	Social life		Physical health		Home life		Work/Studies		Finances	
Alcohol-related harm	2.15	[0.78, 5.92]	3.19*	[1.20, 8.45]	4.63*	[1.05, 20.43]	2.89*	[1.04, 8.07]	2.66	[0.98, 7.22]
Controls										
Demographic										
Age	1.03	[0.93, 1.14]	1.01	[0.91, 1.12]	1.02	[0.92, 1.13]	1.03	[0.92, 1.14]	1.02	[0.92, 1.14]
Sex (Ref: Women)										
Men	0.55	[0.23, 1.32]	0.60	[0.25, 1.42]	0.51	[0.21, 1.26]	0.51	[0.21, 1.24]	0.55	[0.23, 1.35]
Formal education (Ref: < high school)										
High school	0.69	[0.23, 2.06]	0.67	[0.22, 2.08]	0.67	[0.18, 1.71]	0.60	[0.20, 1.82]	0.65	[0.22, 1.97]
Some college	0.29	[0.07, 1.25]	0.33	[0.07, 1.43]	0.23	[0.05, 1.03]	0.23	[0.05, 1.02]	0.24	[0.06, 1.04]
≥College	0.15	[0.02, 1.13]	0.15	[0.02, 1.23]	0.14	[0.02, 1.03]	0.13	[0.02, 1.06]	0.12*	[0.02, 0.98]
PI ethnicity (Ref: Marshallese)										
Samoan	3.37*	[1.13, 10.03]	3.35*	[1.13, 9.97]	3.19*	[1.07, 9.51]	2.68	[0.90, 7.95]	3.14*	[1.06, 9.33]
Health status										
Mental health	0.91*	[0.87, 0.95]	0.91*	[0.86, 0.95]	0.90*	[0.86, 0.95]	0.91*	[0.96, 0.96]	0.90*	[0.86, 0.95]
Physical health	1.02	[0.97, 1.07]	1.01	[0.96, 1.07]	1.01	[0.96, 1.06]	1.00	[0.95, 1.06]	1.00	[0.95, 1.06]
Alcohol use disorder (Ref: No AUD)										
Possible AUD	0.94	[0.39, 2.28]	1.07	[0.43, 2.66]	1.30	[0.51, 3.31]	1.09	[0.44, 2.74]	0.95	[0.38, 2.34]

Note. AOR = adjusted odds ratio; AUD = alcohol use disorder; CI = confidence interval; DV = dependent variable; Ref = reference group.

*$p < .05$.

Table 3.

Logistic Regressions for Perceived Need for Substance Use Disorder Treatment in Past Year by Alcohol-Related Harms

Variable	DV = Perceived need for substance use disorder treatment									
	AOR	95% CI	AOR	95% CI	AOR	95% CI	AOR	95% CI	AOR	95% CI
	Social life		Physical health		Home life		Work/Studies		Finances	
Alcohol-related harm	7.39*	[2.64, 20.71]	7.52*	[2.74, 20.65]	13.16*	[3.13, 55.29]	4.69*	[1.74, 12.64]	6.37*	[2.28, 17.77]
Controls										
Demographic										
Age	1.04	[0.92, 1.17]	0.99	[0.87, 1.12]	0.99	[0.88, 1.12]	1.01	[0.90, 1.13]	1.00	[0.89, 1.13]
Sex (Ref: Women)										
Men	1.61	[0.58, 4.49]	2.42	[0.85, 6.89]	2.04	[0.73, 5.70]	1.92	[0.71, 5.16]	2.43	[0.85, 6.89]
Formal education (Ref: < high school)										
High school	0.64	[0.18, 2.25]	0.67	[0.18, 2.51]	0.52	[0.15, 1.75]	0.61	[0.19, 2.00]	0.72	[0.21, 2.51]
Some college	0.23	[0.04, 1.47]	0.28	[0.04, 1.78]	0.16	[0.02, 1.08]	0.17	[0.03, 1.05]	0.18	[0.03, 1.10]
≥College	0.85	[0.11, 6.85]	0.80	[0.09, 7.13]	1.02	[0.13, 7.95]	0.81	[0.10, 6.70]	0.73	[0.09, 5.93]
PI ethnicity (Ref: Marshallese)										
Samoan	2.51	[0.74, 8.57]	2.30	[0.69, 7.67]	2.04	[0.63, 6.57]	1.51	[0.48, 4.73]	2.14	[0.68, 6.78]
Health status										
Mental health	0.95*	[0.90, 1.00]	0.94*	[0.89, 0.99]	0.93*	[0.89, 0.98]	0.95*	[0.90, 0.99]	0.94	[0.89, 0.99]
Physical health	0.99	[0.93, 1.05]	0.98	[0.92, 1.04]	0.98	[0.92, 1.03]	0.97	[0.02, 1.03]	0.97	[0.91, 1.03]
Alcohol use disorder (Ref: No AUD)										
Possible AUD	1.48	[0.53, 4.11]	1.92	[0.67, 5.49]	2.95	[0.99, 8.79]	1.94	[0.73, 5.19]	1.56	[0.57, 4.30]

Note. AOR = adjusted odds ratio; AUD = alcohol use disorder; CI = confidence interval; DV = dependent variable; Ref = reference group.

*$p < .05$.