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The aim of the Hawai‘i Journal of Health & Social Welfare is to advance knowledge about health and social welfare, with a focus on the diverse peoples and unique environments of Hawai‘i and the Pacific region.

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In 2018, the number of partners providing financial backing for the journal expanded, and to reflect this expansion the name of the journal was changed in 2019 to the Hawai‘i Journal of Health & Social Welfare. The lead academic partners are now the six units of the UH College of Health Sciences and Social Welfare, including the John A. Burns School of Medicine, Office of Public Health Studies, the Thompson School of Social Work & Public Health, the School of Nursing and Dental Hygiene, the UH Cancer Center, and the Daniel K. Inouye College of Pharmacy. Other partners are the Hawai‘i State Department of Health and the UH Office of the Vice Chancellor for Research. The journal is fiscally managed by University Health Partners of Hawai‘i.

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What Is Known about Substance Use in Hawai'i: A Scoping Review

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Abstract

Substance use is a significant public health and social welfare issue in the state of Hawai'i. Literature and data about the most affected populations and geographies in Hawai'i are scattered. A scoping review was conducted to assess the extent of available information about substance use in Hawai'i. The Preferred Reporting Items for Systematic Reviews and Meta-Analyses for Scoping Reviews (PRISMA-ScR) Checklist was used as a guide, using 3 databases: PubMed, Web of Science, and CINAHL for publication years 2010-2023. A manual search was conducted to identify other reports. A total of 21 documents were included in the synthesis. The synthesis revealed a large focus on substance use among Native Hawaiians and adolescents. The granularity of geographical data was found to be at island-level and the 3 most common substances reported were alcohol, marijuana, and methamphetamine. There were data for a wide range of racial and ethnic groups, which is unique due to the diversity in the state of Hawai'i. Most documents used national datasets for reporting substance use in Hawai'i. The findings identified gaps in the literature that can be filled by future research such as focusing on the rise of substance use among older adults, disaggregating data on Pacific Islander populations in Hawai'i, reporting substance use data in geographical areas smaller than island-level, increasing the collection of data on groups that have a high risk for health problems or are underserved by health services, and intensifying collection of data about fentanyl use in Hawai'i.

Abbreviations

ADAD = Hawai'i State Department of Health, Behavioral Health Administration, Alcohol and Drug Abuse Division
ATOD = Hawai'i Student Alcohol, Tobacco, and Other Drug Use
HPSAs = Health Professional Shortage Areas
HRSA = Health Resources and Services Administration
NSDUH = National Survey of Drug Use and Health
SUDs = Substance Use Disorders
YRBSS = Youth Risk Behavior Surveillance System

Introduction

Substance use is a significant public health and social welfare issue in the state of Hawai'i.[1] Substance use is defined as the use of selected substances, including alcohol, illicit drugs, inhalants, and other substances that can be absorbed into the body with possible dependence and other harmful effects.[2] The usage of a substance can lead to a substance use disorder (SUD), which occurs when a person is unable to control their substance use, leading to changes in health and behavior.[3,4] According to the 2021-2022 National Survey of Drug Use and Health (NSDUH), the annual average prevalence of past-year substance use disorders (SUDs) in Hawai'i was 9.4% among individuals aged 12-17 years, slightly higher than the national average (9.0%), and 16.4% among individuals aged 18 years or older in Hawai'i, slightly lower than the national average (17.8%).[5]

Substance use in Hawai'i is evident across all counties. All counties of Hawai'i have high-need and high-demand areas, which are defined by the Health Resources and Services Administration (HRSA) as sites located within Health Professional Shortage Areas (HPSAs), mental HPSA facilities with a score of 16 or above, or within a geographical area considered rural as defined by the HRSA Federal Office of Rural Health Policy.[6,7] According to the 2022 Hawai'i State Department of Health, Alcohol and Drug Abuse Division (ADAD) Report to the Legislature, 7.5% (n=9690) of individuals aged 18 and over in Maui County (including the islands of Maui, Lāna'i, and Moloka'i) had a SUD in the past year – the highest of the counties in Hawai'i. The City and County of Honolulu follows with 7.4% (n=57 160), Hawai'i County with 7.3% (n=11 480), and Kaua'i County with 6.7% (n=3770) of individuals aged 18 and over having an SUD in the past year.[8]

The risk of SUDs may be higher among groups that have a high risk for health problems or are underserved by health resources. The Centers for Medicare & Medicaid Services has provided examples of groups that have a high risk for health problems or are underserved by health services, which include racial and ethnic minorities, children, older adults, sexual and gender minorities, homeless individuals, pregnant women, victims of abuse or trauma, and individuals with higher rates of mental health conditions, such as those who are justice-involved.[9,10] Substance use among youth is a major concern for the state of Hawai'i as demonstrated by ranking fourth highest in the nation for high school students reporting being offered, sold, or given an illegal drug by someone on school property, at 25.4% compared to the national average of 21.7% in 2015.[11] As previously noted, research indicates that youth who identify as sexual or gender minorities also exhibit higher rates of substance use and health risks compared to heterosexual and

cisgender youth. For example, the Centers for Disease Control and Prevention (CDC) noted that sexual minority youth engage in substance use at much higher rates than heterosexual youth.[12]

An estimated 24.2% of Hawai'i's population was multiracial (identifying as two or more races) in 2019.[13] This is drastically higher than the 10.2% multiracial population in United States (US) in 2020.[14] Hawai'i is unique in its population composition as it consists of 0.4% of the US population but accounts for 23.7% of the Native Hawaiian and other Pacific Islander population in the US. Native Hawaiians or Pacific Islanders were about 1.5 times less likely to complete substance use treatment as compared to Whites.[15] Native Hawaiians and Pacific Islanders have been shown to be disproportionately affected by substance use issues in the literature.[16-18] Among adults in Hawai'i who were admitted to ADAD-funded treatment, Native Hawaiians had the highest rates of admission for fiscal years 2021-2022 at 44.9%.[16] This disproportionate burden is further evidenced by a 2022 Office of Hawaiian Affairs report, which revealed that various substance use indicators (eg, consuming alcohol in the past 30 days, binge drinking in the past 30 days, currently using marijuana) were significantly higher for Native Hawaiian youth compared to youth of other ethnic groups in Hawai'i.[17] Additionally, 2019 data indicate that Native Hawaiian and Other Pacific Islander adults experienced alcohol use disorder 4-times greater than the US population of 5%.[18] According to Hawai'i's Emergency Medical Services, Native Hawaiians have the highest 7-year fatal and nonfatal rates of opioid poisoning compared to other ethnic groups.[16]

Information about substance use in Hawai'i are scattered and limited. The purpose of this scoping review is to identify journal articles and reports that focus on substance use in Hawai'i and to describe the data available by age, race/ethnicity, geographies, groups that have a high risk for health problems or are underserved by health services, substances and data sources. There have been past literature reviews focused on drug use among Native Hawaiian youth and culturally grounded and relevant prevention interventions among Native Hawaiians and ethnic minority youth populations. Edwards et al published a comprehensive literature review in 2010 on Native Hawaiian youth and substance use.[19] In 2016, Lauricella et al published a systematic review on culturally grounded interventions for minority youth populations, and in 2021, McLean et al published a systematic literature review on culturally grounded prevention interventions for Native Hawaiians.[20,21] These reviews have yielded valuable findings on Native Hawaiians and prevention programs. These reviews, however, have not focused on the availability of substance use information for the state of Hawai'i in general. The information collected from this scoping review will help to provide recommendations for future research and data collection on substance use in Hawai'i.

Methods

A scoping review was conducted using the Preferred Reporting Items for Systematic Reviews and Meta-Analyses for Scoping Reviews (PRISMA-ScR) Checklist to standardize reporting and transparency methodologies. The team searched 3 databases: PubMed, Web of Science, and CINAHL. For all 3 databases, the article search was filtered to publication years 2010-2023. Additional filters were added for each database (PubMed: Text availability = Full text; Web of Science: Document types = Article, Review Article; CINAHL: Limit To = Full text). The article titles and abstracts were searched between January 26, 2024 and January 30, 2024, using the following keywords: Drug use, drug abuse, drug misuse, drug, alcohol use, alcohol abuse, alcohol misuse, alcohol, substance use, substance abuse, substance misuse, substance, behavioral health, methamphetamine, marijuana, cocaine, heroin, ecstasy, hallucinogens, inhalants, prescription drugs, opioid, opioids, meth, addiction, Hawaii, Hawai'i, and Hawai'i. In addition to the 3 databases, government and college/university reports were identified through a manual search.

The journal article references were extracted and uploaded into Covidence systematic review software (Veritas Health Innovation, Melbourne, Australia) for screening. The titles and abstracts of journal articles were screened and removed if the exclusion criteria were met. The exclusion criteria for all documents (journal articles and reports) were: the absence of a focus on substance use as an outcome; absence of an abstract; absence of Hawai'i-specific information/data; studies conducted outside of the US or written in a language other than English; documents formatted as protocols, brochures, or newsletters; documents with a focus on e-cigarette usage or smoking, policies, perceptions, strategies, histories, theories, or pharmacology; documents whose full-text article was inaccessible; and documents with no mention of substance use.

Figure 1 displays the flow diagram. Three authors screened the documents. If there was a situation where 2 authors could not decide on whether the document should be included in the full-text review, 3 authors met to discuss its contents to come to a decision. For each document included in the full-text review, information such as author/organization, publication year, location, age/age group, race/ethnicity, groups that have a high risk for health problems or are underserved by health services, data source, substance(s), description, and document type, were collected in a spreadsheet. Documents could be excluded after full-text review if they met the exclusion criteria specified during screening. This study did not require institutional review board approval because it did not involve human subjects.

Results

The online database search yielded 688 articles, with 13 reports identified through a manual search. After 268 duplicates were removed, 433 documents remained for title and abstract screening. A total of 409 documents were excluded

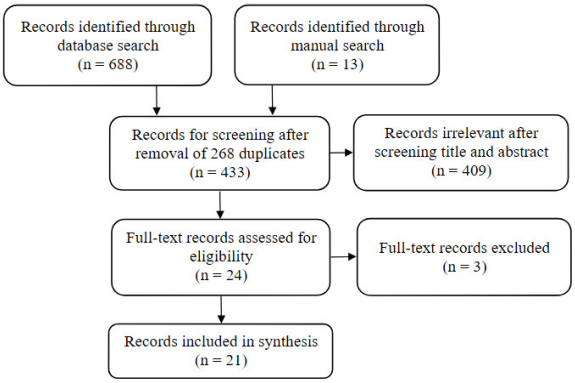

Figure 1. Flow diagram for Scoping Review of Substance Use in Hawai'i Synthesis

from subsequent procedures. A total of 24 documents were assessed for eligibility, and 3 records were excluded. A total of 21 documents were included in the final synthesis. Of these 21 documents, 9 were journal articles and 12 were reports (government, legislative, and organizations).

Characteristics of Reviewed Documents

Characteristics of the 21 reviewed documents are summarized in **Table 1**, which includes information such as author/organization and publication year, age/age group, race/ethnicity, geography, groups that have a high risk for health problems or are underserved by health services, substances, data sources, and brief description/purpose of the document.

Age/Age Group

Approximately 29% of documents included persons of all ages, 81% of documents included specified age groups, and 19% of documents did not report age or reported average age as identified in **Table 1**. About 81% of documents included adolescent groups, such as those aged under 18 or in grades 6-12 and 29% of documents included all ages with specific age categories. The highest age category among the documents with specific age groups was for those 75 and over and mentioned in 3 documents. The data for this age group referred to the usage of a prescription opioid pain reliever in the past year and annual drug poisoning fatality rates involving opioid pain relievers. A single document from the synthesis solely focused on older adults (aged 50 and over).[33]

Race/Ethnicity

There were a variety of race/ethnicity categories reported across documents as seen in **Table 2**. About 67% of documents had a specific category for Native Hawaiian, Hawaiian, or part-Hawaiian, which are categorized as Native Hawaiian, and 19% of documents had a category for Native Hawaiian or Pacific Islander. Approximately 33% of documents had a category for Sāmoan, and 48% of documents had a category for Other Pacific Islanders. Among the documents, 19% included a category for multiple races, 24% included a category for Mixed – Not Hawaiian, and 14% included categories for 2 or more ethnicities with Native Hawaiian and 2 or more ethnicities without Native Hawaiian.

About 29% of documents included a category for Portuguese, 43% of documents included Hispanic/Latino/Spanish, and 71% of documents had a category for White, and 5% of documents had a category for White/Hispanic. The team found that 33% of documents had a category for Black or African American, and 10% of documents had a delineation for American Indian/Alaska Native. Over half of the documents (57%) included a category for Other. Among documents that included specific categories for Asian ethnicities, about 67% included Filipino, 52% included Japanese, 19% included Chinese, 10% included Korean, and 5% included Vietnamese or Indian.

Geographic Level

The geographic levels reported in each document ranged from state, county, and island. Approximately 81% of documents reported data at the state level, 62% at the county level, and 19% at the island level. There were no journal articles or reports that presented information on geographic areas smaller than island, such as communities, towns, and cities.

Groups that have a High Risk for Health Problems or are Underserved by Health Services

Table 3 displays the groups that have a high risk for health problems or are underserved by health services identified among the documents in this synthesis. The search yielded the following groups: Native Hawaiians (86%), adolescents (81%), older adults (38%), sexual and gender minorities (29%), homeless individuals (29%), justice system-involved (24%), pregnant and parenting women (19%), and victims of sexual and intimate partner violence (10%).

Substances

The top 3 reported substances among the documents were alcohol, marijuana, and methamphetamine, as seen in **Table 4**. All but 1 document (95%) included alcohol, 86% of documents included data on marijuana, and 62% of documents included data on methamphetamine. Over half of the documents (57%) reported data on cocaine, 48% included data on heroin, 48% included data on opioids, and 24% of documents included data on fentanyl.

Data Sources

A total of 12 data sources were identified in documents. The Youth Risk Behavior Surveillance System (YRBSS) was found to be the most used data source as it was reported in 33% of documents. The National Survey on Drug Use and Health (NSDUH) was the second most cited data source, followed by the Hawai'i Student Alcohol, Tobacco, and Other Drug Use (ATOD). There were other data sources reported

Table 1. Characteristics of 21 Reviewed Documents Synthesized in a Scoping Review on Substance Use in Hawai'i from 2010-2023

Doc No.	Author/ Organization, Publication Year	Geography	Age/Age Group(s)	Race/Ethnicity[a]	Groups that have a High Risk for Health Problems or are Underserved by Health Services	Substance(s)[b]	Data Source(s)[c]	Description/ Purpose
1	Hawai'i State Department of Health Alcohol and Drug Abuse Division, 2020[22]	State, County, Island	All Ages (Adults aged 18 and over, adolescents aged under 18 (Adolescents Grades 6 through 12), and specific age groups (1-14y, 15-24y, 25-34y, 35-44y, 45-54y, 55-64y, 65-74y, 75+y))	Native Hawaiian, Sāmoan, Other Pacific Islander, Japanese, Filipino, Portuguese, White, Black or African American, Other, Mixed - Not Hawaiian, Hispanic/Latino, 2 or more ethnicities	Native Hawaiians, adolescents, sexual and gender minorities, pregnant and parenting women, homeless, justice system involved, older adults	Methamphetamine, Alcohol, Marijuana, Cocaine, Heroin, Opioids, Stimulants, Other Stimulants, Other Hallucinogens, Other Opiates/Synthetics, Other amphetamines, Benzodiazepines, Over the counter, Fentanyl, Other	NSDUH, TEDS, ATOD	Report: Annual report covering Fiscal Year 2019-20
2	Hawai'i State Department of Health Alcohol and Drug Abuse Division, 2021[8]	State, County, Island	All Ages (Adults aged 18 and over, adolescents aged under 18 (Adolescents Grades 6 through 12), and specific age groups (1-14y, 15-24y, 25-34y, 35-44y, 45-54y, 55-64y, 65-74y, 75+y))	Native Hawaiian, Sāmoan, Other Pacific Islander, Japanese, Filipino, Portuguese, Hispanic/Latino/Spanish, White, Black or African American, Other, Mixed - Not Hawaiian, 2 or more ethnicities with Native Hawaiian, 2 or more ethnicities not Native Hawaiian	Native Hawaiians, adolescents, sexual and gender minorities, homeless, justice system involved, older adults	Methamphetamine, Alcohol, Marijuana, Cocaine/Crack, Heroin, Stimulants, Other Stimulants, Fentanyl, Other, Opioids	NSDUH, ATOD	Report: Annual report covering Fiscal Year 2020-21
3	Hawai'i State Department of Health Alcohol and Drug Abuse Division, 2022[16]	State, County	All Ages (Adults aged 18 and over, adolescents aged under 18 (Adolescents Grades 6 through 12))	Native Hawaiian, Sāmoan, Other Pacific Islander, Japanese, Filipino, Portuguese, Hispanic/Latino/Spanish, White/ Caucasian, Black, Other, Mixed - Not Hawaiian 2 or more ethnicities with Native Hawaiian, 2 or more ethnicities not Native Hawaiian	Native Hawaiians, adolescents, sexual and gender minorities, homeless, justice system involved, older adults	Methamphetamine, Alcohol, Marijuana, Cocaine/Crack, Heroin, Stimulants, Other Stimulants, Fentanyl, Other, Opioids	NSDUH, ATOD	Report: Annual report covering Fiscal Year 2021-22
4	Guo et al, 2022[23]	State	All Ages and specific age groups (0-9, 10-19, 20-29, 30-39, 40-49, and 50+ years)	Native Hawaiian or Pacific Islander, East Asian, Other Asian, White/Hispanic, Other	Native Hawaiians, adolescents, victims of sexual assault or intimate partner violence, older adults	Alcohol, Cannabis, Cocaine/Crack, Opioids, Other	HCUP, Other	Journal article: Relationship between substance use (SU) and sexual violence (SV) in Hawai'i by looking at ED discharges; survivors of SV are more likely to develop SUD, and those reporting SV have a greater proportion of SUDs than the general population
5	Hawai'i State Epidemiological Outcomes Workgroup, 2018a[24]	State, County	Specific Age Categories (Grade 9, 10, 11, 12, and 18 and older)	Native Hawaiian, Other Pacific Islander, Chinese, Japanese, Filipino, Other Asian, White, Black, American Indian/Alaska Native, Other	Native Hawaiians, adolescents, sexual and gender minorities, pregnant women	Alcohol, Marijuana	YRBSS, NSDUH, BRFSS, FARS, PRAMS, UCR, Other	Report: Selected indicators for alcohol use in adults and youth
6	Hawai'i State Epidemiological Outcomes Workgroup, 2018b[11]	State, County	Specific Age Categories (Grade 9, 10, 11, 12, and 18 and older)	Native Hawaiian, Other Pacific Islander, Japanese, Filipino, Other Asian, White, Other	Native Hawaiians, adolescents, sexual and gender minorities, pregnant women	Marijuana, Cocaine, Heroin, Methamphetamine, Opioids, Alcohol, Other, Stimulants, Other Stimulants	YRBSS, NSDUH, BRFSS, FARS, PRAMS, UCR, Other	Report: Selected indicators for drug use in adults and youth

7	Hawai'i HIDTA, 2019[25]	State, County	Not Reported or Average Age Reported	N/A	None	Alcohol, Fentanyl, Heroin, Opioids, Methamphetamine, THC, Cocaine/Crack, Other	Other	Report: Annual reports, compiled into charts and graphs for analysis, are made public to better serve our law enforcement, criminal justice, treatment and prevention disciplines. Methamphetamine produces the highest level of drug-related deaths and overdose deaths in Hawai'i
8	Kim et al, 2017[26]	State, County	All Ages and specific age groups (17 years and younger, 18 to 49 years, and 50 years and older)	Native Hawaiian, Sāmoan, Other Pacific Islander, Japanese (including Okinawan), Filipino, Other Asian, Portuguese, Hispanic, White, Black, Other, Mixed - not Hawaiian	Native Hawaiians, adolescents, pregnant and parenting women, homeless, justice system involved, older adults	Alcohol, Methamphetamine, Marijuana, Other	WITS	Journal article: Alcohol and drug treatment services in Hawai'i for agencies that are funded by ADAD; for the State Fiscal Year 2015
9	Kim & Zhang, 2018[27]	State, County	All Ages and specific age groups (17 years and younger, and 18 years and older)	Native Hawaiian (including part-Hawaiian), Sāmoan, Other Pacific Islander, Japanese (including Okinawan), Filipino, Other Asian, Portuguese, White, Black, Other, Mixed - not Hawaiian	Native Hawaiians, adolescents, pregnant and parenting women	Alcohol, Methamphetamine, Marijuana	WITS	Journal article: Alcohol and drug treatment services in Hawai'i for agencies that are funded by ADAD; for the State Fiscal Years 2015, 2016, and 2017
10	Nigg et al, 2013[28]	State	Specific Age Categories (Grades 9-12)	Native Hawaiian, Japanese, Filipino, White, Other	Native Hawaiians, adolescents	Alcohol	YRBSS	Journal article: Recent trends in Adolescent Alcohol Use in Hawaii: 2005-2011
11	Okamoto et al, 2016[29]	Island	Specific Age Categories (Average age: 11.7 years of age)	Hawaiian/Part-Hawaiian, Chinese, Filipino	Native Hawaiians, adolescents	Alcohol, marijuana	Other	Journal article: Hoʻouna Pono program evaluation; findings may inform future curriculum; culturally relevant drug resistance strategies in alignment with the State of Hawai'i academic standards
12	Okamoto et al, 2019[30]	Island	Specific Age Categories (Age 10, 11, 12, 13 or older)	Hawaiian/Part Hawaiian, Sāmoan, Other Pacific Islander, Chinese, Japanese, Korean, Filipino, Other Asian, Portuguese, Hispanic/Latino/Spanish, White	Native Hawaiians, adolescents	Alcohol, marijuana, methamphetamine, Other	Other	Journal article: Hoʻouna Pono program evaluation; focuses on substance use outcomes across a 2-year time frame associated with the implementation of the curriculum, to complement the findings from the earlier pilot study
13	Onoye et al, 2021[31]	State, County	Specific Age Categories (8th, 10th, and 12th grade)	Native Hawaiian, Other Pacific Islander, Japanese, Filipino, Other Asian, Hispanic/Latino, White, Other, 2 or more ethnicities with Native Hawaiian, 2 or more ethnicities not Native Hawaiian	Native Hawaiians, adolescents, sexual and gender minorities	Alcohol, Marijuana, Opioids, Heroin, Cocaine, Methamphetamine, Other	ATOD	Report: The report provides an assessment of the nature and scope of alcohol, tobacco, and other drug use among participating school students in grades 8, 10, and 12 throughout the state of Hawai'i
14	Pacific Health Analytics Collaborative, 2022[32]	State, County	Specific Age Categories (Ages 12 years or older)	Native Hawaiian, Sāmoan, Other Pacific Islander, Chinese, Japanese, Korean, Vietnamese, Filipino, Indian, Other Asian, Hispanic, White, Black or African American, American/Indian/Alaska Native, Unknown, Multiple Races, Two or More Races, Hispanic	Native Hawaiians, adolescents, sexual and gender minorities, pregnant and parenting women, homeless, justice system involved, older adults	Alcohol, Marijuana, Cocaine, Heroin, Methamphetamine, Opioids, Stimulants, Other Stimulants , Other	YRBSS, NSDUH, BRFSS, FARS, PRAMS, TEDS, WITS, HCUP, UCR, NIBRS, NVSS, Other	Report: Hawai'i State Plan for a Data-Driven System of Care on Substance Use: 2022 Statistical Report
15	Phillips et al, 2022[33]	State	Specific Age Categories (Adults over age 50)	Native Hawaiian or Pacific Islander, Asian, Hispanic/Latino/Spanish, White, Other	Native Hawaiians, Older adults	Cannabis	Other	Journal article: Chronic health conditions, acute health events, and healthcare utilization among adults over age 50 in Hawai'i who use cannabis: A matched cohort study

16	Saka et al, 2021[34]	State, County	Specific Age Categories (Grades 6-12)	Native Hawaiian, Filipino, Other Asian/ Pacific Islander, Hispanic/Latino/Spanish, White, Multiple races	Native Hawaiians, adolescents, sexual and gender minorities	Alcohol, Marijuana, Cocaine, Heroin, Methamphetamine	YRBSS	Journal article: Results of the 2019 Hawai'i State and Counties Youth Risk Behavior Surveys (YRBS) and Cross-Year and National Comparisons
17	Subica et al, 2023[35]	County	Not Reported or Average Age Reported	Native Hawaiian or Pacific Islander	Native Hawaiians, homeless	Cannabis, heroin, methamphetamines, Other	Other	Journal article: Unhoused individuals in Hawai'i are disproportionately indigenous NH/PI, physical and mental health disparities; these disparities may be reduced by accessing community MH services
18	Substance Abuse and Mental Health Services Administration, 2023[36]	State	Not Reported or Average Age Reported	Native Hawaiian or Other Pacific Islander, Asian, Hispanic/Latino/Spanish, Not of Hispanic or Latino Origin, White, Black or African American, American Indian/Alaska Native, Other		Alcohol, Heroin, Cocaine, Other Stimulants, Methamphetamine, Marijuana/Hashish, Other	TEDS	Report: TEDS serves as a repository for treatment data routinely collected by states for the purposes of monitoring their substance use treatment systems. The Substance Abuse and Mental Health Services Administration uses TEDS to enhance their understanding of publicly funded substance use treatment services provided and monitor grantee and program performance
19	Ta et al, 2010[37]	State	Specific Age Categories (Grades 9, 10, 11, and 12)	N/A (study limitation)	Adolescents	Alcohol	YRBSS	Journal article: Review of YRBSS data from 1993 and 2017 to identify trends in alcohol use indicators
20	Wills et al, 2019[38]	County	Not Reported/Average Age Reported (Mean age 12.49 years)	Native Hawaiian or Other Pacific Islander, Asian American (Chinese, Japanese, Korean), Filipino, White, Other (Hispanic, African American)	Native Hawaiians, adolescents	Alcohol, marijuana,	Other	Journal article: Risk and protective factors for Native Hawaiian and Other Pacific Islander youth compared to other youth ethnic groups in Hawaii
21	Zaha et al, 2013[39]	State	Specific Age Categories (Grades 9, 10, 11, and 12)	Native Hawaiian, Asian, White, Other, Multiple Races	Native Hawaiians, adolescents, victims of sexual assault or violence and intimate partner violence	Alcohol, marijuana, cocaine, methamphetamine	YRBSS	Journal article: Relationship between adolescent substance use and intimate partner violence (IPV)

[a]Race/Ethnicity: Native Hawaiian includes Hawaiian, Hawaiian (including part-Hawaiian), and Hawaiian/Part-Hawaiian. Hispanic, Latino, Spanish includes Hispanic, Hispanic/Latino, and Latinx. Black or African American includes Black, Native Hawaiian or Pacific Islander includes Hawaiian/Pacific Islander and Native Hawaiian or Other Pacific Islander. Other includes All Other Races and Other Race. White includes Caucasian and White/Caucasian.

[b]Substance(s): Other includes amphetamine, other amphetamines, antidepressants, barbiturates, combination of drug dependence excluding opioids, combination of opioid drugs with any other drug dependence, hallucinogens, ecstasy, MDMA, prescription pain medication, other prescription drugs, pain relievers, injection drugs, injectables, inhalants, tranquilizers, sedatives, illicit drugs, depressants, steroids without a prescription, steroids, hard drugs other than ice (crack, cocaine, speed, ecstasy, sniffing glue or paint), other opiates/synthetics, phencyclidine, benzodiazepines, prescription opioids, tranquilizers/sedatives, OTC (over-the-counter) drugs, prescription opioids, other prescriptions, miscellaneous, prescription drugs, and pain relievers.

[c]Data Source(s): Youth Risk Behavior Surveillance System (YRBSS), National Survey on Drug Use and Health (NSDUH), Hawai'i Student Alcohol, Tobacco, and Other Drug Use (ATOD), Behavioral Risk Factor Surveillance System (BRFSS), Fatality Analysis Reporting System (FARS), Pregnancy Risk Assessment Monitoring System (PRAMS), Treatment Episode Data Set (TEDS), Uniform Crime Reporting (UCR), Web-based Infrastructure for Treatment Services (WITS), Healthcare Cost and Utilization Project (HCUP), National Incident-Based Reporting System (NIBRS), and the National Vital Statistics System (NVSS), High Intensity Drug Trafficking Areas (HIDTA), Other is considered surveys developed for a specific study, Kaiser Permanente Hawai'i Electronic Health Record System data, Coroners of Hawaii/ Physicians/ Medical Examiner data.

Table 2. Race/Ethnicity Among 21 Reviewed Documents Synthesized in a Scoping Review on Substance Use in Hawai‘i from 2010-2023

		Document Number																				
	N	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
Native Hawaiian[a]	14	X	X	X		X	X		X	X	X	X	X	X	X		X					X
Native Hawaiian or Pacific Islander[d]	4				X											X		X			X	
Sāmoan	7	X	X	X					X	X			X		X							
Other Pacific Islander	10	X	X	X		X	X		X	X			X	X	X							
Asian	2															X						X
Asian American (Chinese, Japanese, Korean)	1																				X	
Chinese	4					X						X	X		X							
Japanese	11	X	X	X		X	X		X	X	X		X	X	X							
Korean	2												X		X							
Vietnamese	1														X							
Filipino	14	X	X	X		X	X		X	X	X	X	X	X	X		X				X	
Indian	1														X							
East Asian	1				X																	
Other Asian	8				X	X	X		X	X			X	X	X							
Other Asian/Pacific Islander	1																X					
Portuguese	6	X	X	X					X	X			X									
Hispanic/Latino/Spanish[b]	9	X	X	X					X				X	X	X	X	X					
White[f]	15	X	X	X		X	X		X	X	X		X	X	X	X	X				X	X
White/Hispanic	1				X																	
Black or African American[c]	7	X	X	X		X			X	X					X							
American Indian/Alaska Native	2					X									X							
Other[e]	12	X	X	X	X	X	X		X	X	X			X		X						X
Other (Hispanic, African American)	1																				X	
Mixed - Not Hawaiian	5	X	X	X					X	X												
Multiple races	4	X													X		X					X
2 or more ethnicities with Native Hawaiian	3		X	X										X								
2 or more ethnicities, not Native Hawaiian	3		X	X										X								

[a]Native Hawaiian includes Hawaiian, Hawaiian (including part-Hawaiian), and Hawaiian/Part-Hawaiian.
[b]Hispanic, Latino, Spanish includes Hispanic, Hispanic/Latino, and Latinx.
[c]Black or African American includes Black.
[d]Native Hawaiian or Pacific Islander includes Hawaian/Pacific Islander and Native Hawaiian or Other Pacific Islander.
[e]Other includes All Other Races and Other Race.
[f]White includes Caucasian and White/Caucasian.

Table 3. Groups that have a High Risk for Health Problems or are Underserved by Health Services Among 21 Reviewed Documents Synthesized in a Scoping Review on Substance Use in Hawai‘i from 2010-2023

Doc No.	Author/Organization, Publication Year	Native Hawaiians (n = 18)	Adolescents (n = 17)	Older adults (n = 8)	Sexual and gender minorities (n = 6)	Homeless (n = 6)	Justice system involved (n = 5)	Pregnant and parenting women (n = 4)	Victims of Sexual Assault or Intimate Partner Violence (n = 2)
1	Hawai‘i State Department of Health Alcohol and Drug Abuse Division, 2020	X	X	X	X	X	X		
2	Hawai‘i State Department of Health Alcohol and Drug Abuse Division, 2021	X	X	X	X	X	X		
3	Hawai‘i State Department of Health Alcohol and Drug Abuse Division, 2022	X	X	X	X	X	X		
4	Guo et al, 2022	X	X	X					X
5	Hawai‘i State Epidemiological Outcomes Workgroup, 2018a	X	X					X	
6	Hawai‘i State Epidemiological Outcomes Workgroup, 2018b	X	X	X				X	
7	Hawai‘i HIDTA, 2019								
8	Kim et al, 2017	X	X	X		X	X	X	
9	Kim & Zhang, 2018	X	X						
10	Nigg et al, 2013	X	X						
11	Okamoto et al, 2016	X	X						
12	Okamoto et al, 2019	X	X						
13	Onoye et al, 2021	X	X		X				
14	Pacific Health Analytics Collaborative, 2022	X	X	X	X	X	X	X	
15	Phillips et al, 2022	X		X					
16	Saka et al, 2021	X	X		X				
17	Subica et al, 2023	X				X			
18	Substance Abuse and Mental Health Services Administration, 2021								
19	Ta et al, 2010		X						
20	Wills et al, 2019	X	X						
21	Zaha et al, 2013	X	X						X

Table 4. Substances Among 21 Reviewed Documents Synthesized in a Scoping Review on Substance Use in Hawai'i from 2010-2023

Doc No.	Author/ Organization, Publication Year	Alcohol (n = 20)	Marijuana, Cannabis, Hashish, THC (n = 18)	Methamphetamine, Crystal Methamphetamine, Ice (n = 13)	Cocaine, Crack (n = 12)	Heroin (n = 10)	Opioids (n = 10)	Fentanyl (n = 5)	Stimulants, Other Stimulants (n = 5)	Other[a] (n = 14)
1	Hawai'i State Department of Health Alcohol and Drug Abuse Division, 2020	X	X	X	X	X	X	X	X	X
2	Hawai'i State Department of Health Alcohol and Drug Abuse Division, 2021	X	X	X	X	X	X	X	X	X
3	Hawai'i State Department of Health Alcohol and Drug Abuse Division, 2022	X	X	X	X	X	X	X	X	X
4	Guo et al, 2022	X	X		X		X			X
5	Hawai'i State Epidemiological Outcomes Workgroup, 2018a	X								
6	Hawai'i State Epidemiological Outcomes Workgroup, 2018b	X	X	X	X	X	X			X
7	Hawai'i HIDTA, 2019	X	X	X	X	X	X	X		X
8	Kim et al, 2017	X	X	X						X
9	Kim & Zhang, 2018	X	X	X	X					X
10	Nigg et al, 2013	X								
11	Okamoto et al, 2016	X	X							
12	Okamoto et al, 2019	X	X	X	X					X
13	Onoye et al, 2021	X	X	X	X	X	X			X
14	Pacific Health Analytics Collaborative, 2022	X	X	X	X	X	X	X	X	X
15	Phillips et al, 2022		X							
16	Saka et al, 2021	X	X	X	X	X				X
17	Subica et al, 2023	X	X	X		X	X			
18	Substance Abuse and Mental Health Services Administration, 2021	X	X	X	X	X	X		X	X
19	Ta et al, 2010	X								
20	Wills et al, 2019	X	X							
21	Zaha et al, 2013	X	X							X

[a] Other column includes amphetamine, other amphetamines, antidepressants, barbiturates, combination of drug dependence excluding opioids, combination of opioid drugs with any other drug dependence, hallucinogens, ecstasy, MDMA (3,4-methylenedioxymethamphetamine), prescription pain medication, other prescription drugs, pain relievers, injection drugs, injectables, inhalants, tranquilizers, sedatives, illicit drugs, depressants, steroids without a prescription, steroids, hard drugs other than ice (crack, cocaine, speed, ecstasy, sniffing glue or paint), other opiates/synthetics, phencyclidine, benzodiazepines, prescription opioids, tranquilizers/sedatives, OTC (over-the-counter) drugs, prescription opioids, other prescriptions, miscellaneous, prescription drugs, and pain relievers.

across the documents such as the Behavioral Risk Factor Surveillance System (BRFSS), Fatality Analysis Reporting System (FARS), Pregnancy Risk Assessment Monitoring System (PRAMS), Treatment Episode Data Set (TEDS), Uniform Crime Reporting (UCR), Web-based Infrastructure for Treatment Services (WITS), Healthcare Cost and Utilization Project (HCUP), National Incident-Based Reporting System (NIBRS), and the National Vital Statistics System (NVSS). Data sources such as surveys created for specific studies, electronic health record systems, and data from the Coroners of Hawai'i, Physicians, and Medical Examiner were classified as "Other."

Discussion

This scoping review has identified gaps in the literature and data collection for Hawai'i that can be addressed through additional research, such as attention to substance use among older adults, disaggregating data on Pacific Islander populations in Hawai'i, reporting substance use data according to geographical areas smaller than island-level to identify needs in specific communities, increasing the collection of data on groups that have a high risk for health problems or are underserved by health services, and focusing on data collection about fentanyl use in Hawai'i.

Based on the findings of this review, there is an apparent dearth of research focused on substance use among the aging population. This review yielded 1 document that focused exclusively on older adults (those who are over 50 in the study). Phillips et al assessed chronic health conditions, acute health conditions, and care utilization using electronic health record data of adults aged 50 and over in Hawai'i who use cannabis.[33] The average age of the sample was 62.8 and about 20.4% of the study's total sample (N = 550) were classified as having comorbid SUDs at baseline which included the usage of alcohol, opioids, sedatives, cocaine, other amphetamines, tobacco, inhalants, or other. Although this article did not primarily focus on SUDs, it provided a sliver of information about SUDs among older adults in Hawai'i. This study examined health care utilization, health outcomes, and acute medical events and reported that the baby boomer generation had relatively high rates of substance use compared to other cohorts.[33] Little is known about substance use among older adults in Hawai'i, and collecting this information may inform prevention, treatment, and recovery services specifically for this population.

The top 5 race/ethnicity from this synthesis were White, Native Hawaiian and Filipino tied for second, followed by Other, Japanese, and Other Pacific Islander, which demonstrates the diversity of individuals in Hawai'i. This result highlights the need for future research to continue disaggregating racial and ethnic groups such as Other Pacific Islanders and the need to add certain groups, such as Micronesians to obtain a clearer understanding about substance use among specific race/ethnicity in the state of Hawai'i. The disaggregation could provide new information about racial or ethnic groups previously overlooked and initiate targeted services for these groups.[40]

Most documents reported information at the state, county, and island levels. This underscores the need for data to be reported at smaller geographic levels such as communities, cities, and towns. The need for community-level data is pressing because communities represent a diverse range of racial/ethnic groups, ages, and cultures. Particularly in Hawai'i, it is necessary to identify community-level geographic data as there may be variation within counties regarding needs, risks, and available resources. The community-level geographic data would allow researchers, social workers, health/public health professionals, and community members to identify specific needs and resources, which would allow these professionals to develop tailored and culturally appropriate substance use prevention, treatment, and recovery services.[41]

This review also highlights the need for an increase in research on groups that have a high risk for health problems or are underserved by health services. The top 3 reported groups in this synthesis were Native Hawaiians, adolescents, and older adults. Although older adults are in the top 3 reported groups, it should be noted that documents in this synthesis often reported some data on older adults but lacked a specific focus on this group. In relation to adolescents, the team came across a Hawai'i State Department of Health legislative report that included 6-month follow-up data on adolescents who were discharged from treatment. There has been a decline in the percentage of adolescents who had not used substances in 30 days prior to their 6-month follow-up over the past 4 consecutive fiscal years, meaning that fewer adolescents were able to remain abstinent during the 6 months after their discharge.[16] It would be beneficial for future substance use research to be longitudinal and report information on relapse or re-admissions. Information about groups that have a high risk for health problems or are underserved by health services such as sexual and gender minorities, pregnant and parenting women, homeless, justice-involved, victims of sexual assault or intimate partner violence were reported in less than 30% of the documents, respectively.

The synthesis revealed that the top 3 reported substances were alcohol, marijuana, and methamphetamine. Methamphetamine is the leading cause of drug-related deaths in Hawai'i.[25] Less than 25% of the documents in this review mentioned fentanyl. Future substance use research and data collection should consider the inclusion of fentanyl, as it has been reported that the usage of fentanyl with methamphetamine is rising in the state.[42] Drug-related deaths due to fentanyl are increasing at a higher pace than methamphetamine deaths. In 2022, deaths due to fentanyl increased by 65%[42] and is the second most dangerous drug threat to Hawai'i.[1]

Among the documents, a variety of data sources were utilized for studies that focused on substance use in Hawai'i. The data source that was utilized the most was the YRBSS, which collects data on substance use behaviors from middle school and high school students in of Hawai'i public schools. The NSDUH was the second most frequently

used data source, followed by the ATOD Survey. The NSDUH collects substance use data from individuals aged 12 years or older in the United States. The ATOD is an assessment of alcohol, tobacco, marijuana, and other drug use among those in grades 8, 10, and 12 in the state of Hawai‘i. Upon looking into the ATOD, the ATOD offers substance use data by community regions (eg, Central O‘ahu, Leeward O‘ahu, Honolulu O‘ahu, and Windward O‘ahu), but these data were not reported in any of the documents in this review.

This scoping review has limitations. Articles or reports that included information on substance use in Hawai‘i but did not include search terms used for the synthesis and were not published between the years 2010-2023 may have been missed. If search terms did not appear in the titles or abstracts of relevant documents, and the year of the document was prior to the year 2010 or after 2023, they did not appear in search results. Search terms related to health, public health, social work, or primary care were not included. Including these search terms may have yielded additional relevant documents. However, the inclusion of broader search terms may yield too many results for conducting this type of scoping review. Documents written in languages other than English were not reviewed, which may have left out data about substance use in Hawai‘i considering the state's diverse populations. This review excluded journal articles that did not have an abstract or were not available in full text, which may have left out journal articles that could have contributed information to this scoping review.

Conclusion

A scoping review was conducted to find available data on substance use in Hawai‘i relating to age/age groups, race/ethnicity, geographies, groups that have a high risk for health problems or are underserved by health services, substances, and data sources. This synthesis revealed that there are a fairly limited number of documents that provide information about substance use in Hawai‘i and accordingly, this study identified gaps in the literature and data collection that can be fulfilled by future research.

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References

1. Hawai'i State Department of Health Alcohol and Drug Abuse Division. *Substance Use State Plan - May 2023*.; 2023. Accessed July 1, 2024. https://health.hawaii.gov/substance-abuse/files/2023/05/Draft-State-Plan-2022-May-2023-Edition.pdf

2. Centers for Disease Control and Prevention. Substance use. National Center for Health Statistics. August 20, 2024. Accessed September 20, 2024. https://www.cdc.gov/nchs/hus/sources-definitions/substance-use.htm

3. MedlinePlus. Substance use disorder. MedlinePlus Medical Encyclopedia. May 4, 2024. Accessed December 4, 2024. https://medlineplus.gov/ency/article/001522.htm

4. National Institute of Mental Health. Substance Use and Co-Occurring Mental Disorders. Mental Health Information. March 2024. Accessed December 4, 2024. https://www.nimh.nih.gov/health/topics/substance-use-and-mental-health

5. Substance Abuse and Mental Health Services Administration Center for Behavioral Health Statistics and Quality. *2021-2022 National Survey on Drug Use and Health: Model-Based Prevalence Estimates (50 States and the District of Columbia)*.; 2024. Accessed September 16, 2024. https://www.samhsa.gov/data/sites/default/files/reports/rpt44484/2022-nsduh-sae-tables-percent-CSVs/2022-nsduh-sae-tables-percent.pdf

6. Health Resources and Services Administration. Behavioral Health Workforce Education and Training (BHWET) Program for Paraprofessionals Notice of Funding Opportunity. January 12, 2021. Accessed June 3, 2024. https://www.google.com/url?sa=t&source=web&rct=j&opi=89978449&url=https://grants.hrsa.gov/2010/Web2External/Interface/Common/EHBDisplayAttachment.aspx%3Fdm_rtc%3D16%26dm_attid%3D9a531006-b2ef-4952-b4a5-f74e89400c7c&ved=2ahUKEwi8wd-U4MCGAxX_GzQIHXqlBLIQFnoECB0QAQ&usg=AOvVaw0z_oaOX6EhhwYuNdcsl59H

7. Office of Primary Care and Rural Health, State of Hawaii Department of Health. Hawaii Health Professional Shortage Areas. 2020. Accessed June 3, 2024. https://health.hawaii.gov/opcrh/files/2020/08/Hawaii-Health-Professional-Shortage-Areas.pdf

8. Hawai'i State Department of Health Alcohol and Drug Abuse Division. *Report to the Thirtieth Legislature, State of Hawaii, 2022*.; 2021. Accessed February 8, 2024. https://health.hawaii.gov/opppd/files/2021/12/2022-ADAD-Leg-Report_.pdf

9. Centers for Medicare & Medicaid Services. Federally-facilitated Marketplace Assister Curriculum: Serving Vulnerable and Underserved Populations. August 29, 2014. Accessed September 5, 2025. https://www.nationaldisabilitynavigator.org/wp-content/uploads/Materials/Nav11+Serving+Vulnerable+and+Underserved+Populations.pdf

10. Davis D. Care of Justice-Involved Populations. *Mo Med*. 2022;119(3):208-212.

11. Hawai'i State Epidemiological Outcomes Workgroup. *2018 Hawai'i State Epidemiologic Profile Selected Youth and Adult Drug Indicators*.; 2018. Accessed February 8, 2024. https://health.hawaii.gov/substance-abuse/files/2019/06/Drug_2018_Hawaii_State_Epidemiologic_Profile.pdf

12. Fish J, Bishop M, Russell S. Developmental differences in sexual orientation and gender identity—related substance use disparities: Findings from population-dased data. *J Adolesc Health*. Published online June 1, 2022. doi:10.1016/j.jadohealth.2020.10.023

13. Kamaka ML, Watkins-Victorino L, Lee A, et al. Addressing Native Hawaiian and Pacific Islander data deficiencies through a community-based collaborative response to the COVID-19 pandemic. *Hawaii J Health Soc Welf*. 2021;80(10). Accessed June 7, 2024. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8538117/pdf/hjhsw8010_S2_0036.pdf

14. Jones N, Marks R, Ramirez R, Rios-Vargas M. Improved race and ethnicity measures reveal U.S. population is much more multiracial. April 9, 2024. Accessed November 26, 2024. https://www.census.gov/library/stories/2021/08/improved-race-ethnicity-measures-reveal-united-states-population-much-more-multiracial.html#:~:text=to%20self%2Didentify.-,Multiracial%20Population,people%2C%20a%20230%25%20change

15. Godinet MT, McGlinn L, Nelson D, Vakalahi HO. Factors contributing to substance misuse treatment completion among Native Hawaiians, Other Pacific Islanders, and Asian Americans. *Subst Use Misuse*. 2020;55(1):133-146. doi:10.1080/10826084.2019.1657896

16. Hawai'i State Department of Health Alcohol and Drug Abuse Division. *Report to the Thirtieth Legislature, State of Hawaii, 2023*.; 2022. Accessed February 9, 2024. https://health.hawaii.gov/opppd/files/2023/01/2023-ADAD-Leg-Report_.pdf

17. Phillips MM, Thompson M, Woodworth F, Massey J, Krause K. *State Epidemiological Profile 2024: Substance Use Trends in Hawai'i State Epidemiological Outcomes Workgroup (SEOW)*. Alcohol and Drug Abuse Division at the Hawai'i State Department of Health; 2025:153. Accessed June 15, 2025. https://health.hawaii.gov/substance-abuse/files/2025/03/Hawaii_Substance_Use_Epi_Profile_2024_FINAL.pdf

18. Subica AM, Guerrero EG, Martin TKK, et al. Native Hawaiian/Pacific Islander alcohol, tobacco and other drug use, mental health and treatment need in the United States U during COVID -19. *Drug Alcohol Re*. 2022;41(7):1653-1663. doi:10.1111/dar.13522

19. Edwards C, Giroux D, Okamoto SK. A Review of the literature on Native Hawaiian youth and drug use: Implications for research and practice. *J Ethn Subst Abuse*. 2010;9(3):153-172. doi:10.1080/15332640.2010.500580

20. McLean KL, Hata J, Hata E, Marshall SM, Okamoto SK. Deep-structure adaptations and culturally grounded prevention interventions for Native Hawaiians: A systematic review of the literature. *J Racial Ethn Health Disparities*. 2021;8(3):570-578. doi:10.1007/s40615-020-00815-6

21. Lauricella M, Valdez JK, Okamoto SK, Helm S, Zaremba C. Culturally grounded prevention for minority youth populations: A systematic review of the literature. *J Prim Prev*. 2016;37(1):11-32. doi:10.1007/s10935-015-0414-3

22. Hawai'i State Department of Health Alcohol and Drug Abuse Division. *Report to the Thirty-First Legislature, State of Hawaii, 2021*.; 2020. Accessed February 9, 2024. https://health.hawaii.gov/opppd/files/2020/12/2021-ADAD-Leg-Report.pdf

23. Guo M, Do B, Wong K, et al. Sexual violence and substance use diagnosed in emergency department discharges in Hawaii, 2005–2014. *Int J Environ Res Public Health*. 2022;19(23):16220. doi:10.3390/ijerph192316220

24. Hawai'i State Epidemiological Outcomes Workgroup. *2018 Hawai'i State Epidemiologic Profile Selected Youth and Adult Alcohol Indicators*.; 2018. Accessed February 8, 2024. https://health.hawaii.gov/substance-abuse/files/2019/06/Alcohol_2018_Hawaii_State_Epidemiologic_Profile.pdf

25. Hawaii High Intensity Drug Trafficking Areas (HIDTA) and Overdose Response Strategy (ORS) Program. *2025 Hawaii HIDTA Annual Threat Assessment Public Health Version*.; 2024.

26. Kim J, McGlone K, Zhang J, Okano S. *Alcohol and Drug Treatment Services in Hawai'i 2015*.; 2017. Accessed February 8, 2024. https://health.hawaii.gov/substance-abuse/files/2018/12/TREATMENT_2017_WEB.pdf

27. Kim J, Zhang J. *Alcohol and Drug Treatment Services Hawai'i, 2015, 2016, 2017*.; 2018. Accessed February 8, 2024. https://health.hawaii.gov/substance-abuse/files/2018/12/TREATMENT_2018_WEB.pdf

28. Nigg CR, Anderson JK, Troumbley R, Alam MM, Keller S. Recent trends in adolescent alcohol use in Hawai'i: 2005-2011. *Hawaii J Med Public Health*. 2013;72(3):92-98.

29. Okamoto SK, Kulis S, Helm S, Lauricella M, Valdez JK. An evaluation of the Ho'ouna Pono curriculum: A pilot study of culturally grounded substance abuse prevention for rural Hawaiian youth. *J Health Care Poor Underserved*. 2016;27(2):815-833. doi:10.1353/hpu.2016.0061

30. Okamoto SK, Kulis SS, Helm S, et al. An efficacy trial of the Ho'ouna Pono drug prevention curriculum: An evaluation of a culturally grounded substance abuse prevention program in rural Hawai'i. *Asian Am J Psychol*. 2019;10(3):239-248. doi:10.1037/aap0000164

31. Onoye J, Miao T, Goebert D, et al. THE 2019-2020 Hawai'i Student Alcohol, Tobacco, and Other Drug Use (ATOD) Survey. 2021. Accessed February 8, 2024. https://health.hawaii.gov/atod-survey/

32. Pacific Health Analytics Collaborative. *Hawai'i State Plan for a Data Driven System of Care on Substance Use: 2022 Statistical Report*.; 2022. Accessed February 8, 2024. https://health.hawaii.gov/substance-abuse/files/2022/08/UH_PHAC_Statistical_Report.pdf

33. Phillips KT, Pedula KL, Choi NG, et al. Chronic health conditions, acute health events, and healthcare utilization among adults over age 50 in Hawai'i who use cannabis: A matched cohort study. *Drug and Alcohol Dependence*. 2022;234:109387. doi:10.1016/j.drugalcdep.2022.109387

34. Saka S, Gerard K, Afaga L. *Results of the 2019 Hawai'i State and Counties Youth Risk Behavior Surveys (YRBS) and CrossYear and National Comparisons*.; 2021. Accessed February 9, 2024. https://hhdw.org/wp-content/uploads/2021/05/2019-YRBS-Report-202105.pdf

35. Subica AM, Sampaga DS, Ortiz-Misiaszek J, Martin TKK, Okamoto SK. The mental health, substance use, physical health, and mental health treatment need of community individuals experiencing homelessness in Hawai'i. *Community Ment Health J*. 2023;59(5):1021-1026. doi:10.1007/s10597-022-01076-9

36. Substance Abuse and Mental Health Services Administration. *Treatment Episode Data Set (TEDS) 2021: Admissions to and Discharges from Substance Use Treatment Services Reported by Single State Agencies*.; 2023. Accessed February 9, 2024. https://www.samhsa.gov/data/sites/default/files/reports/rpt42794/2021-teds-annual-report.pdf

37. Ta VM, Kittinger DS, MPHc LAP, Williams RJ, Eller LN, Nigg CR. Trends in alcohol use among Hawai'i adolescents. *Hawaii Med J*. 2010;69. Accessed February 6, 2024. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3118030/

38. Wills TA, Okamoto SK, Knight R, Pagano I. Parental support, parent-adolescent conflict, and substance use of Native Hawaiian and Other Pacific Islander youth: Ethnic differences in stress-buffering and vulnerability effects. *Asian Am J Psychol*. 2019;10(3):218-226. doi:10.1037/aap0000139

39. Zaha R, Helm S, Baker C, Hayes D. Intimate partner violence and substance use among Hawai'i youth: an analysis of recent data from the Hawai'i Youth Risk Behavior Survey. *Subst Use Misuse*. 2013;48(1-2):11-20. doi:10.3109/10826084.2012.720334

40. Liang PS, Kwon S, Cho I, Trinh-Shevrin C, Yi S. Disaggregating racial and ethnic data: a step toward diversity, equity, and inclusion. *J Clin Gastroenterol Hepatol*. 2023;21(3):567-571. doi:10.1016/j.cgh.2022.12.001

41. Family Health Services Division, Hawai'i Department of Health. *State of Hawai'i Primary Care Needs Assessment Data Book 2016*.; 2016:1-142. Accessed June 7, 2024. https://health.hawaii.gov/opcrh/files/2014/02/pcna2016databook-c.pdf

42. High Intensity Drug Trafficking Areas (HIDTA) Program. *High Intensity Drug Trafficking Areas Program 2024 Report to Congress*.; 2024:1-223. Accessed June 7, 2024. https://www.whitehouse.gov/wp-content/uploads/2024/02/2024-HIDTA-Annual-Report-to-Congress.pdf

Amin S, T. Phillips K, M. Phillips M, Park SL, Pokhrel P. What Do We Know About the Use of Oral Nicotine Pouches? A Scoping Review of Quantitative Studies. *Hawaii J Health Soc Welf*. 2026;85(2):41-50. doi:10.62547/NOLD3340

What Do We Know About the Use of Oral Nicotine Pouches? A Scoping Review of Quantitative Studies

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Abstract

Oral nicotine pouches (ONPs) represent a rapidly emerging nicotine product. Little is known about the current state of quantitative research regarding patterns of ONP use; perceptions and motives related to ONP use; adverse consequences of ONP use; and use of ONPs relative to other tobacco products. To address this gap, this review aimed to summarize the findings of published, population-based research on ONPs. A comprehensive search of electronic databases (PubMed, Scopus, Web of Science, and Google Scholar) was conducted in March 2024 to identify relevant studies on ONP use. A narrative synthesis of the findings was performed. A total of 11 studies were identified including experimental (n=3), cross-sectional (n=7), or intervention-based (n=1). Nine to 10% of adolescents and young adults report ever using ONPs. ONP use is most common among young people who also currently smoke cigarettes or use electronic-cigarettes (e-cigarettes). Marketing messages centered around flavors and social facilitation appear to resonate with young people and experiencing pleasant flavors appears to a key motive for ONP use. Immediate adverse consequences of ONP use appear to be mild. Some evidence suggests that ONPs may be appealing as a reduced-harm alternative for habitual smokers. Evidence regarding ONP use patterns among adolescents and adults appears to be lacking. More longitudinal studies are needed to better understand the antecedents and consequences of ONP use. In addition, more studies are needed to compare the health effects of ONP vs. e-cigarettes and to better understand the dynamics of exclusive and dual use of e-cigarettes and ONP.

INTRODUCTION

Oral nicotine pouches (ONPs) are small, tobacco-free pouches containing pharmaceutical-grade nicotine and plant fibers.[1,2] Placed between the lip and gum, they release nicotine absorbed through the oral mucosa,[2] offering a smokeless nicotine experience and a potentially reduced-risk alternative for adult smokers unable or unwilling to quit.[3] Major tobacco companies have heavily invested in ONPs, marketing various brands such as Lyft, Velo, Zyn, Dryft, Nordic Spirit, and On! across the United Kingdom (UK), United States (US), Europe, and Sweden.[4-9] Regardless of whether they contain tobacco-derived or synthetic nicotine, ONPs are classified as tobacco products in the US.[10] Over the years, there has been a considerable increase in ONP consumption in the US,[11] with retail sales increasing from 126.06 to 808.14 million units between August-December 2019 and January-March 2022.[12] As of now, there are no published studies or reports specifically examining ONP use within Hawai'i. However, youth nicotine and electronic-cigarette (e-cigarette) use remain significant concerns in the state. Approximately 18% of Hawai'i middle school students currently use e-cigarette products, the highest rate reported among all states that collect comparable middle school data.[13] Given this high rate of youth e-cigarette use, it is critical to examine how emerging ONPs might impact nicotine use patterns among young people in Hawai'i.

Many questions remain about the public health impact of ONPs, including unclear patterns of use, user attitudes, relative appeal compared to other tobacco or nicotine products, and potential harm-reduction benefits.[14,15] Concerns exist that discreet use and flavors may attract youth or encourage dual use, undermining benefits associated with the products.[16-18] Although literature on ONPs is growing,[19,20] few reviews have synthesized population-based empirical evidence. This scoping review summarizes studies examining ONP user populations, brands, use patterns, beliefs, harm perceptions, motives, negative effects, appeal versus traditional tobacco, and harm-reduction potential compared to other nicotine products.

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METHODS

The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) Statement 2020 was used in this review.[21] A literature search was conducted in March 2024 using the electronic databases PubMed, Scopus, the Web of Science. Google Scholar was used to search and identify the grey literature. Search terms on ONP included: oral nicotine pouch, nicotine pouches, nicotine-containing pouches, non-tobacco nicotine, tobacco-free nicotine. Boolean operators (AND, OR) were used to combine these terms during searches.

Studies were included if they met the following criteria: (1) published in the English language; (2) reported data on prevalence, usage patterns, and antecedents and consequences of ONP use; and (3) conducted in any geographical region with no age restriction. Studies were excluded if they: (1) were not available in full-text; (2) did not report original research findings (example: editorials, commentaries, reviews were excluded); (3) focused solely on non-epidemiological aspects (eg, chemical composition, manufacturing process) of ONPs; (4) reported only qualitative findings (example: findings based on interviews or focus groups); and (5) did not provide data specifically on ONP use, but rather on other forms of tobacco or nicotine products. The qualitative studies were excluded because of the differences in data analysis processes between qualitative and quantitative studies, making it challenging to draw coherent conclusions.[22] No restrictions were placed on study design to ensure inclusion of various types of studies, including experimental and observational studies.

Two independent reviewers screened titles, abstracts, and full texts per set inclusion and exclusion criteria, resolving disagreements by discussion or input from a third reviewer. Reference lists were hand-searched to ensure comprehensiveness. A final search update before submission found no new studies meeting the inclusion criteria. This process ensured relevant, up-to-date literature was comprehensively included.

Relevant data from included studies were extracted using a standardized form. This included information on study characteristics [eg, author(s), publication year, study design], participant characteristics (eg, age, gender, geographic location), prevalence estimates, patterns of use, factors associated with use, and key findings related to ONP use. A narrative synthesis of the findings from included studies was conducted to address the present research objectives.

RESULTS

An initial search identified 90 articles. After removing duplicates (7 articles) and other non-qualifying publications [eg, those with no full-text (5 articles) or non-epidemiological (3 articles), qualitative studies (3 articles)], 72 articles remained. An additional 46 citations were manually removed after reviewing the abstracts and titles. Full-text review of 26 articles yielded 11 eligible studies[23-33] including 3 experimental studies,[23-25] 1 prospective longitudinal study,[26] and 7 cross-sectional studies,[27-33] with 3 of the cross-sectional studies being part of a longitudinal study.[30,32,33]

Sample characteristics

Across studies (N = 20 895), the gender split was balanced; 47.4% male (n = 10 014) and 52.6% female (n = 10 881). Four studies involved 9490 adolescents (45.4%).[28,30,32,33] Two studies analyzed age-related ONP use,[28,30] 3 studies examined susceptibility (ie, likelihood of using, openness or willingness to use, ONP in the future),[28,32,33] and 2 studies assessed marketing impacts (text or images of product packaging or advertising) on ONP use.[28,33]

Race and ethnicity data were not consistently reported across all studies. Race data were available for 16 676 participants (79.8% of 20 895). Among participants with reported race, 56.1% were White (n = 9347), 10.0% Asian (n = 1665), 8.4% Black/African American (n = 1408), and 25.5% were categorized as other races (n = 4256). Among participants with reported ethnicity (n = 10 438), 30.6% (n = 3199) identified as Hispanic or Latino, including Hispanic other (21.1%, n = 2201), Hispanic White (4.7%, n = 491), and Hispanic multiracial (6.1%, n = 634). Among participants with reported ethnicity who identified as non-Hispanic, 54.5% (n = 5693) were non-Hispanic White, 12.7% (n = 1327) were non-Hispanic Asian, and 2.1% (n = 219) were categorized as non-Hispanic other.

Five studies reported participants' education levels,[23,24,31,33] with 1 including parental education.[33] Educational level data were available for 4644 participants (22.2% of the total sample, N = 20 895). Among those with reported education, 7.2% (n = 334) had less than a high school education, 32.1% (n = 1491) were high school graduates, 1.9% (n = 86) were currently in college, 31.3% (n = 1453) had some college education, 3.6% (n = 169) held an associate's degree, 15.8% (n = 733) held a bachelor's degree, and 8.1% (n = 378) had a master's degree or higher.

Across studies, there were approximately 2977 (14.2%) ever and 2102 (10.1%) current ONP users. The estimated total number of cigarette smokers across studies was 3038 (14.5%), and the total number of other tobacco users (including e-cigarette, nicotine lozenges, tablets, gums, toothpicks) was approximately 7203 (34.5%). Only 2 studies assessed outcomes based on plasma nicotine concentration, while the majority relied on self-reported outcomes to determine tobacco or nicotine product use.[23,25]

Study locations

All studies were conducted in the US except for 1, which was conducted in Sweden.[25] Six studies recruited participants nationwide from the US,[26-31] while 2 studies[23,24] were conducted in Ohio and 2 others in California.[32,33]

Study time frames

Eight studies[23,24,27-32] were published in 2023 and 3 studies[25,26,33] were published in 2022. The data collection periods for the studies varied, spanning from July 2020 to September 2022.[23,25]

Table 1. Summary of Included Quantitative Studies on Oral Nicotine Pouches (ONP)

Author	Study design (N)	Study aim	Major findings
Keller-Hamilton et al[23] 2023	Experimental (30)	Evaluated product appeal and nicotine delivery with varying ONP concentrations.	• Greater plasma nicotine delivery at 30 minutes observed with 6-mg nicotine concentration ONPs among adult smokers • None of the ONPs (6-mg vs 3-mg) provided as strong relief of craving symptoms at 5 minutes compared to cigarettes
Mays et al[24] 2023	Experimental (301)	Assessed the effects of ONP packaging image on smokers' and non-smokers' perceptions.	• All tobacco user groups perceived ONPs as significantly less harmful and less addictive than non-users • Packages displaying 6-mg nicotine concentration resulted in significantly lower perceived harm and addictiveness compared to packages without nicotine concentration display
Chapman et al[25] 2022	Experimental (24)	Evaluated two nicotine pouch variants' harm reduction potential compared to cigarettes.	• Cigarette had highest peak in plasma nicotine levels than ONPs [Cmax: 11.6 ng/ml (cigs) vs 5.1 ng/ml (Zone X #2) and 7.8 ng/ml (Zone X #3)] • ONPs reached peak levels much later [26 min for Zone X #2 (5.8 mg nicotine/pouch); 22 min for Zone X #3 (10.1 mg nicotine/ pouch)) compared to cigarette (8.5 min)] • ONPs were able to effectively reduce urge to smoke following use and maintain a similar urge to smoke profile to cigarette in the 4 h following product use.
Campbell et al[26] 2022	Prospective longitudinal (100)	Analyzed usage patterns of ONPs and combustible cigarettes.	• Proportion of ONP users decreased over time [week 1: 0% to week 6: 16%]. • Among ONP users, average pouches per day increased. • Users of 1-6 pouches per day decreased between week 1 (72%) and week 6 (41%) • Users of 7+ pouches per day increased between week 1 (27%) and week 6 (41%) • Combustible cigarette use decreased over the study period for 82% (79/97) of the study participants. • At week 6, approximately ◦ 16% (15/97) of participants reduced their CPD by more than 50% ◦ 18% (17/97) reduced their CPD between 30% and 50% ◦ 49% 47/97, 49%) reduced their CPD between 1% and 30%.
Dowd et al[27] 2023	Cross-sectional (118)	Identified the use-characteristics, motives, dependence, and adverse effect of ONP.	• Reasons for ONP use: flavor (53%), nicotine level (25%), brand (22%). • 68% (80/118) of current tobacco cigarette users used ONPs where smoking not allowed. • 70% (83/118) of current e-cig users used ONPs where e-cigs not allowed. • Sample showed significant dependence levels [FTND-ST=7, SD=2].
Gaiha et al[28] 2023	Cross-sectional (6131)	Examined ONP use patterns, marketing impact on preferences.	• Use pattern by age (Years) • Ever-users: <21 years: 816 (22.3%); 21–40 years: 1209 (48.9%) • Past-30-day users: <21 years: 458 (12.5%); 21–40 years: 733 (29.7%) • Past-7-day users: <21 years: 383 (10.5%); 21–40 years: 615 (24.9%) • Marketing influence • Participants < 21 years were more likely to buy Zyn if they perceived marketing to contain messages about good tasting flavors (AOR 1.4, 95% CI 1.0–1.8; *P*=.009) and helping to feel comfortable in social situations (AOR 1.3, 95% CI 1.0–1.8; *P*=.033).

			• Participants < 21 years were more likely to buy Lucy [#] if they felt it could be used anywhere (AOR 1.5, 95% CI 1.0–2.3; *P*=.026)

Morean et al[29] 2023	Cross-sectional (609)	Examined young adults' awareness, use, and risk perceptions of ONPs.	• 41.5% (253/609) participants had heard of ONPs
			• 10.3% (63/609) had used ONPs
			• 23.5% (143/609) susceptible to future use
			• Perceptions Total Score (Mean ± SD)
			  ◦ Not Susceptible (n = 403): 2.5 ± 0.73
			  ◦ Susceptible (n = 143): 3.0 ± 0.62
			  ◦ Ever Use: 3.0 ± 0.75
			• Male young adults were more susceptible to use ONPs [AOR = 1.5, 95% CI 1.0, 2.2]
			• Male young adults had more favorable perceptions of ONPs [AOR = 2.5, 95% CI 1.8, 3.5]

Patel et al[30] 2023	Cross-sectional[a] (7832)	Examined the patterns of ONP use among young adults	• ONP users (current: 62.0%, ever: 50.6%) were 21+ years compared to non-ONP users (37.3%). • ONP users (current: 59.0%, ever: 63.8%) were mostly male, compared to non-ONP users (49.4%). • Current ONPs users were more often Hispanic (36.3%) and NH-Black (18.4%) compared to ever ONPs users (16.8% and 8.1%) and non-ONPs users (22.4% and 14.7%). • Ever ONPs users were more often NH-white (63.5%) compared to current ONPs users (37.78%) and non- ONPs users (50.6%). • ONP users (current: 80.9%, ever: 76.1%) ever smoked cigarettes compared to non-ONPs users (31.4%). • ONP users (current: 72.9%, ever: 33.1%) currently smoked cigarettes than non-ONPs users (15.4%). • ONP users (current: 51.0%, ever: 81.8%) ever used e-cigs compared to non-ONPs users (33.9.%). • ONP users (current: 49.4%, ever: 56.0%) currently used e-cigs compared to non-ONPs users (21.3%).
Sparrock et al[31] 2023	Cross-sectional (1582)	Investigated ONP awareness, use, susceptibility, and beliefs	• 46.6% (738/1583) were aware of ONPs • 23.2% (368/1583) believed that ONP is less harmful than smokeless tobacco • 16.1% (255/1583) believed that ONP is less addictive than smokeless tobacco • 18.9% (299/ 1583) believed that using ONP occasionally is not harmful • 14.6% (232/1583) believed that using ONP occasionally is not addictive • 33.2% (525/1583) believed that ONP is socially acceptable • 19.1% (302/1583) believed that ONP is for someone like themselves • Those who agree that ONP is less harmful than smokeless tobacco had higher odds of being susceptible than never ONP users (AOR = 4.8, 95% CI = 2.4 - 9.7), ever-not-current ONP users (AOR = 2.9, 95% CI = 1.3 - 6.3), and current ONP users (AOR = 10.6, 95% CI = 3.4 - 32.7).
Vogel et al[32] 2023	Cross-sectional (1167)	Compared ONP susceptibility with other nicotine products	• ONP use susceptibility rate of 8.7% • Lower vs higher SES adolescents: ↑ susceptible to ONP (OR=1.7; 95% CI = 1.0 – 3.1) • Sexual minority vs Heterosexual adolescents: ↑ susceptible to ONP (OR=1.8; 95% CI = 1.0 – 3.4)
Vogel et al[33] 2022	Cross-sectional[a] (3129)	Assessed willingness, harm perceptions, and hypothetical pouch (viewed text/imagery) product preferences in young adult non-users.	• 82.4% (963/1167) had never heard of ONP before • 19.1% (223/1167) of the overall sample were willing to use ONPs • 0.7% (8/1167) said they would definitely use them. • 49.1% (573/1167) were unsure if ONPs were more or less harmful than cigarettes • 19.7% (230/1167) viewed ONPs as less harmful than cigarette

	• 20.9% (244/1167) viewed ONP as harmful as cigarettes • 10.3% (120/1167) considered ONP more harmful than cigarettes • 52.4% (611/1167) were unsure how the harm of ONP compared to e-cigs • 13.6% (159/1167) viewed them as less harmful than e-cigs • 12.2% (142/1167) as more harmful (142) than e-cigs • 21.7% (253/1167) viewed them as harmful as e-cigs • 57.3% (668/1167) were uncertain about choosing ONP over cigarettes (668); 23.2% (271/1167) reported lower likelihood than cigarettes (271); 10.4% (122/1167) equal likelihood, and 9.1% (106/1167) greater likelihood • 29.7% (346/1167) reported lower likelihood of using ONP compared to e-cigs. • Among tobacco users, willingness to use ONP was higher compared to non-tobacco users (OR= 2.2; 95% CI = 1.1 – 4.6)

[a]Part of longitudinal study; #Lucy: Another brand of oral nicotine pouch

Abbreviations: AOR=Adjusted Odds Ratio; Cmax=Maximum Observed Plasma Concentration; CPD=cigarettes per day; FTND-ST=Fagerström Test for Nicotine Dependence-Smokeless Tobacco; NH=Non-Hispanic; SD=standard deviation; SES= socioeconomic status

Key findings

ONP brands

Among the ONP brands mentioned across studies, Zyn was notably the most common brand, cited across 7 studies.[23, 24,27-30,33] On![29-31,33] and Velo[26,30,31,33] were the next most commonly mentioned brands, each appearing in 4 studies. Lucy[28] and Dryft,[33] though less prominent, were each mentioned in 1 study, respectively.

Patterns of use

Four studies provided insights into the usage patterns and susceptibility to use among adolescents.[28,30,32,33] Across these studies, 9.7% (578 of 5945) of the participants reported having ever used ONPs; 6.8% (418 of 6131) reported ONP use in the past 30 days; 8.6% (273 of 3139) reported intentions to use ONP and 7.8% (333 of 4269) reported willingness to use. Vogel et al (2023) found that 5.2% (162 of 3139) of the participants expressed willingness to try ONPs if offered by a friend.[32] Among young adults, Morean et al found that approximately 10% had ever used ONPs and 23.5% (144 of 609) participants were susceptible to future use.[29] In their prospective longitudinal study among adult cigarette smokers, Campbell et al found a decrease in the proportion of participants using ONPs over the study period.[26] However, the average number of pouches used per day increased among those who continued ONP use.

Beliefs and attitudes concerning ONPs

Three studies highlighted varying levels of awareness and perceptions regarding ONPs among participants, including youths and young adults.[29,31,33] In general, the studies found that adults' and young adults' perceptions of harms associated with ONPs were mixed.[29,31] In their young adult sample, Vogel et al (2022) found that 49% of participants were uncertain whether ONPs were less harmful than cigarettes and 52% were uncertain whether ONPs were less harmful than e-cigarettes.[33] Individuals who were more susceptible to using ONPs were more likely to report lower perceived harms associated with ONPs. They did not find an association between ONP harm perceptions and being a current cigarette smoker or an e-cigarette user.[33]

Dowd et al found that availability of ONPs in diverse, desirable flavors was the most common motive for ONP use.[27] Other important motives included nicotine consumption and brand-attraction.[27] Further, among cigarette smokers and e-cigarette users, Dowd et al found that being able to use ONPs where cigarette smoking or vaping was not allowed was a strong motive for ONP use.[27]

Two studies found that product packaging and marketing may influence ONP-related beliefs and perceptions.[24, 28] Mays et al found that adult tobacco users and non-users who viewed ONP packaging displaying a 6mg nicotine concentration—compared to 3mg or no nicotine information—perceived the ONP as less harmful and less addictive.[4] Gaiha et al found that ever-users of Zyn, compared to never-users, were more likely to "like" Zyn and expressed increased likelihood of buying Zyn after being exposed to marketing contents.[28] Participants under 21 were more likely to consider buying Zyn if the marketing messages emphasized that Zyn provided access to pleasant flavors, helped them feel comfortable in social situations, and was produced by a cigarette company.[28] Vogel et al (2022) found that dual users of combustible and non-combustible tobacco were significantly more willing to use ONPs after being exposed to Facebook content containing ONP marketing.[33]

Negative consequences of ONP use

Two studies examined adverse effects of ONP use.[25,27] Dowd et al assessed dependence on ONP among current (past-30-day) users.[27] They found that the average dependence, as measured by the Fagerström Test for Nicotine Dependence-Smokeless Tobacco-FTND-ST, in the sample was in the range of "significant dependence" [Mean (SD) = 7 (2)].[27] Further Dowd et al reported various adverse effects, including mouth lesions (48%), followed by upset stomach (39%), sore mouth (37%), sore throat (21%), nausea (9%), "strange jaw sensation" (1%), and none (3%).[27] Overall, 97% of the sample endorsed at least 1 ONP-related adverse effect. Chapman et al noted mild adverse effects such as headaches or hiccups.[25] No clinically significant changes were detected in various health parameters, including clinical chemistry, hematology, urinalysis, blood pressure, pulse rate, and ECG parameters.[25] Chapman et al noted prevalence of various usage behaviors that may potentially increase the chances of experiencing adverse events, such as sucking the pouch, moistening the pouch with water before use, and using 2 pouches simultaneously.[25] Some participants noted the need to spit out the saliva while using ONPs.[26] Overall, however, no adverse events reported by participants were severe enough to require medical evaluation.[26]

ONPs use and other tobacco products

Two studies found that among adolescents, ever or current users of cigarettes and/or e-cigarette were more likely to have used ONP.[30,33] Patel et al found that among current ONP using adolescents, approximately 73% and 49% were likely to be current cigarette and e-cigarette users, respectively.[30] Morean et al found that among young adults, e-cigarette users were more susceptible to using ONPs.[29] In their sample of predominantly non-tobacco-using adolescents (78.5% of the sample did not currently use any tobacco products),[29] Vogel et al (2022) found that when asked about preferences for ONPs over combustible cigarettes, 23% reported lower likelihood of using ONP over cigarettes, 10% reported equal likelihood of using cigarettes and ONPs, and 9% reported greater likelihood of using ONPs than cigarettes.[33] The pattern was similar when ONPs were compared to e-cigarettes, with approximately 30% reporting a lower likelihood of using ONPs.

Two studies examined nicotine delivery and craving relief effects of ONPs compared with cigarette smoking among adult cigarette smokers.[23,25] Nicotine delivery was assessed in terms of plasma nicotine concentration at spe-

cific timepoints after ONP or cigarette use among smokers who had abstained from smoking prior to the experiment.[23,25] Each study compared a lower-nicotine-concentration ONP, a higher-nicotine-concentration ONP, and cigarette smoking. Both studies found that at a specific time-point post-administration, cigarette smoking resulted in higher plasma nicotine concentration and tended to show higher levels of craving relief, although the 5.8mg and 10.1mg nicotine pouches used by Chapman et al appeared to relieve craving at rates comparable to cigarette smoking.[23,25]

Campbell et al provided ONPs to adult daily cigarette smokers and followed them over a 6-week period.[26] Average per day cigarette smoking decreased for 82% of study participants. At the end of the 6-week period, cigarette consumption was reduced by more than half for 16% of the participants.[26]

DISCUSSION

This review synthesized current population-based, quantitative research on ONPs, examining studied populations, product types, use patterns, attitudes, motives, adverse effects, appeal, and harm reduction potential. Eleven studies (3 experimental,[23-25] 1 longitudinal,[26] 7 cross-sectional[27-33]) revealed key insights and identified gaps needing further investigation.

The majority of the studies (10 out of 11) were conducted in the US, where Zyn was the most commonly assessed ONP, reflecting its dominant market share.[13] Research on other brands remains limited but is expected to grow as more brands emerge.

Most studies examining ONP perceptions, susceptibility, and use patterns focused on adolescents and young adults.[28-30,32,33] This aligns with ONPs being the second most used nicotine product among US adolescents.[16] Ever-use prevalence in these groups ranges from 9%–10%, highlighting the need for continued monitoring.

The current findings suggest that marketing messages focused on flavors and social enhancement may be particularly effective among young people in terms of persuading them to use ONPs.[28] Experiencing a range of pleasant flavors appears to be a key motive guiding ONP use.[27] Further, how ONP products are packaged appear to influence individuals' perceptions of harms associated with ONP products.[24] Although current evidence regarding harm perceptions in the general population regarding ONP use appears to be mixed,[33] strategic marketing and packaging on the part of the manufacturers may successfully promote lower ONP harm perceptions, especially among regular tobacco users.[24]

Consistent with prior research showing that users of 1 tobacco product often use others,[34] current cigarette smokers and e-cigarette users are more likely to use ONPs.[29,30] Two studies compared nicotine delivery and craving relief of ONPs and cigarettes.[23,25] Of the 2 studies, 1 using ONPs with higher nicotine concentrations found that their nicotine delivery and craving-relief effects were comparable to cigarettes,[25] while the other found that Zyn did not deliver nicotine or relieve cravings to the same extent.[23] Campbell et al suggest ONPs may help reduce smoking.[26] However, whether ONPs promote complete switching or dual use remains unclear and warrants further research.

None of the reviewed studies compared ONPs and e-cigarettes or other smokeless tobacco products on product appeal, including nicotine delivery or craving-relief effects. The comparative health effects and public health impact of dual or substitutive use remain unclear. Given perceptions of both as reduced-harm products, dual use may increase. In Hawai'i, where youth e-cigarette use is among the highest in the nation, understanding ONP use patterns is especially important. More research, especially longitudinal studies, is needed to examine exclusive and dual use patterns, initiation, maintenance, and consequences over time.

The studies reviewed predominantly included non-Hispanic White samples, highlighting the need to understand how race and ethnicity influence ONP use and its impact on other tobacco products to develop effective, equity-focused health communication. Additionally, examining ONP perceptions among vulnerable groups, such as those with mental health or substance use disorders, is crucial. Although adverse effects of ONPs are generally mild and manageable,[27] ongoing monitoring in larger, real-world studies is necessary. Further research should investigate specific health impacts such as cardiovascular effects, oral health, and fetal development and assess the frequency, severity, and long-term public health consequences of ONP use to guide appropriate regulations.

The findings of this review have important implications for tobacco control efforts in Hawai'i. Given the state's diverse population and unique cultural context, understanding how ONP use and perceptions may vary across different ethnic groups is crucial. The review's finding that Asian or Black young adults were among current ONP users highlights the need for culturally tailored prevention and education efforts in multiethnic communities in Hawai'i. No studies reported findings specifically for Native Hawaiian or Other Pacific Islander (NHOPI) participants, highlighting a critical gap in understanding ONP use in this population. Research is particularly needed in Hawai'i to assess NHOPI youth and young adults' ONP use patterns, motivations, and potential health impacts, given their unique cultural and social context. Additionally, the appeal of flavors as a primary motivation for ONP use is particularly relevant in Hawai'i, where the state legislature has considered flavor bans for e-cigarettes.[35,36] Policymakers may need to consider whether similar restrictions should apply to ONPs. Furthermore, as Hawai'i continues to grapple with youth e-cigarette use, the potential for ONPs to become another attractive nicotine product for young people warrants close monitoring. The state's robust tobacco surveillance systems should be adapted to track ONP use, especially among youth and young adults. Lastly, commitment by the state of Hawai'i to becoming smoke-free by 2030 necessitates a careful evaluation of how ONPs might impact smoking cessation efforts and overall nicotine use in the state.[37] As ONPs enter the Hawai'i market, tobacco control stake-

holders must balance potential harm reduction benefits for adult smokers with the risk of youth initiation and dual use among current tobacco users.

This scoping review has limitations such as strict inclusion criteria might have excluded relevant studies, most studies were cross-sectional limiting causal inferences, and self-reported outcomes might introduce bias. Despite these limitations, rigorous screening and diverse study designs provide a comprehensive overview of existing literature on ONP use.

CONCLUSIONS

This study summarized current evidence on ONP use, showing that patterns of use, harm perceptions, and motives, especially the appeal of flavors, are mostly studied among youths and young adults, with use common among current smokers and vapers. Findings suggest ONPs may appeal as a reduced-harm option for cigarette smokers, but more longitudinal research is needed to clarify usage trajectories and dual-use patterns with e-cigarettes.

Conflicts of interest

None.

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References

1. Robichaud MO, Seidenberg AB, Byron MJ. Tobacco companies introduce "tobacco-free" nicotine pouches. *Tob Control*. 2020;29(1):e145-e146. doi:10.1136/tobaccocontrol-2019-055321

2. Azzopardi D, Liu C, Murphy J. Chemical characterization of tobacco-free "modern" oral nicotine pouches and their position on the toxicant and risk continuums. *Drug Chem Toxicol*. 2022;45(5):2246-2254. doi:10.1080/01480545.2021.1925691

3. Patwardhan S, Fagerström K. The new nicotine pouch category: a tobacco harm reduction tool? *Nicotine Tob Res*. 2022;24(4):623-625. doi:10.1093/ntr/ntab198

4. Swedish Match. *Q1 2019 Interim Report*. Accessed April 17, 2025. https://www.swedishmatch.com/globalassets/reports/interim-reports/2019_q1_swedish-match_en.pdf

5. British American Tobacco United Kingdom Limited. LYFT. Accessed April 17, 2025. https://www.lyft.co.uk

6. Altria. Altria enters growing oral nicotine products category with on! pouch product. Accessed April 17, 2025. http://investor.altria.com/file/Index?KeyFile=398170376

7. RJ Reynolds Vapor Company. VELO. Accessed April 17, 2025. https://www.velo.com/index.html

8. Kretek International Inc. Dryft. Accessed April 17, 2025. https://getdryft.com

9. Japan Tobacco International. JTI Sweden and Nordic Snus. Accessed April 17, 2025. https://www.jti.com/europe/sweden

10. Food and Drug Administration, HHS. Deeming tobacco products to be subject to the federal food, drug, and cosmetic act, as amended by the family smoking prevention and tobacco control act; restrictions on the sale and distribution of tobacco products and required warning statements for tobacco products. Final rule. *Fed Regist*. 2016;81(90):28973-29106.

11. Marynak KL, Wang X, Borowiecki M, et al. Nicotine pouch unit sales in the US, 2016-2020. *JAMA*. 2021;326(6):566-568. doi:10.1001/jama.2021.10366

12. Majmundar A, Okitondo C, Xue A, et al. Nicotine pouch sales trends in the US by volume and nicotine concentration levels from 2019 to 2022. *JAMA Netw Open*. 2022;5(11):e2242235. doi:10.1001/jamanetworkopen.2022.42235

13. Center for Disease Control and Prevention. 1995-2019 Middle School Youth Risk Behavior Survey Data. U.S. Department of Health & Human Services. Accessed July 16, 2025. http://nccd.cdc.gov/youthonline/

14. Robichaud MO, Seidenberg AB, Byron MJ. Tobacco companies introduce "tobacco-free" nicotine pouches. *Tob Control*. 2020;29(1):e145-e146. doi:10.1136/tobaccocontrol-2019-055321

15. Benowitz NL. Nicotine addiction. *N Engl J Med*. 2010;362(24):2295-2303. doi:10.1056/NEJMra0809890

16. Harlow AF, Vogel EA, Tackett AP, et al. Adolescent use of flavored non-tobacco oral nicotine products. *Pediatrics*. 2022;150(3):e2022056586. doi:10.1542/peds.2022-056586

17. Havermans A, Pennings JLA, Hegger I, et al. Awareness, use and perceptions of cigarillos, heated tobacco products and nicotine pouches: A survey among Dutch adolescents and adults. *Drug Alcohol Depend*. 2021;229(Pt B):109136. doi:10.1016/j.drugalcdep.2021.109136

18. Deery C. What are the health impacts of nicotine and tobacco products on young people? *Evid Based Dent*. 2023;24(4):159-160. doi:10.1038/s41432-023-00945-w

19. Han DH, Cho J, Harlow AF, et al. Young adults' beliefs about modern oral nicotine products: Implications for uptake in nonvapers, dual use with e-cigarettes, and use to reduce/quit vaping. *Exp Clin Psychopharmacol*. 2023;31(2):455-463. doi:10.1037/pha0000595

20. Cornacchione Ross J, Kowitt SD, Rubenstein D, et al. Prevalence and correlates of flavored novel oral nicotine product use among a national sample of youth. *Addict Behav*. 2024;152:107982. doi:10.1016/j.addbeh.2024.107982

21. Page MJ, McKenzie JE, Bossuyt PM, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. *BMJ*. 2021;372:n71. doi:10.1136/bmj.n71

22. Barnett-Page E, Thomas J. Methods for the synthesis of qualitative research: a critical review. *BMC Med Res Methodol*. 2009;9:59. doi:10.1186/1471-2288-9-59

23. Keller-Hamilton B, Alalwan MA, Curran H, et al. Evaluating the effects of nicotine concentration on the appeal and nicotine delivery of oral nicotine pouches among rural and Appalachian adults who smoke cigarettes: A randomized cross-over study. *Addiction*. 2024;119(3):464-475. doi:10.1111/add.16355

24. Mays D, Long L, Alalwan MA, et al. The effects of oral nicotine pouch packaging features on adult tobacco users' and non-users' product perceptions. *Int J Environ Res Public Health*. 2023;20(4):3383. doi:10.3390/ijerph20043383

25. Chapman F, McDermott S, Rudd K, et al. A randomised, open-label, cross-over clinical study to evaluate the pharmacokinetic, pharmacodynamic and safety and tolerability profiles of tobacco-free oral nicotine pouches relative to cigarettes. *Psychopharmacology (Berl)*. 2022;239(9):2931-2943. doi:10.1007/s00213-022-06178-6

26. Campbell C, Feehan M, Kanitscheider C, et al. Designing studies to inform tobacco harm reduction: learnings from an oral nicotine pouch actual use pilot study. *JMIR Form Res*. 2022;6(8):e37573. doi:10.2196/37573

27. Dowd AN, Thrul J, Czaplicki L, et al. A cross-sectional survey on oral nicotine pouches: characterizing use-motives, topography, dependence levels, and adverse events. *Nicotine Tob Res*. 2024;26(2):245-249. doi:10.1093/ntr/ntad179

28. Gaiha SM, Lin C, Lempert LK, Halpern-Felsher B. Use, marketing, and appeal of oral nicotine products among adolescents, young adults, and adults. *Addict Behav*. 2023;140:107632. doi:10.1016/j.addbeh.2023.107632

29. Morean ME, Bold KW, Davis DR, et al. Awareness, susceptibility, and use of oral nicotine pouches and comparative risk perceptions with smokeless tobacco among young adults in the United States. *PLoS One*. 2023;18(1):e0281235. doi:10.1371/journal.pone.0281235

30. Patel M, Kierstead EC, Kreslake J, Schillo BA. Patterns of oral nicotine pouch use among U.S. adolescents and young adults. *Prev Med Rep*. 2023;34:102239. doi:10.1016/j.pmedr.2023.102239

31. Sparrock LS, Phan L, Chen-Sankey J, et al. Nicotine Pouch: Awareness, Beliefs, Use, and Susceptibility among Current Tobacco Users in the United States, 2021. *Int J Environ Res Public Health*. 2023;20(3):2050. doi:10.3390/ijerph20032050

32. Vogel EA, Barrington-Trimis JL, Harlow AF, et al. Prevalence of and disparities in adolescents' susceptibility to novel oral nicotine products marketed as "tobacco-free." *Prev Med*. 2023;166:107387. doi:10.1016/j.ypmed.2022.107387

33. Vogel EA, Barrington-Trimis JL, Kechter A, et al. Differences in young adults' perceptions of and willingness to use nicotine pouches by tobacco use status. *Int J Environ Res Public Health*. 2022;19(5):2685. doi:10.3390/ijerph19052685

34. Huang S, Chen Q, Griffin P, Liu G, Azagba S. Longitudinal transitions in tobacco use in youth and young adults: A latent transition analysis of the population assessment of tobacco and health study from Wave 1 to 5. *Addict Behav*. 2023;138:107548. doi:10.1016/j.addbeh.2022.107548

35. Juarez DT, Seto J, Guimaraes A, et al. Hawaii state legislator views on e-cigarettes and likelihood of legislative action. *J Am Pharm Assoc (2003)*. 2015;55(5):511-516. doi:10.1331/JAPhA.2015.15003

36. Lau J. Lawmakers pass ban on flavored e-cigarettes despite intense opposition. Civil Beat. May 2022. Accessed April 17, 2025. https://www.civilbeat.org/2022/05/lawmakers-pass-ban-on-flavored-e-cigarettes-despite-intense-opposition/

37. Hawai'i State Department of Health. *Hawai'i Tobacco Prevention and Control Plan 2030*. Chronic Disease Prevention and Health Promotion Division; 2024. Accessed April 17, 2025. https://hhsp.hawaii.gov/assets/pdf/HHSP_Tobacco_Plan_WEB.pdf

Kiyota E, Perkinson MA, Ceria-Ulep C. A Place to Belong: How Ibasho Is Redefining Aging in Hawai'i. *Hawaii J Health Soc Welf*. 2026;85(2):51-53. doi:10.62547/XNMI1937

A Place to Belong: How Ibasho Is Redefining Aging in Hawai'i

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The Spotlight on Nursing is a recurring column from the University of Hawai'i at Mānoa School of Nursing and Dental Hygiene (SONDH). It is edited by Holly B. Fontenot, PhD, APRN, WHNP-BC, FAAN, FNAP; Associate Dean for Research, Professor, and Frances A. Matsuda Chair in Women's Health for SONDH, and HJH&SW Contributing Editor; and Joanne R. Loos PhD, Science Writer for SONDH

Acronyms

UH Mānoa: University of Hawai'i at Mānoa
OLM: Our Lady of the Mount Church

Introduction

Society worldwide is experiencing a demographic shift that demands urgent attention, and Hawai'i is no exception. The state's population is aging at a rapid pace. In 2024, 21.5% of residents were aged 65 and over, a figure expected to rise to 1 in 4 people by 2035.[1] This rate outpaces the national average. This super-aged society, where more than 20% of the population is 65 or older, presents significant challenges, including increased demand for health care services, a shrinking health care workforce, rising costs for caregivers and social services, and inadequate housing for older persons.[2,3]

Until recently, the concept of aging in place was considered the preferred and most desirable option for many older persons, emphasizing staying in one's own home. Yet this approach has been critiqued for its static and individualistic focus.[4] It often overlooks the social dimensions of aging, such as isolation and loneliness. In response, innovative community-based models like *Ibasho*[5,6] have emerged to redefine what it means to age well within a community.

The concept and history of Ibasho

Ibasho is a Japanese concept meaning "a place where one belongs."[7] It goes beyond physical space to encompass community, purpose, and intergenerational connection. The principles-based model empowers older persons to co-create elder-led community hubs that provide opportunities to contribute through mutual care and active participation.[7,8] At its core, the *Ibasho* model rests on several principles: elders as assets rather than passive recipients of care, intergenerational connection, cultural adaptability, and the strengthening of social capital and community resilience.[7,8]

The philosophy behind *Ibasho* is rooted in a moment of insight Dr. Emi Kiyota, an environmental gerontologist, experienced while working on a senior housing project for Buddhist monks in rural Bhutan in 2009. There, she encountered the quote, "The time to be happy is now, the place to be happy is here, and the way to be happy is to make other people happy." This quote, which was displayed in a local elementary school, profoundly shaped Dr. Kiyota's thinking. It highlighted a gap in how society approaches elder care. Current systems often treat older persons as primarily in need of care, rather than as contributors to their communities. *Ibasho* challenges that narrative, recognizing older persons as valuable assets who are capable of leading, teaching, and fostering positive change in their neighborhoods.

Dr. Kiyota's work has demonstrated the model's effectiveness across diverse settings. In Japan, following the 2011 earthquake and tsunami, she established the first Ibasho House in Ofunato City, Iwate with the collaboration among Honeywell Hometown Solutions, Operation USA, and Tenjin Kai, a local social welfare organization. This elder-led initiative created a communal space for healing and rebuilding trust. The model has since expanded to Nepal, the Philippines, and Singapore, where elders have led agricultural projects, educational programs, and disaster recovery efforts. Impact evaluations confirmed that participation in Ibasho projects enhances elders' sense of control, expands social networks, and strengthens feelings of belonging.[5]

Ibasho is relevant for Hawai'i

Given the local value of Hawai'i that reveres *kupuna* (elders), the *Ibasho* model may also resonate locally, as it regards *kupuna* as resources rather than resource consumers. The principle of revering *kupuna* is echoed in several Asian and Pacific Islander cultures, such as Chinese, Japanese, Filipino, and Samoan. In the Filipino culture, the grandparents are the primary caregivers to their grandchildren.[9,10]

Hawai'i faces unique challenges that make the *Ibasho* model especially relevant. The state faces a shortage of health care workers, particularly in rural areas. Further, the geographically dispersed population leads to many older persons experiencing physical and social isolation. The high cost of living pushes younger generations off the islands, shrinking the pool of caregivers.[11] *Ibasho* offers a way forward by empowering elders to take leadership roles, bridging generational gaps and creating resilient, interdependent communities.

New partnership with the School of Nursing and Dental Hygiene

The University of Hawai‘i at Mānoa (UH Mānoa) School of Nursing and Dental Hygiene is developing a strategy for partnerships that would leverage the clinical nursing expertise of graduate and undergraduate students to foster community connections and promote health using the *Ibasho* framework with Dr. Kiyota's expertise. Dr. Kiyota plans to operationalize *Ibasho* in Hawai‘i and strengthen community-based research on healthy aging through a multidisciplinary approach involving the UH Mānoa School of Nursing and Dental Hygiene. Potential partners include the UH Mānoa Center on Aging, the Thompson School of Social Work and Public Health, the UH Mānoa School of Architecture, and the John A. Burns School of Medicine. A pilot group, Ibasho Friends, has already assembled at Our Lady of the Mount Catholic Church (OLM) in Kalihi Valley, and organizers are preparing to adapt the *Ibasho* model to Hawai‘i's unique cultural and geographic context. The group, composed predominantly of Filipino members, was formed after Dr. Kiyota introduced the *Ibasho* concept to various faith-based communities in Hawai‘i, including Christian, Methodist, Congregational, and other churches, during the COVID-19 pandemic. The OLM community showed the most interest and was selected as the pilot site. This pilot will serve as a test for intergenerational programming and elder-led initiatives, demonstrating how the *Ibasho* philosophy can be applied to diverse communities. Previous *Ibasho* sites have focused on elder-selected activities such as developing a community garden and farmers' market and teaching and engaging in cultural traditions with younger generations. For this pilot, participants will apply the model by striving to achieve several goals: (1) Identify a community space or hub with Ibasho members and the pastor of OLM to serve as Hawai‘i's Ibasho Café; (2) Begin small-scale activities and programs that foster connection and purpose; and (3) Gradually transition leadership to the members themselves as they develop their capacity to select, organize, and sustain the group's activities. Over time, members may expand to new *Ibasho* sites, supported by a clear structure for managing growth.

Central to *Ibasho*'s approach is the belief that aging is not a decline to be feared, rather, it is a stage of life rich with meaning, purpose, and contribution. Under the premise that everyone, regardless of age or ability, seeks to be useful to others, *Ibasho* creates community hubs where elders can lead, mentor, and build community. By doing so, it challenges assumptions about aging and reframes it as a period of growth, connection, and impact. Similar to the "third places" that urban planners describe—informal gathering spaces beyond home and work—*Ibasho* empowers elders to create their own hubs of belonging.[5] These elder-led spaces not only reduce isolation but also strengthen intergenerational ties, offering children mentors, reconnecting adults across generations, and making neighborhoods more resilient. The partnership described here comprises 3 major components: (1) Student involvement in the development of community resilience through co-creation with the community; (2) Education through the combination of theory and practical implementation; and (3) Research on person-environmental fit, which may inform future environment and care for seniors in the state.

Conclusion

For Hawai‘i, with its rapidly aging population, workforce shortages, and rising isolation, this model may offer both timely solutions and unique opportunities. Rooted in values of family and community, *Ibasho* provides a framework for honoring older adults as assets rather than burdens. By embracing it, Hawai‘i can pioneer innovative care models that transform aging into a stage of leadership, creativity, and social contribution. Ultimately, *Ibasho* reminds us that happiness, purpose, and community are inseparable. With this vision, Hawai‘i can become a living example of how aging, when supported by intergenerational collaboration, can be a time of empowerment, engagement, and meaningful growth.

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References

1. U.S. Census Bureau. 2024 Population and Housing Estimates. 2025. Accessed October 3, 2025. https://www.census.gov/programs-surveys/popest/data/tables.html

2. *Housing America's Older Adults 2023*. Joint Center for Housing Studies of Harvard University; 2023. https://www.jchs.harvard.edu/housing-americas-older-adults-2023

3. Office of the Assistant Secretary for Planning and Evaluation. *Health Care Workforce: Key Issues, Challenges, and the Path Forward*. U.S. Department of Health and Human Services; 2024. Accessed October 2, 2025. https://aspe.hhs.gov/sites/default/files/documents/82c3ee75ef9c2a49fa6304b3812a4855/aspe-workforce.pdf

4. Finlay JM, Finn BM. Geography's blind spot: The age-old urban question. *Urban Geography*. 2021;42(8):1061-1078. doi:10.1080/02723638.2020.1742468

5. Kiyota E, Tanaka Y, Arnold M, Aldrich DP. Elders leading the way to resilience. *SSRN 2575382*. Published online 2015.

6. Minkler M, Frantz S, Wechsler R. Social support and social action organizing in a "grey ghetto": The tenderloin experience. *Int Q Community Health Educ*. 2005;25(1):49-61. doi:10.2190/5271-3JLQ-0GJH-4634

7. Ibasho. Accessed October 3, 2025. https://ibasho.org/

8. Kiyota E, Tanaka Y, Arnold M, Aldrich DP. *Elders Leading the Way to Resilience*. Global Facility for Disaster Reduction and Recovery (GFDRR), World Bank; 2015. Accessed October 3, 2025. https://www.gfdrr.org/sites/default/files/publication/Elders-Leading-the-Way-to-Resilience.pdf

9. Kataoka-Yahiro MR, Ceria C, Yoder M. Grandparent caregiving role in Filipino American families. *J Cult Divers*. 2004;11(3).

10. Kataoka-Yahiro M, Ceria C, Caulfield R. Grandparent caregiving role in ethnically diverse families. *J Pediatr Nurs*. 2004;19(5):315-328. doi:10.1016/j.pedn.2004.05.010

11. Lopez K. Averting Hawai'i's caregiver crisis. *Generations Magazine*. Published online October 2025. Accessed October 2, 2025. https://generations808.com/averting-hawaiis-caregiver-crisis/

Hawai'i Journal of Health & Social Welfare
General Recommendations on Data Presentation and Statistical Reporting (Biostatistical Guideline for HJH&SW)
[Adapted from Annals of Internal Medicine & American Journal of Public Health]

The following guidelines are developed based on many common errors we see in manuscripts submitted to HJH&SW. They are not meant to be all encompassing, or be restrictive to authors who feel that their data must be presented differently for legitimate reasons. We hope they are helpful to you; in turn, following these guidelines will reduce or eliminate the common errors we address with authors later in the publication process.

Percentages: Report percentages to one decimal place (eg, 26.7%) when sample size is >=200. For smaller samples (<200), do not use decimal places (eg, 27%, not 26.7%), to avoid the appearance of a level of precision that is not present.

Standard deviations (SD)/standard errors (SE): Please specify the measures used: using "mean (SD)" for data summary and description; to show sampling variability, consider reporting confidence intervals, rather than standard errors, when possible, to avoid confusion.

Population parameters versus sample statistics: Using Greek letters to represent population parameters and Roman letters to represent estimates of those parameters in tables and text. For ex ample, when reporting regression analysis results, Greek symbol (ß), or Beta (b) should only be used in the text when describing the equations or parameters being estimated, never in reference to the results based on sample data. Instead, one can use "b" or ß for unstandardized regression parameter estimates, and "B" or ß for standardized regression parameter estimates.

***P* values:** Using *P* values to present statistical significance, the actual observed *P* value should be presented. For *P* values between .001 and .20, please report the value to the nearest thousandth (eg, *P*=.123). For *P* values greater than .20, please report the value to the nearest hundredth (eg, *P* =.34). If the observed *P* value is great than *.999*, it should be expressed as "*P* > *.99*". For a *P* value less than .001, report as "*P*<.001". Under no circumstance should the symbol "NS" or "ns" (for not significant) be used in place of actual *P* values.

"Trend": Use the word trend when describing a test for trend or dose-response. Avoid using it to refer to *P* values near but not below .05. In such instances, simply report a difference and the confidence interval of the difference (if appropriate), with or without the *P* value.

One-sided tests: There are very rare circumstances where a "one sided" significance test is appropriate, eg, non-inferiority trials. Therefore, "two-sided" significance tests are the rule, not the ex ception. Do not report one-sided significance test unless it can be justified and presented in the experimental design section.

Statistical software: Specify in the statistical analysis section the statistical software used for analysis (version, manufacturer, and manufacturer's location), eg, SAS software, version 9.2 (SAS Institute Inc., Cary, NC).

Comparisons of interventions: Focus on between-group differ ences, with 95% confidence intervals of the differences, and not on within-group differences.

***Post-hoc* pairwise comparisons**: It is important to first test the overall hypothesis. One should conduct *post-hoc* analysis if and only if the overall hypothesis is rejected.

Clinically meaningful estimates: Report results using meaningful metrics rather than reporting raw results. For example, instead of the log odds ratio from a logistic regression, authors should transform coefficients into the appropriate measure of effect size, eg, odds ratio. Avoid using an estimate, such as an odds ratio or relative risk, for a one unit change in the factor of interest when a 1-unit change lacks clinical meaning (age, mm Hg of blood pressure, or any other continuous or interval measurement with small units). Instead, reporting effort for a clinically meaningful change (eg, for every 10 years of increase of age, for an increase of one standard deviation (or interquartile range) of blood pressure), along with 95% confidence intervals.

Risk ratios: Describe the risk ratio accurately. For instance, an odds ratio of 3.94 indicates that the outcome is almost 4 times as likely to occur, compared with the reference group, and indicates a nearly 3-fold increase in risk, not a nearly 4-fold increase in risk.

Longitudinal data: Consider appropriate longitudinal data analyses if the outcome variables were measured at multiple time points, such as mixed-effects models or generalized estimating equation approaches, which can address the within-subject variability.

Sample size, response rate, attrition rate: Please clearly indicate in the methods section: the total number of participants, the time period of the study, response rate (if any), and attrition rate (if any).

Tables (general): Avoid the presentation of raw parameter estimates, if such parameters have no clear interpretation. For instance, the results from Cox proportional hazard models should be presented as the exponentiated parameter estimates, (ie, the hazard ratios) and their corresponding 95% confidence intervals, rather than the raw estimates. The inclusion of *P*-values in tables is unnecessary in the presence of 95% confidence intervals.

Descriptive tables: In tables that simply describe characteristics of 2 or more groups (eg, Table 1 of a clinical trial), report averages with standard deviations, not standard errors, when data are nor mally distributed. Report median (minimum, maximum) or median (25th, 75th percentile [interquartile range, or IQR]) when data are not normally distributed.

Figures (general): Avoid using pie charts; avoid using simple bar plots or histograms without measures of variability; provide raw data (numerators and denominators) in the margins of meta-analysis forest plots; provide numbers of subjects at risk at different times in survival plots.

Missing values: Always report the frequency of missing variables and how missing data was handled in the analysis. Consider add ing a column to tables or a footnote that makes clear the amount of missing data.

Removal of data points: Unless fully justifiable, all subjects included in the study should be analyzed. Any exclusion of values or subjects should be reported and justified. When influential observations exist, it is suggested that the data is analyzed both with and without such influential observations, and the difference in results discussed.

Guidelines for Publication of Hawai'i Journal of Health & Social Welfare Supplements

The Hawai'i Journal of Health & Social Welfare (HJH&SW) partners with organizations, university divisions, and other research units to produce topic-specific issues of the journal known as supplements. Supplements must have educational value, be useful to HJH&SW readers, and contain data not previously published elsewhere. Each supplement must have a sponsor(s) who will work with the HJH&SW staff to coordinate all steps of the process. Please contact the editors at hjhsw@hawaii.edu for more information if you would like to pursue creating a supplement.

The following are general guidelines for publication of supplements:

1. Organizations, university divisions, and other research units considering publication of a sponsored supplement should consult with the HJH&SW editorial staff to make certain the educational objectives and value of the supplement are optimized during the planning process.

2. Supplements should treat broad topics in an impartial and unbiased manner. They must have educational value, be useful to HJH&SW readership, and contain data not previously published elsewhere.

3. Supplements must have a sponsor who will act as the guest editor of the supplement. The sponsor will be responsible for every step of the publication process including development of the theme/concept, peer review, editing, preliminary copy editing (ie, proof reading and first round of copy editing), and marketing of the publication. HJH&SW staff will only be involved in layout, final copy editing and reviewing final proofs. It is important that the sponsor is aware of all steps to publication. The sponsor will:

a. Be the point of contact with HJH&SW for all issues pertaining to the supplement.

b. Solicit and curate articles for the supplement.

c. Establish and oversee a peer review process that ensures the accuracy and validity of the articles.

d. Ensure that all articles adhere to the guidelines set forth in journal's Instructions to Authors page (https://hawaiijournalhealth.org/authors.htm), especially the instructions for manuscript preparation and the statistical guidelines.

e. Obtain a signed Copyright Transfer Agreement for each article from all authors.

f. Comply with all federal, state, and local laws, rules, and regulations that may be applicable in connection with the publication, including ensuring that no protected health information appears in any article.

g. Work with the editorial staff to create and adhere to a timeline for the publication of the supplement.

h. Communicate any issues or desired changes to the HJH&SW staff in a timely manner.

4. Upon commissioning a supplement, the sponsor will be asked to establish a timeline for the issue which the sponsor and the HJH&SW editor(s) will sign. The following activities will be agreed upon with journal publication to take place no later than 24 months after signing. Extensions past the 24 months will be subject to additional fees based on journal publication rates at that time:

- Final date to submit a list of all articles, with working titles and authors
- Final date for submitting Word documents for copy editing
- Final date for submitting Word documents for layout
- Final date to request changes to page proofs (Please note that changes to page proofs will be made only to fix any errors that were introduced during layout. Other editing changes will incur an additional fee of $50 per page.)

5. The cost of publication of a HJH&SW supplement is $6,000 for an 8-article edition with an introduction from the sponsor or guest editor. Additional articles can be purchased for $500 each with a maximum of 12 articles per supplement. This cost covers one round of copy editing (up to 8 hours), layout, online publication with an accompanying press release, provision of electronic files, and indexing in PubMed Central, SCOPUS, and Embase. The layout editor will email an invoice for 50% of the supplement to the designated editor for payment upon signature of the contract. The remaining will be due at the time of publication. Checks may be made out to University Health Partners.

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9. The editorial board reserves the right of final review and approval of all supplement contents. The HJH&SW will maintain the copyright of all journal contents.

Revised 3/21/23

Hawai‘i Journal of Health & Social Welfare
Style Guide for the Use of Native Hawaiian Words and Diacritical Markings

The HJH&SW encourages authors to use the appropriate diacritical markings (the ‘okina and the kahakō) for all Hawaiian words. We recommend verifying words with the Hawaiian Language Dictionary (http://www.wehewehe.org/) or with the University of Hawai‘i Hawaiian Language Online (http://www.hawaii.edu/site/info/diacritics.php).

Authors should also note that Hawaiian refers to people of Native Hawaiian descent. People who live in Hawai‘i are referred to as Hawai‘i residents.

Hawaiian words that are not proper nouns (such as keiki and kūpuna) should be written in italics throughout the manuscript, and a definition should be provided in parentheses the first time the word is used in the manuscript.

Examples of Hawaiian words that may appear in the HJH&SW:

‘āina	**Kaua‘i**	**O‘ahu**
Hawai‘i	**Lāna‘i**	**‘ohana**
kūpuna	**Mānoa**	**Wai‘anae**

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