

Determinants and Prevention Strategies of Substance Abuse in Pacific Countries: A Systematic Review

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ABSTRACT

Objectives: People abuse substances like drugs, alcohol, and tobacco for different reasons, including pleasure, improved performance and vigilance, relief of depression, curbing hunger, and weight control. In this review, we sought to identify the determinants and prevention strategies that have been undertaken to minimize the issue of substance abuse. **Methods:** The systematic review was conducted following the Cochrane Library Guidelines and PRISMA checklist. We searched six online databases to identify studies from January 2000 to July 2017. **Results:** Only peer-reviewed studies published in the English language that had full text accessible were included. We reviewed 19 studies; only one was quasi-experimental and the majority were descriptive studies. The determinants of substance abuse identified include personal, facilitatory/promotor, environmental, and social factors. The prevention strategies identified use culturally appropriate and gender-sensitive treatments, and identify sources of strength in families, community, individual, and even spiritual. **Conclusions:** Substance abuse poses significant public health risks and therefore requires adequate interventions such as educating and informing individuals of the health risks associated with substance abuse and must be considered locally to promote the well-being of people.

Substance abuse has large and reciprocal impacts on families.¹ The World Health Organization (WHO) defines substance abuse as the harmful or hazardous use of psychoactive substances, including alcohol and illicit drugs.² It includes the physiological signs of addiction, such as tolerance, withdrawal, social factors (impaired work performance, relationship dysfunction), and behavioral markers (risky use, inability to regulate use).³ People abuse substances like drugs, alcohol, and tobacco for different reasons, including pleasure, improved performance and vigilance, relief of depression, curbing hunger, and weight control.^{4,5} Psychoactive drug use is responsible for more than 400 000 deaths per year worldwide.⁶ The global level of alcohol consumption in 2016 was 6.4 L of pure alcohol per person aged ≥ 15 years, and in 2015, more than 1.1 billion people smoked tobacco.⁷

Substance abuse is associated with other health problems. Psychoactive substance use can lead to dependence syndrome — a cluster of behavioral, cognitive, and physiological phenomena that develop

after repeated substance use and that typically include a strong desire to take the drug, difficulties in controlling its use, persisting in its use despite harmful consequences, a higher priority given to drug use than to other activities and obligations, increased tolerance, and sometimes a physical withdrawal state.² Drug use disorders account for 0.55% of the total global burden of disease, and injection drug use accounts for an estimated 30% of new HIV infections outside sub-Saharan Africa and contributes significantly to hepatitis B and hepatitis C epidemics in all regions.⁸ Smoking elevates the risk of lung and other cancers, cardiovascular disease, and respiratory conditions.^{9,10} Alcohol intoxication and the use of substances like marijuana and solvents are associated with traffic and other types of injury, an increased risk of HIV infection, cognitive impairment, and mental disorders.^{11,12}

Alcohol is a leading cause of death and injury in the Pacific.¹³ The New Zealand Mental Health Survey showed that the lifetime prevalence of any substance use disorder for Pacific people, in general,

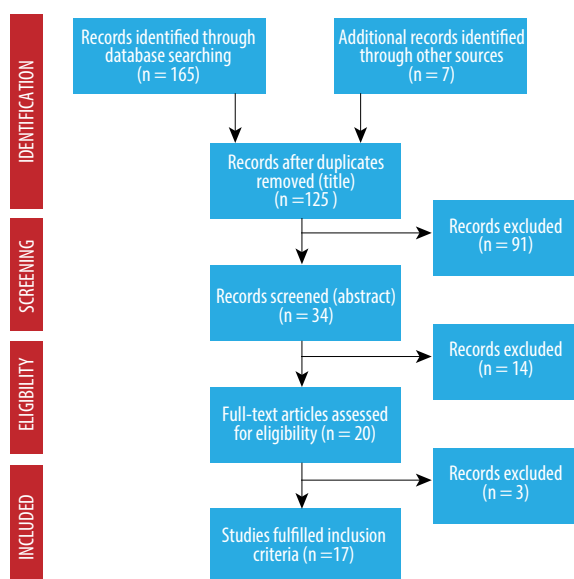


Figure 1: Article selection process.

was 17.7% compared to 12.3% in the general population, and the 12-month prevalence was 4.9% compared to 2.7% in the general population.¹⁴ The most prevalent specific substance use disorders were related to alcohol use and marijuana use.^{15,16} The most recent New Zealand Health Survey found that for drinkers - the proportion engaged in 'hazardous drinking' in Pacific adults (39.2%) was almost double that of European/other New Zealanders (20.1%).¹⁷ Despite these grave consequences, it was found that there are strategies already in place to help those that seek help or are in need of treatments.

There is a need to identify the determinants of substance abuse to mitigate their burden and contribute preventative and education programs.

There are many factors that increase the likelihood of substance abuse among adolescents. Genetics, age, and gender contribute to adolescent substance abuse.^{18,19} Family history of substance abuse,^{20,21} irregular school attendance, and negative peer relationship may also be associated with substance abuse.²² The role of social and demographic structures such as racism, violence, unemployment rate, and low socioeconomic status are determinants of substance abuse among African people.²³

Prevention programs can be in the form of short-term such as alcohol-related awareness building, medium-term like alcohol use behavior change, and long-term like cancer prevention. To increase the effectiveness of prevention programs, other factors should also be considered such as the level of

education, parents' education, and family income.²⁴ Studies showed those individuals who are younger, unmarried, unemployed, and consume tobacco, alcohol, and illicit drugs have more chance to adhere substance abuse treatment services.^{25,26}

The review of the literature found that there are limited data available on substance abuse in the Pacific island countries. This paper gathers the most recent studies done about Pacific Islanders on substance abuse. There have been reviews done on some particular substance abuse, however, this systematic review would be the first review done regarding the determinants and prevention strategies in the Pacific region. This review aims to identify the determinants and prevention strategies that have been undertaken to minimize the issue of substance abuse.

METHODS

This systematic review was conducted following the Cochrane Library Guidelines and the PRISMA checklist. The following databases were used to obtain relevant articles: Medline, CINAHL, PsychInfo, EMBASE, Scopus, and Web of Science. The databases used were common among studies involving violence, which is why they were selected. Medical subheadings and keywords were used to achieve the relevant articles which included, substance*, abuse, prevent*, strategy, determinants, and Pacific. The search was done without considering the name of a specific region or country. To further the search for articles, AND and OR were used to combine the search parameters. The articles included in this study were published from January 2000 to July 2017, in the English language, peer-reviewed, and had full text accessible.

To protect the study from selection and assessment bias, two independent reviewers scanned the titles of all available studies and removed the irrelevant studies. The reviewers then read the abstracts of the remaining studies, again removing the irrelevant studies. The third step conducted by the reviewers was reading the full texts in order to obtain the final articles. A total of 17 studies met the study inclusion criteria [Figure 1].^{27,28}

Once this was done, the reviewers searched the bibliographies of the selected studies to find more relevant articles. Following this, two more articles were included bringing the total to 19. The studies' full texts were then printed for further analysis.

Using the information from the selected studies, we developed an extraction sheet (Annex 1) four sections including: study information, population, methodology, and results. A descriptive analysis was then carried out, and frequencies and percentages were recorded.

RESULTS

The general characteristics of included studies are presented in Table 1. Only 5.3% studies were published between 2000–2004, and the majority (68.4%) were published between 2010–2017. Approximately 36.8% of studies were based in the USA and Hawaii, 26.3% in New Zealand, and only 15.8% were conducted in Hawaii. About 73.7% of studies focused on adolescents, adults, and older

Table 1: Characteristic of studies based on the year and region of conducting studies and age and gender of recruited participants.

Factors	Frequency	Percentage
Year of studies		
2000–2004	1	5.3
2005–2009	5	26.3
2010–2017	13	68.4
Region of conducted studies		
<i>South Pacific</i>		
New Zealand	5	26.3
Pohnpei, Tonga and Vanuatu	1	5.3
<i>American Pacific</i>		
USA	1	5.3
USA and Hawaii	7	36.8
Hawaii	3	15.8
<i>Asia Pacific</i>		
Taiwan	1	5.3
Taiwan, China, Nepal, Malaysia, and Sri Lanka	1	5.3
Age of participants		
Adolescents	2	10.5
Adolescents and adults	2	10.5
Adolescents, adults, and older	14	73.7
Not stated	1	5.3
Gender of participants recruited		
Male	3	15.8
Female	1	5.3
Both male and female	10	52.6
Not stated	5	26.3

Table 2: Characteristics of studies based on study design, type, sampling, and data collection methods.

Factor	Frequency	Percentage
Study design		
Quantitative study	14	73.7
Qualitative study	2	10.5
Mixed methods study	3	15.8
Type of studies		
Cross-sectional	17	89.5
Quasi-experimental	1	5.3
Cohort study	1	5.3
Sampling methods		
Convenience sampling	4	21.1
Random sampling	6	31.6
Purposive sampling	5	26.3
Stratified sampling	2	10.5
Snowball sampling	2	10.5
Data collection methods		
Questionnaire	12	63.2
Face to face in-depth interview	6	31.6
Focus group discussion	1	5.3

age population, and approximately 15.8% of study participants are male.

The methodological features of the included studies are shown in Table 2. Almost 73.7% of studies used a quantitative approach, and only 15.8% of studies followed a mixed-method approach. Almost 89.5% included studies adopted a cross-sectional study design, whereas only 5.3% of studies are both cohort and quasi-experimental design. About 26.3% of studies used a purposive sampling technique to select the respondents, and approximately 31.6% of studies applied a random sampling technique, and 21.1% research studies used a convenience sampling method to identify the respondents for their research. About 63.2% of research studies used a questionnaire survey for their data collection method, and only 31.6% of studies used face to face in-depth interview techniques to collect data from their respondents.

The total number of participants in selected studies was 311 760. About 63.2% of studies were community-based, and 26.3% were school-based, as shown in Figure 2.

The frequency of substance abuse is displayed in Table 3. About 63.2% of studies concluded that gender is one of the most important factors for

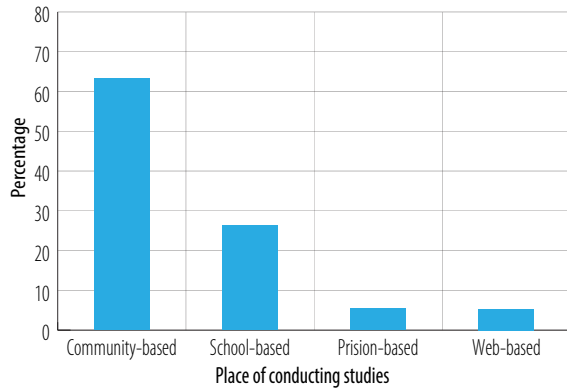


Figure 2: Percentage of studies based on the place of conducting the study.

substance abuse followed by age, which accounts for 42.1%. Almost 21.1% research studies revealed that individuals are introduced to different types of abusing items by their family members, and it has also been reported in most of the studies (21.1%) that low income plays a major role for getting individuals addicted to substance abuse and approximately 15.8% cases the addictions to substance abuse starts from home and due to peer pressure.

Table 3: Frequency of substance abuse based on participants’ characteristics, facilitator, and environmental and social factors.

Factors	Frequency	Percentage
Personal factors		
Age	8	42.1
Ethnicity	7	36.8
Sex	12	63.2
Facilitator/promoter		
Peer supporter	1	5.3
Perceive need for help	1	5.3
Family members	4	21.1
Partner support	1	5.3
Church	2	10.5
Community participation	2	10.5
Environmental factors		
Home	3	15.8
School	2	10.5
Peers	3	15.8
Social factors		
Lack of education	2	10.5
Low income	4	21.1
Culture	2	10.5

Table 4: Prevention strategies used in studies.

Strategies	Frequency	Percentage
Use culturally appropriate and gender-sensitive treatments.	1	5.3
Identifying sources of strength in families, community, individual, and even spiritual.	1	5.3

About 5.3% of cases used culturally appropriate and gender-sensitive treatments as prevention strategies along with identifying sources of strength in families, communities, individuals, and even spiritual [Table 4].

DISCUSSION

This is a systemic review study conducted in the South Pacific regions, American Pacific regions, and the Asian Pacific regions from 2000 to 2017. The review identifies the determinants and prevention strategies that have been undertaken to minimize the issue of substance abuse. The determinants identified in this review are personal, facilitatory/promotor, environmental, and social factors. The prevention strategies that have been identified are use culturally appropriate and gender-sensitive treatments and identifying sources of strength in families, community, individual, and even spiritual. These determinants and prevention strategies have been discussed below.

In this study, 42.1% of studies reported age as a determinant of substance abuse. Numerous studies have shown the increased issues related to substance abuse among the baby boomer generation and the increased efforts in the rehabilitation and treatment services. Substance abuse is the most common mental health complications emerging in childhood.²⁹ Several anthropological studies in Micronesia have shown that the increased difficulties associated with substance abuse among the young generations are related to the psychological glitches caused by pressures between the western cultural impacts and traditional customs and institutions.³⁰ In this study, 36.8% of studies reviewed reported ethnicity as a determinant of substance abuse. Studies have reported that Pacific Islanders/native Hawaiians had the highest self-reported rates for the treatment

of alcohol and/or other drugs.³¹ Of the studies reviewed, 63.2% reported gender as a determinant of substance abuse. In a study by Smith et al,³⁰ in 2007 it was stated that in all countries alcohol consumption and use of drugs were greater among males than females, whereas in Pohnpei, females used marijuana and methylated spirits more than males.

The results of this study showed that the prevention strategies should be more culturally appropriate and gender-sensitive to be more successful. Some social factors affect the treatment of substance abuse. For example, for abused women the risk of stigma related to their use is high and they are at high risk of physical and sexual abuse.^{32,33} Tailored programming for women, which induces practices that address abusers' specific needs, which may help to increase their time in treatment.³⁴ Training staff to provide a more empathetic and female-friendly environment will help the efficiency of prevention programs. Women's issues are better to be discussed by same-gender groups and with a female therapist.^{33,35}

There are many prevention strategies for substance abuse that have been examined among different groups. Technology-based intervention is a method that has been used to prevent substance abuse among adolescents. For example, web-based cognitive behavioral therapy (CBT) program for adults in substance use treatment.³⁶ Another study showed that web-based CBT is an interesting method to prevent relapse for adolescents.³⁷ In a randomized controlled trial study conducted among 129 adolescent-aged participants, participants in the intervention group were asked to complete 12 core lessons over three months which focused on evidence-based relapse prevention skills which adolescents in the control group have not received any intervention. The results showed that a significant increase in motivation to decrease or not misuse and also a greater decrease in drug use score drugs in three-month and six-month follow-up compared to the control group.³⁸

Delivering motivational interviewing (MI) using different methods to prevent substance abuse has been examined in many studies. Another systematic study assessed 25 studies. The results revealed that telephone-based MI in treating substance abuse was supported by all studies, however, internet-based MI was effective in preventing and treating alcoholism and also smoking cessation. SMS-based MI was useful in controlling tobacco and drinking abuse.³⁹

A pre and post-survey study examined the effectiveness of a national program called 4-H Health Rocks! to prevent tobacco, alcohol, and drug abuse among a total of 1192 respondents aged 8- to 14-years old. The program consisted of instruction on the negative health consequences of substance abuse, social, and individual skills such as communication, decision making, and self-esteem practices. The results showed a positive sign in participants' perceived knowledge, skills, and assets. However, the majority reported no change from before program to after program participation.⁴⁰

Studies also showed significant effect in preventing substance abuse using interactive prevention programs than didactic-based lectures. Another pre- and post-survey examined the effectiveness of preventative programs among adolescents and their substance use knowledge and program perceptions. Students were divided into small groups led by near-peer health care professional trainees who provided information on the physical effects of substances on human organs. Results demonstrated significant positive increases in knowledge of substance use risks on mental and physical health.

In this study, 21.1% of studies reviewed reported family members, and low income as determinants of substance abuse, 15.8% of studies reported home and peers as determinants of substance abuse, and 10.5% of studies reported church, community participation, school, lack of education, and culture as determinants of substance abuse. Studies have reported evidence of a relationship between drunkenness and indicators of social disengagement and stress. A commonly quoted barrier and facilitator concerned relationships with peers has been reported.⁴¹ In Tonga and Vanuatu, students bullying others at school or communicating easily with friends reported higher odds of alcohol misuse and use of illegal drugs, while in Pohnpei and Vanuatu reported higher self-confidence was positively associated with this risk behavior.³⁰ In Vanuatu, the factors associated with alcohol misuse and use of illegal drugs had negative perceptions of school teachers and watching television four hours per day. However, in the population, having informal communication with their family members had associated with a lower likelihood.³⁰ Studies have reported an association between smoking and aggressive, anti-social behavior.^{30,42} Smokers reported lower general happiness.³⁰

CONCLUSION

Substance abuse poses significant public health risks and therefore requires adequate interventions such as educating and informing individuals of the health risks associated with substance abuse and must be considered locally to promote the well-being of people. The review presents determinants and prevention strategies of substance abuse in the Pacific region. The review revealed that substance abuse prevention strategies are variable among the Pacific people, and there is a need for further studies on substance abuse in the Pacific and the increase in prevention strategies for substance abuse in the Pacific. The focus of prevention strategies should not only be on behavioral intervention but also should consider a mix of structural and policy-related approaches to prevention.

Disclosure

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Annex 1: Data Extraction Sheet

Article	Participants	Methods	Results
<p>Masson et al,⁴³ Year: 2012 Country: USA and Hawaii Type of study: descriptive study</p>	<p>Number: 61 Male: NA Female: NA Age: ≥ 18 years.</p>	<p>Sampling: convenience sampling Data collection tools: semi-structured interviews, interviewer-administered questionnaires Place: population-based</p>	<p>Barriers to treatment:</p> <ul style="list-style-type: none"> ▪ Peer pressure. ▪ Fear of losing confidentiality and being unemployed. ▪ Fear of deportation. ▪ Believed that their drug abuse was not bad enough for warrant treatment. ▪ Don't know how to pay for the service. ▪ Anticipating long waiting time ▪ Don't know where to get the services. <p>Facilitator:</p> <ul style="list-style-type: none"> ▪ Peer support. ▪ Involvement in the criminal justice system. ▪ A perceived need for treatment ▪ Culturally competent substance treatment services.
<p>Huakau et al,⁴⁴ Year: 2005 Country: New Zealand Type of study: cross-sectional</p>	<p>Number: 1103 Male: 507 Female: 596 Age: 13–65 years old</p>	<p>Sampling: simple random sampling Data collection tools: computer-assisted telephone interview, computer-assisted cell phone interviewing systems, and questionnaires Place: population-based</p>	<p>Determinants</p> <ul style="list-style-type: none"> ▪ Age ▪ Gender ▪ Ethnicity ▪ Environment
<p>Lee et al,⁴⁵ Year: 2016 Country: Taiwan Type of study: cross-sectional</p>	<p>Number: 473 Male: 473 Mean age: 33.17 years old</p>	<p>Sampling: purposive sampling Data collection tools: questionnaires and face to face interview. Place: prison-based</p>	<p>Determinants</p> <ul style="list-style-type: none"> ▪ Gender ▪ Environment <p>Barrier</p> <ul style="list-style-type: none"> ▪ Duration of Betel Quid use. <p>Facilitator/promoters</p> <ul style="list-style-type: none"> ▪ Preference for areca nut prepared with lao-hwa quid.
<p>Lee et al,⁴⁶ Year: 2012 Country: Asian countries Type of study: cross-sectional</p>	<p>Number: 8922 Male: NA Female: NA Age: > 15 years old</p>	<p>Sampling: multistage sampling Data collection tools: interviewer-administered survey Place: population-based</p>	<p>Determinants</p> <ul style="list-style-type: none"> ▪ Age ▪ Gender ▪ Education
<p>Author. Okamoto et al,⁴⁷ Year: 2011 Country: Hawaii Type of study: descriptive study</p>	<p>Number: 138 Male: 38% Female: 62% Age: 16–70 years old</p>	<p>Sampling: purposive sampling Data collection tools: online survey Place: school-based</p>	<p>Determinants</p> <ul style="list-style-type: none"> ▪ Age ▪ Gender ▪ Ethnicity
<p>Han et al,⁴⁸ Year: 2016 Country: USA Type of study: prospective longitudinal study</p>	<p>Number: 567 Male: 177 Female: 390 Mean age: 34 years old</p>	<p>Sampling: purposive sampling Data collection tools: self-report survey Place: population-based</p>	<p>Prevention strategies</p> <ul style="list-style-type: none"> ▪ Use culturally appropriate and gender-sensitive treatments. <p>Determinants</p> <ul style="list-style-type: none"> ▪ Gender
<p>Okamoto et al,⁴⁹ Year: 2016 Country: Hawaii Type of study: pilot</p>	<p>Number: 322 Male: 45% Female: 55% Mean age: 11.7 years old</p>	<p>Sampling: convenience sampling Data collection tools: questionnaires Place: school-based</p>	<p>Determinants</p> <ul style="list-style-type: none"> ▪ Gender ▪ Peers ▪ Family members
<p>Donavan et al,⁴¹ Year: 2015 Country: USA Type of study: descriptive study</p>	<p>Number: 23 Male: 8 Female: 15 Age: 9th–12th graders</p>	<p>Sampling: convenience sampling Data collection tools: pre and post knowledge test, questionnaires Place: community-based</p>	<p>Facilitator</p> <ul style="list-style-type: none"> ▪ Integrating evidence-based components of positive youth development and tribal-specific culture, traditions and values.

Annex 1: Data Extraction Sheet*-continued*

Article	Participants	Methods	Results
Wu et al, ⁵⁰ Year: 2013 Country: USA Type of study: cohort study	Number: 278 295 Age: ≥ 12 years	Sampling: multistage area probability sampling. Data collection tools: computer-assisted self-interview, face to face interview Place: population-based	Determinants ▪ Ethnicity ▪ Age ▪ Ethnicity ▪ Income status
Rasmus et al, ⁵¹ Year: 2016 Country: USA Type of study: quasi-experimental	Number: 62 Male: NA Female: NA Age: ≥ 21 years	Sampling: Stratified sampling Data collection tools: interview Place: community-based	Prevention strategies ▪ Identifying sources of strength in families, community, individual and even spiritual.
Parackals et al, ⁵² Year: 2010 Country: New Zealand Type of study: cross-sectional	Number: 1129 Female: 1129 Age: 16–40 years old	Sampling: stratified random sampling Data collection tools: web-assisted telephone interview system Place: population-based	Policy ▪ More than half (53%) of nonpregnant women of childbearing age give higher preferences rating for a warning label as a source of information for alcohol consumption in pregnancy. Determinants ▪ Age ▪ Gender ▪ Ethnicity
Fleming, ⁵³ Year: 2016 Country: USA Type of study: cross-sectional survey	Number: 133 Male: 51% Female: 49% Average age: 38 years	Sampling: purposive sampling Data collection tools: online survey Place: web-based	Determinants ▪ Gender ▪ Social influencers ▪ perceived partner support ▪ descriptive and injunctive subjective norms ▪ marital satisfaction
Sualiisauni et al, ⁵⁴ Year: 2012 Country: New Zealand Type of study: Descriptive study	Number: 69 Male: 31 Female: 38 Age: 15–25 years old	Sampling: purposive sampling Data collection tools: semi-structured focus group Place: school-based	Determinants ▪ Family ▪ Peers ▪ Church
Tevaale et al, ⁵⁵ Year: 2012 Country: New Zealand Type of Study: cross-sectional	Number: 9107 Male: 42.7% Female: 57.3% Age: ≤ 15 years old	Sampling: simple random sampling Data collection tools: questionnaire Place: school-based	Determinants ▪ Gender ▪ Socioeconomic status ▪ Cultural factors ▪ Home and environmental factors ▪ Spiritual/religious factor
Smith et al, ³⁰ Year: 2006 Country: Pohnpei, Tonga and Vanuatu Type of study: cross-sectional study	Number: 8777 Male: NA Female: NA Age: 11–15 years old	Sampling: cluster random sampling Data collection tools: questionnaire Place: school-based	Determinants ▪ Gender ▪ Age ▪ Peers ▪ Environment ▪ Communication with family members ▪ Television and video watching ▪ Injury and violence ▪ Community participation
Sundborn et al, ¹⁷ Year: 2009 Country: New Zealand Type of study: cross-sectional study	Number: 1669 Male: 953 Female: 716 Age: 35–74 years old	Sampling: cluster random sampling Data collection tools: self-administered questionnaires, interview Place: population-based	Determinants ▪ Gender ▪ Socioeconomic status Facilitator ▪ Social and family reason

Annex 1: Data Extraction Sheet*-continued*

Article	Participants	Methods	Results
Operario et al, ⁵⁶ Year: 2006 Country: USA Type of study: cross-sectional study	Number: 496 Male: 496 Female: NA Age: 18–29 years old	Sampling: snowball sampling Data collection tools: interview Place: venue-based	Determinants ▪ Ethnicity ▪ Age ▪ Education ▪ Sexual orientation ▪ Venues (frequent substance use, club drug use, and polydrug use).
Operario and Nemoto, ⁵⁷ Year: 2005 Country: USA Type of study: cross-sectional study	Number: 332 Male: 332 Female: NA Age: ≥ 18 years	Sampling: snowball sampling Data collection tools: interview Place: venue-based	Determinants ▪ Education ▪ Ethnicity ▪ Gender ▪ Venue
Goebert, Park and Nishimura, ⁵⁸ Year: 2004 Country: Hawaii Type of study: cross-sectional study	Number: 118 Male: 91 Female: 27 Age: NA	Sampling: convenience sampling Data collection tools: face to face interview Place: residential-based	Determinants ▪ Age ▪ Ethnicity ▪ Gender ▪ Economic ▪ Environment ▪ Cultural