Pacific peoples and alcohol: a review of the literature

Vili Nosa, Gemma Malungahu, Janine Paynter, Dudley Gentles, David Newcombe

ABSTRACT

AIM: To present a review of recent research exploring alcohol use by Pacific peoples in New Zealand. The review builds on a comprehensive narrative review of research and literature on Pacific peoples and alcohol use, Pearls Unlimited (2009).

METHOD: We conducted a scoping review of published and grey literature written and published between 2009 and 2019. Research was included if the study population, or a clearly identified subgroup of the study population, included one or more Pacific ethnicities and addressed alcohol use.

RESULTS: There were 30 relevant articles covering a large range of aspects of alcohol consumption by Pacific youth and adults. Alcohol consumption by Pacific men has declined significantly to 60% from 70% in 2006/07. However, of those who consume alcohol, 46% meet the threshold for hazardous consumption. Alcohol consumption by Pacific youth has also declined.

CONCLUSION: While there has been some notable research and in-depth exploration of alcohol use and Pacific people, persistent inequity in hazardous alcohol consumption indicates that an evaluation of the current interventions to prevent and service unmet needs of Pacific peoples are overdue.

Previously highlighted gaps in the research

Pearls Unlimited identified a number of gaps in research that fell across different areas of alcohol use. These were the broad areas:

1. Motivations, reasons and context for drinking by Pacific peoples: these include the history of alcohol use in different Pacific communities, cultural expectations and obligations relating to alcohol, life challenges that may lead to alcohol use (eg, unemployment), resiliency and risk factors in each different Pacific ethnicity, relationships between sporting culture and alcohol consumption in the Pacific youth population and, finally, the aspects of acculturation contributing to greater alcohol consumption.

2. Treatment and prevention options, such as the role the church can play in prevention or treatment of alcohol problems, what treatment models are most successful for Pacific users of alcohol and other drug treatment services, the most effective mechanisms for dealing with alcohol abuse and alcohol related violence in Pacific communities, gender focused interventions and assessment of primary care models.

3. Up-to-date trends in alcohol use and consumption, particularly for different Pacific ethnicities. Related to this was research to make the Alcohol Use Disorders Identification Test (AUDIT) more culturally appropriate.

Methods

This was a scoping review to give an update on the developments in research that have happened since Pearls Unlimited was published.\(^1\) A broad Google search of ‘Alcohol New Zealand’ was done to establish the current context for alcohol literature relating to Pacific peoples in New Zealand. This was also a starting point for the grey literature search. Two other searches were ‘Pacific people health New Zealand’ and ‘Pacific people alcohol’. Documents from these searches contributed to the literature review if they met the criteria or were used to identify other eligible literature.

The databases used were Ovid Medline, Embase, Scopus, Kiwi Research Information Service, Cochrane, Index New Zealand, PubMed, Google Scholar and ProQuest. Targeted health website searches were also conducted (Table 1).

Literature was included if it was published during the period of 2009–2019, written in English, included the Pacific population in New Zealand and had a primary focus on alcohol use. Some earlier studies (pre-2009), or studies undertaken outside of New Zealand, are cited to provide context for the included studies. Searches yielded 846 items. Following removal of duplicates and exclusions based on titles and abstracts (by authors GM and JP), thirty resources were eligible for this study. These included journal articles (n=19), reports (n=10) and a book (n=1).

Results

Prevalence of past-year alcohol consumption

The New Zealand Health Survey provides recent data on alcohol consumption in New Zealand.\(^2\) In 2017/18, around 79% of New Zealand adults reported consuming alcohol in the past year. This is similar across age groups from 25– 64 years. Prevalence is higher for the 18–24 age group and lower for older age groups (65+ years). After adjusting for age, results show that Pacific adults are significantly less likely to have consumed alcohol in the past year (34%) compared to 85% of non-Pacific ethnicities (eg, European/other).

There has been a significant decline in alcohol consumption by Pacific males when comparing 2017/18 (60.0%) with 2006/07 (70.5%). There was minimal change in alcohol consumption among Pacific women from 2006/07 (49.2%) to 2017/18 (49.4%). Over the same period, there was a significant decline in proportions of both European men and women who consumed alcohol.

Table 1: Targeted health websites searched.

<table>
<thead>
<tr>
<th>Organisation or resource</th>
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<tr>
<td>Alcohol &amp; Public Health Research Unit</td>
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<td>Centre for Social and Health Outcomes Research and Evaluation</td>
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<td>Centre for Applied Cross-cultural Research (CACR)</td>
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<td>Matua Raki National Addiction Treatment Workforce Development Programme (NATWDP)</td>
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<td>Mental Health and Wellbeing Commission</td>
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<td>Ministry of Health</td>
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<td>New Zealand National Drug Policy</td>
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<td>New Directions in Pacific Health</td>
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\(^1\) Pearls Unlimited

\(^2\) New Zealand Health Survey
Prevalence of hazardous alcohol consumption

Hazardous drinking in people aged 15 years or older is measured using the 10-question Alcohol Use Disorders Identification Test (AUDIT) developed by the World Health Organization, and in the New Zealand Health Survey a score of eight or more is considered hazardous drinking. While Pacific adults were less likely than European adults to have consumed alcohol in the past year, those who did drink were significantly more likely to have been hazardous drinkers (36%) than European adults (25%). Among Pacific men who drink, 46% reported hazardous drinking compared to only 25% of women.

Unmet need

The 2007/08 New Zealand Alcohol and Drug Use Survey measured the proportions of people who wanted help within the last 12 months to reduce their level of alcohol or drug use but did not receive it. Pacific peoples (4.8%) and Māori (4.2%) were more likely than European/other (1.7%) to have wanted help to reduce their level of alcohol or drug use in the past year but not received it.

Pacific users of alcohol and drug treatment services report making repeated, unsupported and unsuccessful attempts to cease alcohol and substance abuse before finally connecting with a treatment service.

A study exploring conceptualisation of deliberate self-harm among Pacific populations in New Zealand was conducted because current clinical definitions of deliberate self-harm (DSH) do not incorporate a Pacific perspective. Nineteen semi-structured interviews were conducted with Pacific health professionals. It was felt that the current definition of DSH was too narrow. From a Pacific perspective, indirect and longer-term self-harm, such as alcohol and drug abuse, should be considered as part of the concept. Conceptualising alcohol abuse as an attempt to self-harm may provide a pathway to healing or reconciliation via development of church or community initiatives promoting the cohesion of Pacific people's families, culture and spirituality.

Youth alcohol consumption, behaviours and harms

The two best sources of current data on alcohol consumption by youth are the New Zealand Health Survey (2016/17) and the Youth'12 The Health and Wellbeing of Secondary School Students in New Zealand survey. The New Zealand Health Survey, as reported online, does not provide data broken down by ethnicity.

A report by Fa’alili-Fidow and colleagues based on the Youth'12 The Health and Wellbeing of Secondary School Students in New Zealand survey provides the most up-to-date details on youth drinking by ethnicity. Secondary school students aged 12–18 years were invited to participate. The Pacific Island ethnicities represented in the survey are Samoan, Tongan, Cook Island, Niuean, Tokelauan, Fijian and a small number of other Pacific Island ethnicities. The specific ethnicities within this survey that are large enough to provide reliable subgroup estimates are Samoan, Tongan and Cook Island. The other Pacific Island ethnicities are combined.

In 2012, the proportion of Pacific students who reported that they consumed alcohol weekly or more often was 5.9% (95% CI 3.9–7.9). The proportion of Pacific students who reported binge drinking within the previous four weeks was 18.4% (95% CI 15.1–21.6). There has been significant declines in the proportions of Pacific students who report regular alcohol consumption or binge drinking since 2001 and particularly since 2007. Pacific students were less likely to report drinking alcohol weekly or more often compared to their European counterparts (5.9% (95% CI 3.9–7.9) versus 9.5% (95% CI 8.2–10.8), respectively). Pacific students are also less likely to report binge drinking in the previous four weeks compared to European students ( 18.4% (95% CI 15.1–21.6) versus 24.9% (95% CI 22.8–27.0), respectively). Comparisons between the specific Pacific ethnic groups found that Cook Island students were slightly but significantly more likely to report binge drinking compared to Samoan students.

Most students (Youth'07 survey) who reported binge drinking got their alcohol from friends (71%), someone else who bought it (43%), brothers and sisters (34%), another adult they know (29%) or their parents (26%), or they bought it themselves (22%), took it from home (17%) or stole it...
Equivalent data from the Youth’12 survey specifically for Pacific students has not been reported on; however, a report that focused on students with problem substance use from the Youth’12 survey found that friends were still the main source of alcohol for students with very high substance use (51%) and for students with lower levels of substance use (42%). Around 46% of students with high substance use report that they get someone else to buy it for them. This is lower (25%) for students with lower levels of substance use.

Students in the 2007 survey reported that they normally drank alcohol with friends (88%), followed by family (52%), other people (40%) and lastly ‘by myself’ (11%). What was concerning was that one in four Pacific students reported experiencing alcohol-related harm. The most common harms for Pacific students was doing things that could get them into trouble (29%), having unsafe sex (28%), having friends and family talk with them about reducing their alcohol consumption (26%) and getting an injury because of their alcohol use (25%).

**Protective factors for youth**

Factors associated with a lower risk of binge drinking were age (younger pupils were less likely to binge drink), culture and parenting style. Students with parents able to speak a Pacific language were less likely to report binge drinking. Students whose parents knew where they were after school or at night were less likely to report binge drinking.

Weekly church attendance was a protective factor after controlling for other variables. The majority of Pacific people are affiliated with at least one religion and the use of alcohol is discouraged in alignment with religious beliefs.

A qualitative study explored factors that support abstinence and responsible drinking behaviour among Pacific youth living in Auckland. Young people highlighted three main communities that helped support abstinence and responsible drinking. These communities are family (including extended family), peers and church. Most of the participants referred to their practices of toka’i (respect and honouring others) and the social shame that would be directed towards their parents if they were to drink and behave drunk. This was associated with feelings of guilt when they were not able to fulfil their obligation of taking their families (specifically their mothers) to church on Sunday due to drinking heavily the night before. Their Pacific value systems and their holding of at least a bicultural or multicultural identity, their affiliation with church and their family ties give rise to the protective factors that neutralise the negative risks, such as alcohol-related harm, associated with heavy drinking.

**Risk factors for youth**

Teevale et al found that binge drinking occurs more frequently among Pacific students from relatively well-off neighbourhoods. This may reflect the transitional nature of Pacific communities in New Zealand with “the more affluent and middle-class adopting mainstream use of alcohol.” This trend has not emerged among Pacific adults. People living in the most deprived quintile are significantly more likely to report hazardous drinking or binge drinking. This measurable inequality by deprivation is stronger for young men.

Frequent supply of alcohol by parents, friends or others was also a significant predictor of all drinking measures among teenagers. Most participants in Greenaway’s evaluation on the social environment of alcohol supply in Māngere, Auckland, identified as Cook Island, Niuean, Samoan, Tongan and Māori. Parents reported feeling helpless, due to the constant social supply of alcohol. This influenced some parents to supply alcohol to their young adults in an environment where they could monitor them. Some of the participants reported underage access to alcohol was inevitable and had become accepted and normalised. This was compounded by the high number of alcohol outlets in the neighbourhood and the lowering of the purchase age to 18 years old.

A 2011 study investigated the impact of recent migration and acculturation on cigarette, alcohol and marijuana use by youth. Pacific youth were less likely to consume alcohol frequently compared to European youths. Experiencing ethnic discrimination was associated with a higher risk of frequent alcohol consumption. First generation migrants were less likely to report more frequent alcohol consumption compared to youth born in New Zealand. However, acculturation seemed to attenuate this
association, and youth who reported that they felt more comfortable in New Zealand European social settings and spoke English at home were less likely to report more frequent alcohol consumption.16

Gender and alcohol
A report examining women, alcohol use and harm was published in 2013.17 The report draws out specific Pacific perspectives on woman and alcohol where literature is available and with specific Pacific focus groups. Although Pacific women have in general and historically consumed less alcohol than men, this has changed. The proportion of young women (16–17 years) who reported harmful alcohol consumption exceeds the proportion of young men who reported harmful drinking in 2011. Pacific women were more likely than New Zealand European women to be non-drinkers or drink less often, but they consumed more on a typical occasion. These factors vary by ethnicity among Pacific women. Pacific women participating in focus groups reported that they had observed increasing alcohol consumption and more drunkenness among women. Alcohol marketing, outlet density, low prices, social inequity and trauma were all considered influences on alcohol consumption. The women felt that alcohol consumption eroded family cohesion and cultural wellbeing, and they specifically mentioned sexual abuse, unplanned pregnancies, fighting by young women and expulsions from tertiary education.17

In many cultures, including Pacific ones, alcohol is “one of the more powerful symbols of gender roles and identities.”18 For Pacific cultures, there is a gender-based double standard. For example, it is acceptable for males to go out at night and engage in alcohol drinking, whereas for females this is less acceptable.19 This double standard may provoke a rebellion among females, particularly Pacific females born in New Zealand, who then drink in defiance, with or without parental consent.19

Hutton and Wright20 conducted an ethnographic study of Māori and Pacific women’s drinking practices. The findings indicate that Pacific women often drink as a group, where the notion of peers belonging to the same sex and ethnicity provided a sense of safety and security for the young women.20 The women in the study reported drinking more when they were with their Pacific peer group, which was related to feeling comfortable ‘letting their hair down’, having fun, excitement and the desire to achieve ‘the buzz’ for relaxation and socialisation.20 This uptake of the New Zealand drinking culture by young Pacific women is still challenged by Pacific cultural opposition to female drinking, such that Pacific women who avoid drinking around family, particularly elders and men.20 This has been observed in studies of Niuean women6 and Tongan women,21 Hutton and Wright20 did not indicate whether Pacific women in the study were born in New Zealand or in the Pacific. Future research needs to identify whether the cultural pressure opposing drinking is different for Pacific-born women compared to women born in New Zealand born.9

Research by Manuopangai21 investigated the consumption of alcohol among Tongan females aged 16–25 years in Auckland. The qualitative study included interviews with 20 Tongan females that attended a Tongan Methodist church. The study revealed five key themes related to alcohol use by the Tongan women: contemporary drinking style, cultural and religious influences, gender roles, knowledge of alcohol use and the associated harm experienced by the women. A key finding from the study indicated how the brother–sister relationship restricted women’s alcohol consumption in the presence of their brothers and male cousins. The Tongan value faka’apa’apa (respect) in the brother–sister relationship inhibited alcohol consumption among the female cohort, whereby women did not consume alcohol in front of their male brothers and cousins as a sign of respect and dignity.21 The females in the study perceived drinking as both good and bad.21 ‘Good’ was perceived as everyone having a good time and enjoying themselves, whereas a ‘bad’ time was when one or more drinkers became annoying, noisy, caused trouble and behaved in a shameful manner.21 Most of the participants from the study viewed a ‘cool drinker’ as a person who could consume a lot of alcohol but still control their behaviour, socialise and have a good time with others.21 Similar to other findings,21 this may in part be seen as an incentive to act like a ‘cool drinker’ and not become the drinker who becomes annoying and shameful.
The church’s disapproval of drinking did not always lessen alcohol use by females affiliated with the church. For example, study participants reported that attending church with a hangover from the night before was common among the young people. In addition, conversations about previous drinking events were common among the young females. Drinking culture among some groups of females affiliated with the church had become normalised and accepted. In turn, this indicates how for this group of females religion was not a protective factor against alcohol consumption.

An initiative within the church, an annual four-day camp for youth, was provided to help reduce alcohol and drug consumption (‘Apitanga Tapu Inukava Malohi Faito’o Konatapu & Tapaka). However, it was perceived by the females as ineffective in reducing their alcohol intake. The camp was attended primarily to socialise with their peers from other churches; despite this, the females in the study recommended that the camps should include inspirational speakers to share their experiences of alcohol use and their successful restriction of alcohol consumption. Other recommendations were to incorporate more information in English about the definition of a standard drink and to define moderate drinking.

Parenting, family and alcohol

The New Zealand Alcohol in Pregnancy Study was a representative sample of New Zealand women aged 16–40 years and included Pacific Island participants. This study explored awareness of the safety of alcohol consumption during pregnancy and opinions of warning labels as a source of information on the dangers of alcohol consumption during pregnancy. Pacific Island women were significantly more supportive of warning labels on alcohol (OR 2.13, 95% CI 1.13–4.01) compared to European/other ethnicities. They were also significantly less likely (OR 0.53, 95% CI 0.30–0.93) to consider it safe to consume alcohol during pregnancy compared to European/other ethnicities.

A qualitative study of Samoan and Cook Island fathers from the Pacific Islands Family Study explored broader influences on mental health and risky behaviour, including alcohol consumption. The Samoan fathers all reported making a conscious effort to educate their children about risky health behaviour such as alcohol use and smoking. Acculturation (loss of some Pacific Island culture in the process of fitting in to or adopting New Zealand culture) is generally associated with increases in risky health behaviour, such as harmful alcohol use and smoking. However, Tautolo reported that Pacific Island culture for one participant was connected negatively with harmful alcohol consumption, due to an alcoholic and abusive grandfather. Many participants reported that they curbed their alcohol consumption as part of their efforts to be good fathers.

Unfortunately, the New Zealand Health Survey doesn’t provide data on alcohol consumption disaggregated by Pacific ethnicity. Two studies provide disaggregated Pacific ethnic data on alcohol consumption, and one of them found significant differences. Tongan parents generally had lower rates of alcohol consumption compared to Samoan and Cook Island Māori. Prevalence of harmful drinking was significantly higher among Cook Island parents compared to Tongan and Samoan parents. This survey found lower rates of alcohol consumption compared to the New Zealand survey, and that both mothers and fathers moderated their drinking in response to parenthood. The authors also suggested a need for alcohol and drug service interventions meeting specific ethnic and parent needs.

Family influence on substance use was explored in a qualitative study of users enrolled in drug treatment services. Sixteen participants provided detailed narratives (talanoa) of their lives and substance abuse. A dysfunctional family or family member was often the source of alcohol and contributed to persistent use. However, their own new family connections, children and supportive partners, and the desire to create stability and healthy relationships in contrast to their past, were strong motives to cease substance use.

Public policy and inequities

Liberal alcohol policy changes (eg, price decreases) and increases in accessibility (eg, increased outlet density) have been associated with increases in alcohol-related harm in other countries, such as Scandi-
In recent years, there has been an increased effort to reduce alcohol-related harm in New Zealand through the Sale and Supply of Alcohol Act 2012 (which regulates the supply of alcohol in New Zealand), the Local Government Act 2002 and a recent national commitment to reducing alcohol-related harm, the National Drug Policy 2015 to 2020. Despite these interventions, there has been no significant decrease in hazardous drinking among Pacific men and women since 2012/13. The National Drug Policy sets out the government’s approach to alcohol and other drug issues, with the overarching goal of minimising alcohol and other drug harm and promoting and protecting health and wellbeing. In addition to the National Drug Policy, there is a guide to priority outcomes, specifically for Pacific health and wellbeing.

Law and research on interventions that target or include Pacific peoples

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Alcohol Healthwatch and Women’s Health Action say wide consultation with Pacific peoples is needed to identify how policies and services can better meet their needs and expectations and address inequities. A key recommendation of the organisations was to increase funding and support for alcohol-related research, programmes and services that address the needs of Pacific communities.

Screening tools within a primary care context can be an important mechanism to connect people who have problematic alcohol use with treatment services. Newcombe et al tested the validity of Alcohol, Smoking and Substance Involvement Screening Test (ASSIST) with Samoan, Tongan, Niuean and Cook Island Māori participants. ASSIST is recommended for use as a screening tool with Pacific people in a New Zealand context.

Injury is a large contributor to New Zealand’s alcohol-related burden of disease, and alcohol is a lead risk factor for injury. Therefore, trauma care settings offer an opportunity for screening and brief interventions aimed at reducing hazardous alcohol consumption. These settings may be useful for engaging Pacific Island people who may not access primary care as frequently. At present, screening in trauma care settings is not routine in New Zealand.
Zealand, due to lack of resources and training for health professionals. To remedy this, a mobile text messaging intervention to reduce alcohol-related harm was developed and tested in New Zealand.36 Pacific Island participants (Cook Islands n=1, Niuean n=1, Samoan n=3) were represented in the qualitative evaluation and were interviewed by a Pacific Island researcher. Two positive features of the intervention from a Pacific perspective were the tailored greeting and the privacy afforded by the intervention.36

“Different greetings... Because it's just the sense of them knowing who you are and where you’re from. They've done the research in terms of understanding what ethnic background you are.” (Male, Samoan, inpatient, hazardous drinker)

“... Pacific Island culture in general it's like there are a lot of things that you don't talk about... so I think people would sign up for this because it seems like something you can do personally that you don't have to tell people about. So you don't have to talk about it... I think getting the texts would be helpful cause then it would be like a way for you to kind of like reflect and then like cut down.” (Female, Samoan inpatient, hazardous drinker)

If youth remain consistently engaged with support services after their initial contact, there is a high probability of resolving their alcohol- and drug-abuse problems.38 Research has been done to investigate factors associated with successful engagement. One of these studies—a retrospective study of engagement of youth with an outpatient service in Auckland, New Zealand, for reducing alcohol and drug harm—found that, once connected with the service, Pacific Island youth were more likely than European youth to remain engaged in the service. For Pacific youth, remaining connected with family (eg, living at home), especially for older youth (16–19-year-old age range), also predicted longer engagement with the service.38

Limitations
The search was limited to literature that was published since 2009. This was a scoping review and not a critical review of the studies conducted.

Conclusion
Cagney and Alliston1 identified a number of gaps in research on alcohol use and Pacific peoples. Some of the gaps have been addressed since 2009, such as the data on consumption patterns in adults and youth. These are provided by the New Zealand Health Survey and the Adolescent Health Research Group's Youth2000 Survey Series. They also provide some insight into differences between New Zealand's larger Pacific groups, such as Tongan and Samoan. Deeper qualitative exploration of alcohol and drinking culture among Pacific women, and particularly young women, has been added to the discourse.

Surveys on alcohol consumption show limited improvements in hazardous alcohol consumption by Pacific men and women. Pacific men and women are more likely to report hazardous drinking compared to non-Pacific ethnicities. There have been promising declines in Pacific youth alcohol consumption and binge drinking. Gender differences in alcohol use, particularly by women, have featured in research on Pacific ethnicities and alcohol use from 2009 to 2017.

However, there are still some gaps to be addressed:
What is the role of prejudices and oppression due to gender, racism, colonisation and different sexual orientation or gender identity (eg, LBGT and fa‘afine (or fakaleiti)) in both the uptake of harmful alcohol consumption and access to support services?
What are the specific attributes of New Zealand Pacific men's alcohol consumption, such as the link between masculinity, sport and consumption?
What are the inherent protective factors, particularly those that can be drawn from pre-colonial Pacific and spiritual culture, that had no place for alcohol? Such factors can include, but are not limited to, family dynamics and obligations and cultural and religious practices, such as church attendance.
Finally, a critical examination is needed of health system services, the accessibility of alcohol and alcohol and drug services for Pacific peoples from specific Pacific ethnicities, genders and generational perspectives (eg, New Zealand born versus Pacific born).
Competing interests:
Nil.

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REFERENCES


29. Livingston M. A longitudinal analysis of alcohol outlet density and assault. Alcoholism, clinical and...


