

# Hazardous drinking and general practitioner visits in the past year

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## ABSTRACT

**AIM:** To quantify the relationship between any general practitioner (GP) visit and hazardous alcohol use, and whether this differs by sociodemographic factors.

**METHOD:** Hazardous alcohol use (scores 8+ Alcohol Use Disorders Identification Test) and any past year GP visits were examined using 2016/17 New Zealand Health Survey data from 13,598 adults. Sub-group analyses examined whether the association differed by age, sex or ethnicity (Māori/non-Māori), and socioeconomic status (NZDep2013) in post-hoc analyses.

**RESULTS:** Results differed for Māori and non-Māori. Regardless of drinking behaviour, Māori males aged 15–24 years were least likely to visit a GP. Among Māori in each demographic group, GP visits were similar for people meeting hazardous drinking criteria and safer drinkers. Conversely, among non-Māori males aged under 45 and non-Māori females aged 15–24 and 45–64 years, GP visits were 10–13 percentage points higher among people meeting hazardous drinking criteria than safer drinkers. GP visits were lower for people meeting hazardous drinking criteria living in more deprived areas.

**CONCLUSION:** Multiple strategies need to be prioritised to address service access particularly for young Māori, and support people drinking at hazardous levels. This includes increasing access to services in various settings, enhancing existing primary health services (eg, cultural responsiveness, alcohol screening, brief interventions), addressing access barriers, and health promotion.

Alcohol use is a risk factor for both mental and physical health problems, and is associated with an increased risk of suicide and premature mortality.<sup>1</sup> The Global Burden of Disease Study found alcohol consumption (regardless of pattern of use) was the seventh leading risk factor for deaths and disability adjusted life years globally, and the leading risk factor for deaths among people aged 15–49 years.<sup>1</sup> Hazardous drinking is defined by the World Health Organization as a pattern of alcohol consumption that increases a person's risk of psychological and physical harm, including high blood pressure, cardiovascular diseases, diabetes, liver damage and some cancers.<sup>2</sup> This includes people who use alcohol over the recommended levels (no more than 10 standard drinks a week for women and 15 for men, see [www.hpa.org.nz](http://www.hpa.org.nz)).

Each year about one in five adults in New Zealand (748,000 people) drink alcohol at hazardous levels.<sup>3</sup> Often there is a long delay between the onset of hazardous drinking and treatment, indicating an unmet need for prevention and earlier intervention.<sup>4</sup> To meet the needs of people experiencing and at risk of alcohol-related harm earlier, primary care has an important role in expanding access to and choice of services.<sup>5</sup> Primary care services are an important first point of contact with the health system for people who may be experiencing problems related to their own or whānau members' alcohol use. An earlier New Zealand study in 2000 found 16% of people who accessed general practitioners (GPs) in Auckland met hazardous drinking criteria.<sup>6</sup> Regular screening and discussions about alcohol use in primary health settings may help reduce

the onset of more severe issues and improve access to treatment.<sup>7</sup>

Considering the impact of alcohol on physical and mental health, the question remains about whether people meeting hazardous drinking criteria access GP services more or less than those with lower-risk alcohol use? National and international studies report mixed results, with some showing increased access, and others showing decreased access.<sup>8–10</sup> One US study, for example, found the impact of alcohol use on primary care utilisation depended on sex and ethnicity.<sup>10</sup> In general, GP use differs across age, sex and ethnic groups.<sup>3</sup> However, these factors have not been investigated in relation to hazardous drinking and GP visits in New Zealand.

This study firstly aimed to quantify the relationship between hazardous alcohol use and any past year GP visit using data from the New Zealand Health Survey (NZHS), and secondly, to determine the nature of any association with age, sex or ethnicity.

## Methods

### Data collection

The NZHS is conducted face-to-face every year; and over samples Māori, Pacific and Asian ethnic groups (see [health.govt.nz](http://health.govt.nz)). In 2016/17, the survey included 13,598 adults aged 15+ years living in the community. Information collected includes sociodemographic factors, healthcare utilisation, long-term physical health problems, mental health issues and behavioural health patterns such as alcohol and other substance use. Ethical approval for the survey was granted by the New Zealand Health and Disability Multi-Region Ethics Committee.

### Measures

The following measures from the 2016/17 NZHS were included in the analysis.

*Any past year GP visit.* People were asked if they had seen or been visited by a GP about their own health in the past 12-months (yes/no).

*Alcohol use.* Hazardous drinking was identified using the Alcohol Use Disorders Identification Test (AUDIT).<sup>2</sup> The AUDIT contains 10 items measuring alcohol intake, drinking behaviours and alcohol-related problems within the past 12 months. The

AUDIT produces a score between 0 and 40, with scores 0–7 reflecting no current issues or safer drinking levels; scores 8 and over (AUDIT 8+) reflecting hazardous (potentially “risky”) alcohol use; and scores 20–40 suggesting a need for referral for diagnostic assessment and treatment.<sup>11</sup> Despite limited New Zealand research, the AUDIT has good face validity locally and numerous overseas studies have confirmed the AUDIT’s test-retest reliability, construct validity and sensitivity to change in the identification of hazardous drinking.<sup>12</sup>

*Other substance use.* Self-reported use of any other substances for recreational or non-medical purposes in the past 12-months.

*Sociodemographic characteristics.* Socio-demographic characteristics included age group (15–24; 25–44; 45–64; 65+ years), sex (female/male) and ethnicity (Māori/non-Māori). Due to small sample sizes in some population groups, people identifying as Asian, Pacific and/or New Zealand European/Other were combined into non-Māori for the purposes of this study. Socioeconomic deprivation was examined in post-hoc analyses based on NZDep2013 quintiles (quintiles 1 and 2 reflect least deprived areas; 4 and 5 most deprived areas).

### Statistical methods

All survey data were weighted to account for the sampling design. In the first stage of analysis, descriptive statistics were reported. In the second stage, the association between hazardous drinking with any past year GP visit was examined using chi-square analyses, and reported with 95% confidence levels.

The association of hazardous drinking with any past year GP visit was examined in sub-groups based on age, sex and ethnicity to examine whether the effect of hazardous drinking on GP visits differed in relation to these sociodemographic variables. Post-hoc analyses examined whether the association between hazardous drinking and any GP visit differed in relation to socioeconomic deprivation. Chi-square analyses of subgroups were undertaken given the categorical nature of the data and ease of interpretation.

Analyses were undertaken using Stata Version 15 (StataCorp, College Station, Texas, US).

## Results

### Sample characteristics

Of the 13,598 adults aged 15+ years who took part in the survey, just over half were female (51.27%). Approximately two-thirds of survey participants were aged 25–64 years (17.54% 15–24; 32.49% 25–44; 31.34% 45–64; 18.64% 65+ years).

In total, 12.88% of participants identified as Māori (5.18% Pacific, 12.54% Asian and 69.40% New Zealand European/Other).

Overall, one in five (19.52%) adults met hazardous drinking criteria (AUDIT 8+; 1.34% AUDIT 20+) and 12.07% had used one or more other substances in the past year.

### GP visits

At a population level, no association between hazardous drinking and greater or lesser rates of past year GP visits were found (see Table 1). In total, 76.54% of people who met hazardous drinking criteria had visited a GP in the past year and 77.60% of safer drinkers.

**Table 1:** Relationship between hazardous drinking (AUDIT 8+) and sociodemographic variables with any GP visit in the past year, N=13,598.

	Any GP visit in the past year (%)		p value (Chi-square)
	Yes (n=10,859)	No (n=2,727)	
<b>Hazardous drinking (AUDIT 8+)</b>			
Yes (n=2,526)	76.54% [74.27, 78.68]	23.46% [21.32, 25.73]	.39
No (n=10,938)	77.60% [76.41, 78.74]	22.40% [21.26, 23.59]	
<b>Age group</b>			
15–24 (n=1,558)	65.96% [62.78, 69.00]	34.04% [31.00, 37.22]	<.001
25–44 (n=4,344)	70.55% [68.68, 72.34]	29.45% [27.66, 31.32]	
45–64 (n=4,334)	81.28% [79.77, 82.69]	18.72% [17.31, 20.23]	
65+ (n=3,350)	93.20% [91.84, 94.35]	6.80% [5.65, 8.16]	
<b>Sex</b>			
Male (n=5,833)	72.70% [71.01, 74.32]	27.30% [25.68, 28.99]	<.001
Female (n=7,753)	81.73% [80.52, 82.88]	18.27% [17.12, 19.48]	
<b>Ethnicity</b>			
Māori (n=2,745)	72.81% [70.32, 75.16]	27.19% [24.84, 29.68]	<.001
Non-Māori (n=10,841)	78.00% [76.85, 79.11]	22.00% [20.89, 23.15]	

Note: Values inside the brackets [ ] represents the 95% confidence intervals.

**Table 2:** Association between hazardous drinking (AUDIT 8+) and any GP visit in the past year in relation to age, sex and ethnicity, N=13,598.

	Percentage (%) of GP visits in past year across age groups			
	15–24	25–44	45–64	65+
	(n=1,559)	(n=4,352)	(n=4,336)	(n=3,351)
<b>Māori males</b>				
AUDIT 8+ (n=398)	48.03% [34.94, 61.40]	65.00% [55.35, 73.56]	85.17% [76.19, 91.15]	91.43% [73.53, 97.61]
AUDIT <8 (n=672)	51.05% [39.38, 62.61]	65.12% [56.15, 73.13]	77.34% [68.69, 84.15]	95.79% [90.04, 98.29]
	p=.74	p=.98	p=.16	p=.35
<b>Māori females</b>				
AUDIT 8+ (n=408)	67.28% [54.38, 78.00]	71.85% [64.30, 78.34]	78.94% [69.12, 86.26]	96.18% [83.41, 99.21]
AUDIT <8 (n=1,226)	72.64% [64.53, 79.49]	74.12% [68.57, 79.00]	84.43% [79.55, 88.31]	91.61% [85.17, 95.41]
	p=.45	p=.61	p=.23	p=.33
<b>Non-Māori males</b>				
AUDIT 8+ (n=1,150)	70.09% [60.31, 78.33]	69.67% [64.43, 74.45]	79.85% [74.92, 84.03]	95.02% [90.74, 97.38]
AUDIT <8 (n=3,553)	57.33% [51.17, 63.26]	57.77% [53.97, 61.48]	79.71% [76.59, 82.51]	94.42% [92.40, 95.93]
	p<.05	p<.001	p=.96	p=.75
<b>Non-Māori females</b>				
AUDIT 8+ (n=570)	83.63% [73.45, 90.42]	83.07% [76.25, 88.24]	91.58% [86.28, 94.96]	87.88% [68.47, 96.04]
AUDIT <8 (n=5,487)	73.15% [67.81, 77.89]	79.19% [76.71, 81.47]	81.50% [79.13, 83.66]	92.31% [90.00, 94.12]
	p=.056	p=.26	p=.001	p=.42

Note: Values inside the brackets [ ] represents the 95% confidence intervals.

There were statistically significant associations between GP visits with age, sex and ethnicity (see Table 1). GP visits were lowest in the 15–24 age group (65.96%) and increased with age. Nearly all adults aged 65+ years had visited a GP in the past year (93.20%). The proportion of females visiting a GP was higher (81.73%) than males (72.70%). Over three-quarters of non-Māori (78.00%) had accessed a GP and 72.81% of Māori.

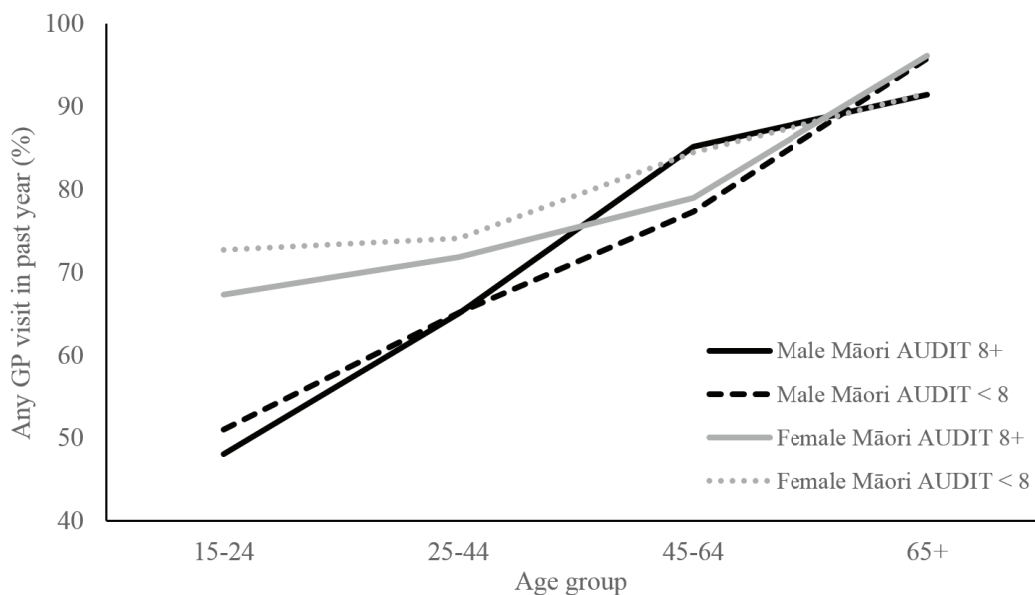
### Effects of age, sex and ethnicity

Sub-group analyses were undertaken to determine whether the association between hazardous drinking and any GP visit differed in relation to age, sex or ethnicity.

Table 2 indicates GP visits tended to increase with age for both males and females. Among people aged under 45 years who met hazardous drinking criteria, GP visits were greater among females than males.

**Māori males.** Across all age groups, no associations between hazardous drinking and any GP visit were found for Māori males. That is, GP visits for Māori males were similar for those who did and did not meet hazardous drinking criteria. Overall, Māori males aged 15–24 years were least likely to have visited a GP in the past year regardless of drinking behaviour (see Figure 1) (48.03% hazardous drinking; 51.05% safer drinking).

**Figure 1:** Association between hazardous drinking (AUDIT 8+) and any GP visit in the past year among Māori males and females across different age groups.

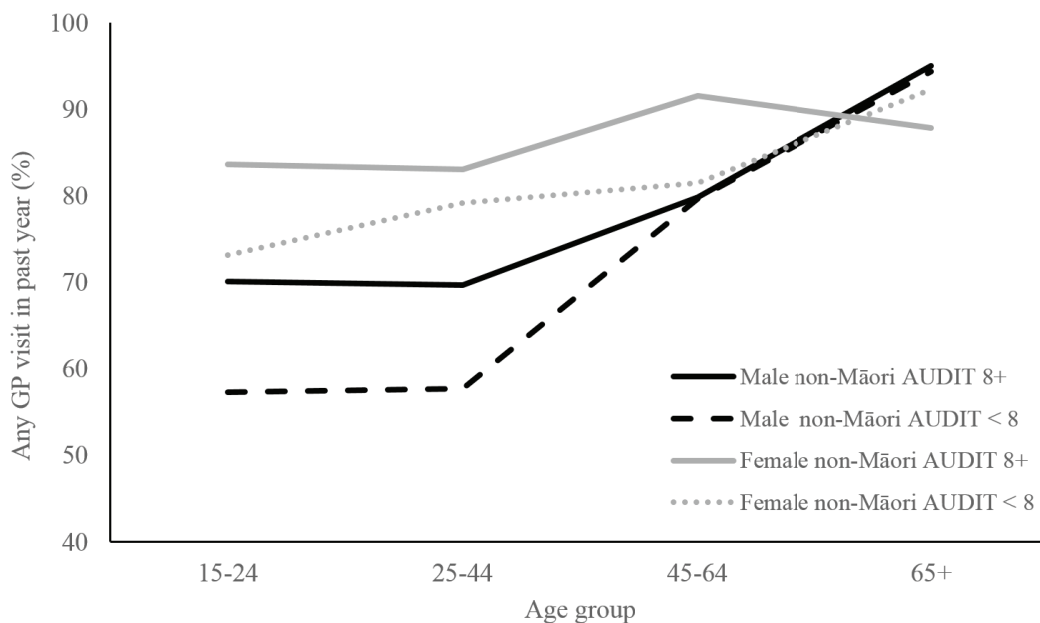


*Māori females.* Figure 1 indicates GP visits were similar among Māori females who met hazardous drinking criteria and those who did not across all age groups.

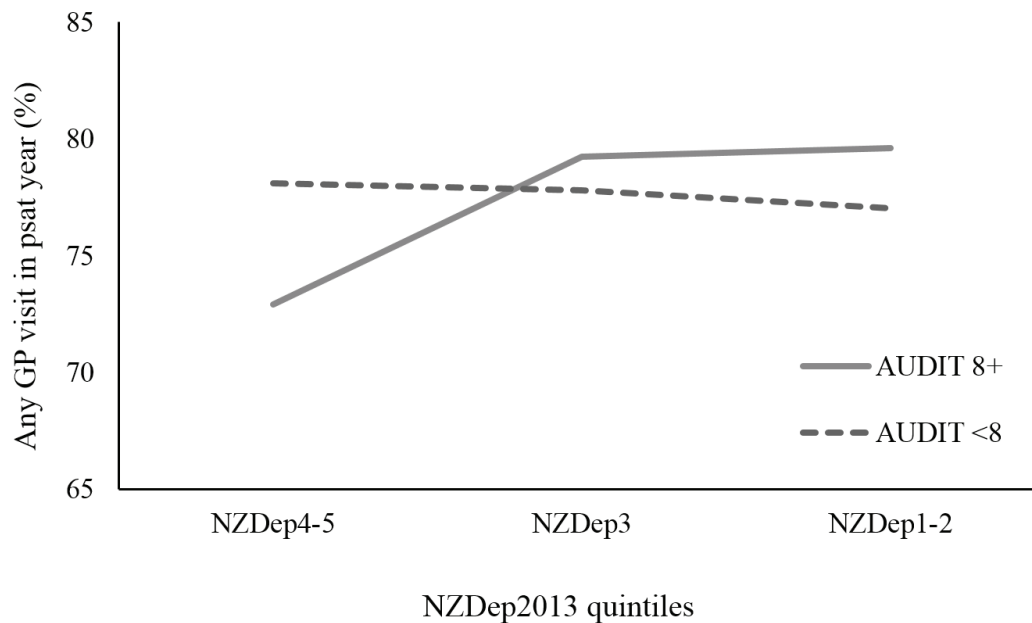
*Non-Māori males.* Among non-Māori males aged under 45, a significantly greater proportion of people who met hazardous drinking criteria had visited a GP in the past year than safer drinkers (approximately 70% and 57% respectively). Among non-Māori males aged over 45, no association between hazardous drinking and GP utilisation was found (see Figure 2).

*Non-Māori females.* Like non-Māori males, a greater proportion of non-Māori females aged 15–24 and 45–64 years who met hazardous drinking criteria had visited a GP than safer drinkers (see Figure 2). Among non-Māori females aged 15–24 years who met hazardous drinking criteria, 83.63% had visited a GP compared to 73.15% of safer drinkers (91.58% and 81.50% respectively among non-Māori females aged 45–64 years). No significant association between hazardous drinking and GP utilisation was found among non-Māori females aged 25–44 and 65+ years.

**Figure 2:** Association between hazardous drinking (AUDIT 8+) and any GP visit in the past year among non-Māori males and females across different age groups.



**Figure 3:** Association between hazardous drinking (AUDIT 8+) and any GP visit past year across socioeconomic deprivation quintiles.



In summary, no associations between hazardous drinking and GP visits for Māori were found. For non-Māori, there was a positive association between hazardous drinking and GP visits for some age and sex groups.

### Post-hoc analyses

Post-hoc analyses examining the impact of socioeconomic deprivation on the association between hazardous drinking and GP visits showed 72.92% [69.78, 75.85] of people living in more deprived areas (NZDep2013 quintiles 4 and 5) who met hazardous drinking criteria had visited a GP, compared to 78.11% [76.41, 79.71] of people drinking at safer levels,  $p < .01$  (see Figure 3). That is, GP visits among people living in more deprived areas who met hazardous drinking criteria were lower than those drinking at safer levels.

## Discussion

### Key findings

The main finding is the association between hazardous drinking and any past year GP visit depends on sociodemographic variables including age, sex and ethnicity.

GP visits among people who did and did not meet hazardous drinking criteria increased with age and tended to be higher among females than males, especially among people aged under 45 years.

Māori people who met hazardous drinking criteria were less likely to have visited a GP in the past year than non-Māori in the same demographic groups, particularly males aged under 45 and females under 65 years. Among young people aged 15–24 years who met hazardous drinking criteria, 48.03% of Māori males had accessed a GP and 70.09% of non-Māori males (67.28% and 83.63% for Māori and non-Māori females respectively). Young Māori males had the lowest rate of GP visits overall, irrespective of drinking behaviour, with only about half visiting a GP in the past year.

When looking at the influence of hazardous drinking within ethnic groups, results differed for age and sex groups. For Māori, GP visits were similar for people who met hazardous drinking criteria and those who did not. In contrast, GP visits were higher for some non-Māori groups who met hazardous drinking criteria. Among non-Māori males aged under 45 years, and females aged 15–24 and 45–64 years, GP visits were 10–13 percentage points *higher* among people who met hazardous drinking criteria than safer drinkers.

Post-hoc analyses demonstrated that in more deprived areas, the percentage of GP visits were lower among people who met hazardous drinking criteria than safer drinkers.

## Limitations

The analyses were not designed to directly compare results for Māori and non-Māori people—findings reported are descriptive only. While deprivation was examined, the descriptive results do not control for this and may partly explain the lower proportion of GP visits among younger Māori people in particular.

While some within group differences were specifically tested, other nuanced differences likely exist. For example, it would be useful to examine the association between hazardous drinking and GP visits among Māori males and females living in more deprived areas in future research. Non-Māori also included multiple ethnic groups, including Asian people who tend to access GPs at a lower rate than non-Asian people.<sup>3</sup>

Further analysis of sub-population groups in the current study was limited by the available sample sizes. Future studies should consider combining several years of NZHS data to enable further insights into subpopulations at greatest risk. GP visits are currently examined by the NZHS, rather than broader primary care use, which would be usefully examined in future health surveys.

## Implications for improving access to primary care for Māori

Results highlight the need to reduce inequalities and improve access to GP services by Māori people, and people living in more deprived areas. The low rate of GP visits among young Māori males is particularly concerning given alcohol is the leading cause of mortality among adults aged under 50 years, primarily due to road injuries and self-harm.<sup>1</sup>

The *Wai2575 Māori Health Trends Report* shows Māori adults are generally more likely to have unmet needs and less likely to see a GP than non-Māori, and that this pattern has not changed much over the last 10 years.<sup>13</sup> Access to healthcare is a key contributing factor in health inequalities. The poor access to primary care by Māori is considered a key factor in the higher rates of illness and hospitalisations for Māori and in generating poorer health outcomes.<sup>14</sup> The strategies used so far to improve health inequalities for Māori have not worked and

there is a need to prioritise implementation of new approaches that make a difference.

A range of approaches to improve access to primary care for Māori have been recommended, including addressing individual barriers (eg, choice of appointment times, transport and cost); enhancing existing services (eg, communication skills, addressing racism and health professional attitudes, tailoring health promotion messages, cultural responsiveness and workforce representativeness); and increasing the availability of services in other settings acceptable to Māori (such as kaupapa Māori and community services).<sup>15,16</sup> Greater engagement with Māori may be supported through building relationships with local communities and enhancing cultural competency of the health workforce.

The finding that young Māori males are least likely to visit a GP has significant implications on how to reach this group. Moreover, while young non-Māori (of both genders) who drink hazardously are more likely to visit a GP compared to safer drinkers, the results differ for Māori. Young Māori males and females who drink hazardously visit a GP at the same level, or potentially even less, than safer drinkers. While the reasons for this cannot be explained by NZHS data, findings point to the need for public health approaches to reach young Māori. A multi-pronged approach that supports both prevention and early intervention is required to increase equity in access and outcomes for Māori.

At a policy level it is important that budget announcements to invest NZ\$455.1 million in primary health over the next five years (see [www.treasury.govt.nz](http://www.treasury.govt.nz)) include kaupapa Māori and other cultural services, and that these services also support people with alcohol and other drug issues, alongside mental health needs. Commitment from the government and health services to improving health equity is also important, along with local initiatives and plans, and new workforce roles to improve access and outcomes for Māori. The principles of partnership with Māori, *mana motuhake*, and active protection are also key to ensuring decision-making involves Māori communities, *hapū* and *iwi*, and that solutions are developed that work for Māori.

## Implications for enhancing responses to hazardous alcohol use in existing primary care services

While GP visits may be for a range of reasons, for people who access these services, this might be an appropriate setting for the provision of screening and brief intervention for hazardous alcohol use.<sup>17</sup>

*Screening.* Alcohol screening in general practice settings is not yet routine practice in New Zealand and is a missed opportunity to recognise and provide early healthcare support and advice.<sup>18</sup> To ensure early identification of people who access GP services, it is recommended that annual screening be undertaken for people aged 15–25 years, and five yearly screening for those aged 35 years and over.<sup>19</sup> Given time pressures on GPs, it is appropriate that practice nurses and other health practitioners take on the role of screening.<sup>20</sup> For screening to be routinely offered, ongoing training and mentoring is needed to maintain health practitioners' awareness, confidence and skills, along with ongoing support for implementation.

Primary health services need to ensure both Māori and non-Māori people are screened for hazardous alcohol use. Some evidence suggests alcohol screening in health services is less likely among Māori people.<sup>21</sup>

*Brief interventions and referrals.* While evidence for the efficacy of brief alcohol interventions is modest,<sup>22</sup> even small reductions in alcohol use can have a positive impact on people's physical health and wellbeing.<sup>23</sup> Moreover, brief interventions have the potential to be feasibly and widely implemented in primary care and other community settings.<sup>21</sup> As with screening, ongoing training and development in brief interventions is required to ensure knowledge and skills are developed and maintained in practice. Where people may require additional support, referral to an addiction practitioner or specialist alcohol and other drug service, is part of a stepped-care approach.<sup>21</sup>

It is important that culturally appropriate screening and brief intervention options are available for Māori. This may require the development of different strategies for Māori that include cultural adaptations of standard screening and brief intervention

approaches, and development of co-designed eHealth tools.<sup>24, 25</sup> For example, Takitaki Mai is a cultural adaptation of motivational interviewing which incorporates pōwhiri processes to support engagement with Māori and their whānau.<sup>26</sup> There is also a need to develop primary health roles that work outside the GP context, such as people working in Whānau Ora and those engaged in assertive outreach with kaupapa Māori health and social services.<sup>24, 25</sup> Initiatives centred on values such as mana and whanaungatanga, that recognise and respond to whānau, can also help maximise positive outcomes for Māori.

*Other strategies.* While three-quarters of people meeting hazardous drinking criteria visited a GP in the past year, it may be the case that alcohol-related issues were not raised in discussions given many people fear others' reactions and experience self-stigma.<sup>17</sup> Educational programmes, as well as organisational values and policies can help reduce alcohol-related stigma among primary health workers.<sup>27</sup>

A range of non-stigmatising information needs to be available for people wanting to reduce their substance use including self-help strategies and advice on where to go for help.<sup>28, 29</sup> Information needs to be tailored and relevant to different population groups, including young Māori males. Access to addiction and mental health literacy programmes may also be important, particularly among younger males.<sup>30</sup> Health literacy information targeting parents and other whānau members which provides information on the harms of hazardous drinking and what to do to keep youth safe is also important.

## Future research

While the impact of sociodemographic variables on the relationship between hazardous drinking and GP visits were examined in this study, and should be included in future analyses, GP utilisation may depend on other factors that require further examination. This study examined any past year GP visit and results may differ for the frequency of GP use. A better understanding of why some people, particularly young Maori, are less likely to access GPs is also required as this has important implications for interventions going forward.



Future research may usefully examine the impact of alcohol use disorders as indicated by AUDIT scores over 20, as well as the reason for GP visits which may be related to long-term health conditions, substance use or mental health issues. Moreover, the outcomes of primary care interventions aimed at addressing alcohol issues for Māori should be examined, as well as barriers and enablers to access, particularly for younger people.

## Conclusions

Using data from the NZHS, this paper helps highlight priority areas in responding to the one in five people who meet criteria for hazardous drinking each year. To provide effective primary health responses to Māori, particularly younger people, who meet hazardous drinking criteria, there is a need to ensure services are designed and delivered in culturally responsive ways to enhance engagement and provided in a range of settings.

For people who do access GP services, this is an important first point of contact with the healthcare system and opportunities exist for the adoption of routine alcohol screening and brief interventions to improve health outcomes.

Attention is also required to improve GP access for people living in more deprived areas.

Multiple strategies need to be prioritised to achieve equity in service access to support people at risk of hazardous drinking. This includes developing and implementing new approaches that make a difference, addressing individual barriers to service access, enhancing existing primary care services (eg, screening, brief interventions and workforce development), the availability of services in other settings that are acceptable to Māori, and broader health promotion as part of a multi-pronged approach supporting both prevention and early intervention.

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Nil.

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## REFERENCES:

1. Griswold MG, Fullman N, Hawley C, Arian N, Zimsen SRM, Tymeson HD, et al. Alcohol use and burden for 195 countries and territories, 1990–2016: A systematic analysis for the Global Burden of Disease Study 2016. *The Lancet*. 2018; 392(10152):1015–35.
2. Saunders JB, Aasland OG, Babor TF, de la Fuente JR, Grant M. Development of the Alcohol Use Disorders Identification Test (AUDIT): WHO collaborative project on early detection of persons with harmful alcohol consumption—II. *Addiction*. 1993; 88(6):791–804.
3. Ministry of Health. Annual data explorer 2016/17: New Zealand Health Survey [data file] 2017 [cited 8 October 2018]. Available from: <http://minhealthnz.shinyapps.io/nz-health-survey-2016-17-annual-update>
4. Wells JE, Baxter J, Schaaf D. Substance use disorders in Te Rau Hinengaro: The New Zealand mental health survey. Wellington: Alcohol Advisory Council of New Zealand; 2006.
5. Government Inquiry into Mental Health and Addiction. He Ara Oranga: Report of the Government Inquiry into Mental Health and Addiction. Wellington, New Zealand: Crown copyright New Zealand 2018; 2018.
6. Paton-Simpson G, McCormick IR, Powell A, Adams P, Bunbury D. Problem drinking profiles of patients presenting to general practitioners: Analysis of Alcohol Use Disorders Identification Test (AUDIT) scores for the Auckland area. *New Zealand Medical Journal*. 2000; 113(1105):74–7.
7. Lange S, Shield K, Monteiro M, Rehm J. Facilitating screening and brief interventions in primary care: A systematic review and meta-analysis of the AUDIT as an indicator of alcohol use disorders. *Alcoholism, Clinical and Experimental Research*. 2019; 43(10):2028–2037.
8. Scott KM, Marwick JC, Crampton PR. Utilization of general practitioner services in New Zealand and its relationship with income, ethnicity and government subsidy. *Health Services Management Research*. 2003; 16(1):45–55.
9. Bijl RV, Ravelli A. Psychiatric morbidity, service use, and need for care in the general population: Results of the Netherlands mental health survey and incidence study. *American Journal of Public Health*. 2000; 90(4):602–7.
10. Cherpitel CJ. Emergency room and primary care services utilization and associated alcohol and drug use in the United States general population. *Alcohol and Alcoholism*. 1999; 34(4):581–9.
11. Babor TF, Robaina K. The Alcohol Use Disorders Identification Test (AUDIT): A review of graded severity algorithms and national adaptations. *The International Journal of Alcohol and Drug Research*. 2016; 5(2):17–24.
12. Meneses-Gaya Cd, Zuardi AW, Loureiro SR, Crippa JAS. Alcohol Use Disorders Identification Test (AUDIT): An updated systematic review of psychometric properties. *Psychology & Neuroscience*. 2009; 2(1):83–97.
13. Ministry of Health. Wai 2575 Māori health trends report. Wellington: Ministry of Health; 2019.
14. Russell L, Smiler K, Stace H. Improving Māori health and reducing inequalities between Māori and non-Māori: Has the primary health care strategy worked for Māori? An evaluation of the period 2003–2010. Wellington: Health Services Research Centre; 2013.
15. Jansen P, Smith K. Māori experiences of primary health care: Breaking down the barriers New Zealand Family Physician. 2006; 33(5):298–300.
16. Barwick H. Improving access to primary care for Māori, and Pacific peoples: A literature review commissioned by the Health Funding Authority. Wellington: Ministry of Health; 2000. Available from: [http://ndhadeliver.natlib.govt.nz/delivery/DeliveryManagerServlet?dps\\_pid=IE5285224](http://ndhadeliver.natlib.govt.nz/delivery/DeliveryManagerServlet?dps_pid=IE5285224)
17. Glass JE, Andréasson S, Bradley KA, Finn SW, Williams EC, Bakshi AS, et al. Rethinking alcohol interventions in health care: A thematic meeting of the International Network on Brief Interventions for Alcohol & Other Drugs (INEBRIA). *Addiction Science & Clinical Practice*. 2017; 12(1):14.
18. Maynard K, Paton S. Increasing the use of alcohol screening and brief intervention in New Zealand. *Kōtuitui: New Zealand Journal of Social Sciences Online*. 2012; 7(2):72–82.
19. The Royal New Zealand College of General Practitioners. Implementing the ABC alcohol approach in primary care: To record alcohol intake and provide brief advice and counselling for patients whose alcohol behaviours may be harmful. Wellington: The Royal New Zealand College of General Practitioners; 2012.

20. O'Brien A, Leonard L, Deering D. Could an advance practice nurse improve detection of alcohol misuse in the emergency department? *International Journal of Mental Health Nursing*. 2012; 21(4):340–8.
21. Gifford H, Paton S, Cvitanovic L, McMenamin J, Newton C. Is routine alcohol screening and brief intervention feasible in a New Zealand primary care environment? *New Zealand Medical Journal*. 2012; 125(1354):17–25.
22. Kaner EF, Beyer FR, Muirhead C, Campbell F, Pienaar ED, Bertholet N, et al. Effectiveness of brief alcohol interventions in primary care populations. *Cochrane Database of Systematic Reviews*. 2018; (2).
23. Lai J, Hanton P, Jury A, Tuason C. Reducing days of alcohol use improves lifestyle and wellbeing: An analysis of outcomes data from New Zealand adult community alcohol and other drug services. *New Zealand Medical Journal*. 2019; 132(1495):54–64.
24. McCormick R, Kalin C, Huriwai T. Alcohol and other drug treatment in New Zealand -one size doesn't fit all. *New Zealand Medical Journal*. 2006; 119(1244).
25. Adamson S, Sellman D, Deering D, Robertson P, de Zwart K. Alcohol and drug treatment population profile: A comparison of 1998 and 2004 data in New Zealand. *New Zealand Medical Journal*. 2006; 119(1244):U2284.
26. Britt E, Gregory D, Tohiariki T, Huriwai T. *Takitaki mai: A guide to motivational interviewing for Māori*. Wellington: Matua Ra-i; 2014.
27. Berends L, Lubman D. Obstacles to alcohol and drug care: Are Medicare Locals the answer? *Australian Family Physician*. 2013; 42:339–42.
28. Ministry of Health. *Alcohol use in New Zealand: Key results of the 2007/08 New Zealand alcohol and drug use survey*. Wellington: Ministry of Health; 2009.
29. Doherty DT, Kartalova-O'Doherty Y. Gender and self-reported mental health problems: Predictors of help seeking from a general practitioner. *British Journal of Health Psychology*. 2010; 15(1):213–28.
30. Cotton SM, Wright A, Harris MG, Jorm AF, McGorry PD. Influence of gender on mental health literacy in young Australians. *The Australian and New Zealand Journal of Psychiatry*. 2006; 40(9):790–6.