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Alcohol screening in 22 Australian Aboriginal Community Controlled Health Organisations: Clinical context and who is screened

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Abstract

Introduction: Alcohol screening among Indigenous Australians is important to identify individuals needing support to reduce their drinking. Understanding clinical contexts in which clients are screened, and which clients are more or less likely to be screened, could help identify areas of services and communities that might benefit from increased screening.

Methods: We analysed routinely collected data from 22 Aboriginal Community Controlled Health Organisations Australia-wide. Data collected between February 2016 and February 2021 were analysed using R, and aggregated to describe screening activity per client, within 2-monthly extraction periods. Descriptive analyses were performed to identify contexts in which clients received an Alcohol Use Disorders Identification Test consumption (AUDIT-C) screen. Multi-level

logistic regression determined demographic factors associated with receiving an AUDIT-C screen. Three models are presented to examine if screening was predicted by: (i) age; (ii) age and gender; (iii) age, gender and service remoteness.

Results: We observed 83,931 occasions where AUDIT-C was performed at least once during a 2-monthly extraction period. Most common contexts were adult health check (55.0%), followed by pre-consult examination (18.4%) and standalone item (9.9%). For every 10 years' increase in client age, odds of being screened with AUDIT-C slightly decreased (odds ratio 0.98; 95% confidence interval [CI] 0.98, 0.99). Women were less likely to be screened with AUDIT-C (odds ratio 0.95; 95% CI 0.93, 0.96) than men.

Discussion and Conclusions: This study identified areas where alcohol screening can be increased (e.g., among women). Increasing AUDIT-C screening across entire communities could help reduce or prevent alcohol-related harms. Future Indigenous-led research could help identify strategies to increase screening rates.

1 | INTRODUCTION

Globally, harms from alcohol use impact individuals, families and their communities [1, 2]. Alcohol causes 1 in 20 deaths (5.3%; in 2016) and 1 in 20 individuals live with an alcohol use disorder (5.1%; aged 15+; in 2016) [3]. In Australia, more than three out of four individuals consumed alcohol in the past 12-months (78.8%; aged 18+; from July 2017 to June 2018) [4]. Among Aboriginal and Torres Strait Islander (hereafter, 'Indigenous') Australians, the harms of alcohol are recognised [5, 6]. Indigenous Australians had their land stolen from them, endured government policies aimed to systematically remove their language and culture, and had their children taken from them—The Stolen Generations [5, 7–10]. Therefore, alcohol use needs to be understood within the historical context of colonisation as Indigenous Australians may turn to alcohol to numb their pain and ongoing trauma [5, 11]. The ongoing impacts of colonisation can increase the risk of short-term and long-term harms to individuals in Indigenous communities.

Screening for alcohol use is important to identify individuals who may need help to reduce their consumption [1, 12]. For example, screening can help to identify individuals whose drinking may put them at greater risk of short-term or long-term harm, including individuals who might have an alcohol use disorder [1]. Indigenous Australians can be better supported when clinicians use structured screening tools, not just unstructured assessments [13]. In particular, using short screening tools, such as the Alcohol Use Disorders Identification Test consumption (AUDIT-C) [14], has shown to be acceptable, at least in comparison to the full AUDIT, for Indigenous communities (urban and remote) [15, 16]. Therefore, using appropriate structured screening tools to detect unhealthy drinking is important to better support Indigenous Australians through early screening and brief intervention.

Throughout Australia, there are currently over 140 Aboriginal Community Controlled Health Organisations (ACCHO) [17]. They have been in existence since the 1970s, are community-led, cater to the needs of the local community and are therefore in a unique position to help Indigenous Australians reduce impacts from alcohol [15, 18]. Many ACCHOs are already working to address alcohol and other drug-related issues in their communities [18]. Thus, it is important to identify strategies to support efforts by ACCHOs to address alcohol-related harm, and to support individuals and communities who may be consuming alcohol at unhealthy levels.

In Australia, AUDIT-C is recommended for use in ACCHOs [12]. At the time of the study, ACCHOs were required to report rates of AUDIT-C screening as part of their national Key Performance Indicators to their funding body, the Australian Government Department of Health [19]. ACCHOs can be supported to increase screening [20–22]. However, efforts to increase screening should be mindful of those clients who may be less likely to be screened regularly and may not receive support when needed [23]. For example, clients in some demographic groups (e.g., those women who do not need to present for antenatal, postnatal or contraception-related health needs) might be less likely to be screened, and therefore not receive support when needed. Thus, it is important that ACCHOs receive support to ensure that individual community members are screened appropriately.

It is also useful to understand the contexts where screening is taking place [13]. Such contexts could include during Adult Health Checks, chronic condition management consultations or opportunistically. This can identify potential areas of work within ACCHOs where support might help increase rates of alcohol screening.

In this paper, we aimed to: (i) identify in what clinical settings or contexts Indigenous Australian clients are being screened with AUDIT-C (e.g., during chronic condition management or opportunistically); and (ii) identify participant demographics (e.g., age, gender, remoteness) associated with greater likelihood of being screened with AUDIT-C. We examined a large dataset, provided by 22 ACCHOs, of clinical interactions with Indigenous Australian clients, over a 5-year period. We performed a descriptive analysis to identify the clinical circumstances associated with clients being screened with AUDIT-C. We used multi-level logistic regression to explore whether demographic factors (age, gender and remoteness) influence AUDIT-C screening rates.

2 | METHODS

2.1 | Aboriginal leadership

This study was designed by a study investigator (Katherine M. Conigrave) in consultation with the Aboriginal Health Council of South Australia. The methods were refined in association with the Aboriginal Health and Medical Research Council of New South Wales and the 22 ACCHOs who were enrolled in the study. The lead author (Teagan J. Weatherall) is an Aboriginal Australian of the Kamilaroi and Anaiwan nations.

2.2 | Ethical approval

Approval was obtained from eight ethics committees in Australia: the Aboriginal Health and Medical Research Council of New South Wales Ethics Committee (project 1217/16), Central Australian Human Research Ethics Committee (project CA-17-2842), Human Research Ethics Committee of Northern Territory Health and Menzies School of Health Research (project 2017-2737), Central Queensland Hospital and Health Service Human Research Ethics Committee (project 17/QCQ/9), Far North Queensland Human Research Ethics Committee (project 17/QCH/45-1143), The Aboriginal Health Research Ethics Committee, South Australia (project 04-16-694), The St Vincent's Hospital Melbourne Human Research Ethics Committee (project LRR 036/17) and The Western Australian Aboriginal Health Ethics Committee (project 779).

2.3 | Setting

Data were collected as part of a cluster-randomised controlled trial. The overall aim of the trial was to determine whether training and support provided to ACCHOs can increase rates of AUDIT-C screening. The main results of this study have been published previously [13, 22–24]. In this paper we report on the contexts in which screening occurred, pooling data across all phases of the trial. A total of 22 ACCHOs participated in the study. ACCHOs were recruited if they saw at least 1000 clients annually and used Communicare as their practice management software. The recruitment process has been described in detail elsewhere [25]. Only data from Indigenous Australian clients who were at least 15 years of age or older were included.

2.4 | Data collection

De-identified, routinely collected Communicare data were extracted every 2 months from the 22 ACCHOs from 28 February 2016 to 28 February 2021. The data summarised client attendance within each 2-monthly extraction period. Each observation described when a client attended a given service during a 2-monthly data extraction period. We examined all instances where people were screened at least once during a 2-month period. In uncommon cases where people were screened more than once during a 2-month data extraction period, we used the most recent context.

2.5 | Variables

2.5.1 | Demographics

Demographic data included age and gender. Remoteness was based on service location and the Australian Bureau of Statistics Remoteness Structure. Service remoteness was classified as: 'urban and inner regional', 'outer regional and remote' or 'very remote' [26].

2.5.2 | Alcohol Use Disorders Identification Test-C

AUDIT-C is comprised of the three consumption items from the 10-item Alcohol Use Disorders Identification Test (AUDIT) [14]. The first item of AUDIT-C asks: 'How often did you have a drink containing alcohol in the past year?'. Responses range from: 'never' to 'four or more times a week'. The second item asks: 'How many

drinks did you have on a typical day when you were drinking in the past year?'. Responses range from: 'none, I do not drink' to '10 or more'. The third item asks: 'How often did you have six or more drinks on one occasion in the past year?'. Responses range from: 'never' to 'daily or almost daily'. The three AUDIT-C items are each scored 0–4 with a possible total score ranging from 0 to 12. A score of 0 indicates no alcohol use. A score of 4 or more for men, and 3 or more for women, is considered indicative of an individual at risk of alcohol-related harm [27].

2.6 | Analysis

Analyses were conducted using R, version 4.2.0 [28]. The 'targets' R package was used to cache results and to organise analysis into a sequential computational pipeline [29]. We created a binary variable which described whether (1) or not (0) clients were screened with AUDIT-C during an extraction period.

2.6.1 | Frequency analysis

All unique clinical contexts in which AUDIT-C was performed were extracted. The contexts ranged from either completion of an online clinical template such as an Adult Health Check, to simply asking AUDIT-C on its own during a client consultation. Two researchers (James H. Conigrave and Katherine M. Conigrave) coded all the unique clinical contexts into 14 categories. For example: the category 'Adult Health Check' includes the clinical items 'Check up; Aboriginal & TSI adult', 'Check up; Aboriginal & TSI over 50s', 'Health Check; Aboriginal & TSI Teenager'; and 'Lifestyle Screen' includes the clinical items 'Smoking & Alcohol Assessment' and 'Review; Lifestyle; Brief Interventions' (for a full list see Table S1, Supporting Information).

2.6.2 | Exploring demographic associations of screening

Data were clustered, with multiple observations for clients who themselves are nested within ACCHOs. General linear models assume that data points are independent and such dependencies can result in invalid results. To manage this clustering, we used multi-level logistic regression models fit with the 'lme4' package [30]. These models simultaneously estimate population parameters of interest (fixed effects), while estimating deviations from these fixed effects due to data belonging to clusters (random effects). Including individual random effects allows us to understand to what

TABLE 1 Characteristics of clients and services.

Variable	
Clients	
Mean age in years (SD)	36.86 (16.27)
Female %	54.24
N	105,831
Mean AUDIT-C score (SD)	3.07 (3.26)
Services	
Remoteness	
Urban and inner regional	10
Outer regional and remote	5
Very remote	7

Note: AUDIT-C score: scored on a scale of 0–12. A score of 4 or more for men, and 3 or more for women, is considered indicative of an individual at risk of alcohol-related harm.
Abbreviations: AUDIT-C, Alcohol Use Disorders Identification Test consumption; SD: standard deviation.

extent screening is due to a fixed-effects predictor of interest (e.g., client age). Only random intercepts for services were included, as random intercepts for clients resulted in models failing to converge (indicating that the models were too complicated for the data). Three models are presented: (i) screening predicted by age; (ii) screening predicted by age and gender; and (iii) screening predicted by age, gender and service remoteness. Likelihood ratio tests were used to indicate whether model fit was improved by the inclusion of each additional predictor.

3 | RESULTS

3.1 | Demographic characteristics

The demographic characteristics of clients and ACCHOs are presented in Table 1. A total of 105,831 Indigenous Australian clients attended the 22 ACCHOs over the 5 years. There were 718,186 instances where clients attended a participating service during 2-monthly extraction periods. The mean age of clients was 36.86 years (16.27 SD) and just over half of the clients were women (54.24%; Table 1). Clients who were screened had a mean AUDIT-C score of 3.07 (3.26 SD).

3.2 | Clinical context in which clients are being screened with AUDIT-C

We examined in what clinical context clients were being screened with AUDIT-C (Table 2). In the 5-year study period, we detected 83,931 occasions when

TABLE 2 Clinical context in which clients were screened with AUDIT-C.

Context of AUDIT-C	Observations	%
Adult health check	46,197	55.0
Pre-consult exam	15,410	18.4
AUDIT-C separately	8276	9.9
Chronic condition management	3862	4.6
AHP/AHW	3126	3.7
Antenatal check	2415	2.9
Miscellaneous	2190	2.6
Lifestyle screen	568	0.7
NA	517	0.6
Mental health screen	442	0.5
AUDIT	389	0.5
Postnatal check	279	0.3
Alcohol and other drugs consult	147	0.2
Alcohol screen and AUDIT	72	0.1
Alcohol and other drugs assessment	41	0.0
Total	83,931	100.0

Note: Adult health check refers to any proactive health check for Aboriginal and Torres Strait Islander, including outreach services; Pre-exam consult could be completed by a nurse, AHP or AHW; Antenatal check: includes preconception checks; AUDIT: full 10 item form.
Abbreviations: AHP, Aboriginal Health Practitioner; AHW, Aboriginal Health Worker; AUDIT-C, Alcohol Use Disorders Identification Test consumption.

AUDIT-C was delivered. Overall, the most common context in which clients were screened with AUDIT-C was during an Adult Health Check (55.0% of screening occasions). This is a free annual health check that is available to Aboriginal and Torres Strait Islander individuals. The next most common context was as part of a pre-consult examination, which is conducted before a client sees a doctor (18.4%). The third most common use of AUDIT-C was as an additional clinical item (9.9%; Table 2). This item can be selected by a doctor or other health working during a consultation for any reason.

3.3 | Demographic predictors of being screened with AUDIT-C

We used multi-level logistic regressions to determine if demographic factors, such as age, gender or service remoteness, can explain the differences in AUDIT-C screening rates. The models are presented in Table 3. We included random intercepts for ACCHOs in the models. Odds ratios above one indicate that the predictor

increases the odds of being screened with AUDIT-C. Odds ratios below one indicate that the predictor reduces the odds of being screened with AUDIT-C.

In Model 1, we identified a significant relationship, that as clients' age increases by 10 years (a decade), the odds of being screened with AUDIT-C slightly decreased (odds ratio 0.98; 95% confidence interval 0.98, 0.99). In Model 2, we included gender and this improved model fit ($\chi^2(1) = 50.23$; $p \leq 0.001$). We found that women, compared to men, were less likely to be screened with AUDIT-C (odds ratio 0.95; 95% confidence interval 0.93, 0.96). In Model 3 when we included remoteness this did not improve model fit ($\chi^2(2) = 0.55$; $p = 0.76$). This finding suggests that the remoteness of ACCHOs was not useful in explaining the likelihood of clients being screened with AUDIT-C (Table 3).

4 | DISCUSSION

This study aimed to identify in what clinical contexts Indigenous Australian clients are being screened with AUDIT-C, and what patient characteristics are associated with a greater likelihood of being screened. Overall, the most common contexts were during an Adult Health Check, followed by a pre-consult examination, then AUDIT-C being asked as a separate item within a consultation. Also, older clients and female clients were less likely to be screened with AUDIT-C. Identifying which clients are being screened, and in what context, can help ACCHOs plan strategies to increase alcohol screening and detect risky drinking earlier for Indigenous Australians.

4.1 | Clinical context in which clients are being screened with AUDIT-C

Overall, from the 22 ACCHOs, the most common context where AUDIT-C was conducted was during an Adult Health Check. The Adult Health Checks offered to clients of ACCHOs are designed specifically for Indigenous Australians and are funded through the Australian Government's Medicare program [31, 32]. These checks are used to detect health conditions or health risk factors, including hazardous patterns of alcohol use [7, 33]. Alcohol screening is a mandatory component of the Adult Health Checks. Also, given the stigma associated with Indigenous Australians and alcohol, ACCHO staff may feel more comfortable screening for alcohol use in the broader context of general health screening [34, 35]. When this study commenced, AUDIT-C was not routinely included in ACCHOs' Communicare (service software) template for the Adult Health Check. Some ACCHOs

TABLE 3 Hierarchical multi-level logistic regression predicting the odds of being screened with AUDIT-C by client demographics.

Predictors	OR [95% CI]	lnOR	SE	p	ICC	Likelihood ratio test
Model 1					12.21	
(Intercept)	0.11 [0.09, 0.14]	−2.20	0.10	<0.001		
Age (decade)	0.98 [0.98, 0.99]	−0.02	0.00	<0.001		
Model 2					12.22	$\chi^2(1) = 50.23$; $p \leq 0.001$
(Intercept)	0.12 [0.09, 0.14]	−2.16	0.12	<0.001		
Age (decade)	0.98 [0.98, 0.99]	−0.02	0.00	<0.001		
Female	0.95 [0.93, 0.96]	−0.05	0.01	<0.001		
Model 3					11.91	$\chi^2(2) = 0.55$; $p = 0.76$
(Intercept)	0.12 [0.09, 0.17]	−2.11	0.17	<0.001		
Age (decade)	0.98 [0.98, 0.99]	−0.02	0.00	<0.001		
Female	0.95 [0.93, 0.96]	−0.05	0.01	<0.001		
Remoteness: outer regional and remote	1.07 [0.62, 1.84]	0.07	0.28	0.81		
Remoteness: very remote	0.82 [0.47, 1.42]	−0.20	0.28	0.48		

Note: lnOR, the natural logarithm of the odds ratio (logits); SE, standard error (of lnOR); Likelihood ratio tests evaluate whether model fit improves when predictors are added to a nested model. % of variance on the lnOR scale described by clustering by service.

Abbreviations: CI, confidence interval; ICC, intra-class correlation; OR, odds ratio.

individually introduced AUDIT-C into the template early in the project, but during the course of this study it became routine in later versions of Communicare.

4.2 | Demographic predictors of being screened with AUDIT-C

In this study, we found that overall, older clients and women were less likely to be screened with AUDIT-C. The finding that men are more likely to be screened with AUDIT-C could be because Indigenous men tend to drink more frequently, and greater quantities of alcohol compared to women [36–38]. It could be that staff are consciously or unconsciously targeting screening to those whom they consider are at greater risk from alcohol. By observation, higher screening rates among men may also be due to existing efforts to increase health screening among young men. Screening may be occurring either at ACCHOs, or at other settings, such as youth groups or men's groups [39]. While women may be less likely to be risky drinkers, compared to men, it is important that any risky drinking among women is detected. This would reduce the woman's risk of harms linked to alcohol, including breast cancer. It would also reduce the risk of fetal alcohol spectrum disorder if alcohol were consumed during pregnancy [40]. Therefore, ACCHOs should aim to regularly screen the entire community. This could include offering outreach services to women's, men's or Elders' groups.

Another factor to consider is that there may be younger Aboriginal ACCHO staff who may feel uncomfortable, embarrassed or 'shame' to ask older clients about their drinking or any alcohol-related problems [34, 41]. In Indigenous communities, Elders are very respected by the younger generations, which could include younger Aboriginal ACCHO staff. To address this, ACCHO staff can work together to increase alcohol screening. ACCHOs could also target alcohol-related health promotion materials to all community members, using a range of language and imagery to appeal to everyone [42, 43].

4.3 | Implications for policy, practice and research

Currently in Australia, there is no specific funding from the Australian Government's Medicare program that is attached to AUDIT-C screening or alcohol brief interventions. Given the harms from alcohol to individuals and impacts on communities [5], it may be beneficial for ACCHOs to receive government funding specifically for alcohol screening and brief interventions. For example, a new specific Medicare Benefits Schedule item could be created for delivering advice about alcohol. Government funding will help ACCHOs address alcohol-related issues in communities and will benefit clients by providing those who need it with support to help them rethink their drinking [44].

We acknowledge that a common way for health professionals to deliver alcohol screening for Indigenous Australians is through the Adult Health Check and ACCHOs receive reimbursement for these

checks through the Medicare Benefits Schedule. While this check includes alcohol screening, it does not specify a validated screening tool. Previous research by J. Conigrave et al. showed that the use of AUDIT-C more than triples the number of individuals detected as having unhealthy drinking, compared to an unstructured item [13].

Local alcohol-related policies that are led by Indigenous communities have been shown to be effective to improve health outcomes for Indigenous Peoples [45]. By observation, local ACCHOs have been successful in increasing alcohol screening through the use of incentives, such as Indigenous-designed shirts for clients who have an Adult Health Check. Also, by observation, some ACCHOs have effectively engaged with the board, community and clinicians to further increase screening. Future research is needed to work with ACCHOs to develop and implement approaches to increase AUDIT-C screening and to measure the impact of different strategies [22]. For example, screening programs that are supported by delivering brief interventions, and where necessary, by referral to alcohol and other drug teams within ACCHOs, addiction medicine specialists, and to detoxification and residential rehabilitation services. This research should be led by and implemented by Indigenous communities.

4.4 | Limitations

This study has a number of limitations. First, the same individuals could have attended multiple ACCHOs and had AUDIT-C recorded at each service. Second, in this study the range of the 22 participating ACCHOs were recruited from most—but not all—states and territories in Australia (except Tasmania and Australian Capital Territory). However, this is unlikely to impact the study findings. Finally, AUDIT-C or other alcohol screening could have occurred during outreach visits around the community, such as during men's or women's groups or secondary school visits. Informal communication from service staff suggests outreach screening visits may not have been recorded because staff did not have the technology or time to record the events in the practice software. Future research would benefit from working with ACCHOs to identify potential barriers and enablers of collecting health screening data.

5 | CONCLUSION

Alcohol screening using structured tools, such as AUDIT-C, is important to identify individuals who may need support in reducing their consumption. Overall, older clients and women were less likely to be screened using AUDIT-C. Increasing screening rates within the entire community, including through outreach services, can be achieved by working with ACCHOs. Future research that is led by Indigenous communities can provide effective strategies to increase alcohol screening among Indigenous Australians.

CONFLICT OF INTEREST STATEMENT
The authors have none to declare.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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