The impact of an alcohol consumption intervention in community sports clubs on safety and participation: an RCT

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Abstract

Objective: Sports clubs have been identified as settings where high levels of risky alcohol consumption occurs. Settings characterised by such behaviour are likely to negatively impact on levels of safety, participation and amenity.

Design: The study was part of a randomised control trial, designed to help community sports clubs responsibly manage the sale and consumption of alcohol; the primary outcome was reduction in alcohol consumption. This study examined the secondary effects of safety and participation.

Methods: A multilevel analysis examining the pathways between the alcohol intervention, risky alcohol consumption, and safety and participation was undertaken.

Results: It was identified that average overall risky consumption at the club level mediated the association between the intervention and increased participation; the intervention reduced overall hazardous consumption, which in turn increased participation at the club.

Conclusion: Interventions that target responsible alcohol management can also increase club participation.

Implications for public health: Given the number of individuals involved with sports clubs, responsibly managing alcohol will also ensure that sports clubs are health promoting settings that promote community participation and engagement.

Key words: alcohol, sport, safety, participation

Community sports clubs promote physical activity, social engagement, networking among members and volunteering.[1] Thus, they make a positive contribution to the wellbeing of the community.[2] However, community sports clubs are not always health promoting settings.[3] They can also be settings where high levels of alcohol consumption occur; levels often much higher than in the broader community.[4,5] High levels of alcohol consumption are linked to more than 60 diseases,[6] to increased violence, reduced safety[7-9] and reduced levels of social capital.[10] Given these associations, it is possible that the positive health benefits of participating or belonging to a community sports club may be offset by these negative effects. Minimising these negative effects is critical; in many communities more than 20% of the population participate or are involved with a community sports club.[11,12]

In Australia and many other countries, it has been shown that modifying the environment to reduce the accessibility and availability of alcohol can be effective in reducing consumption and subsequent harm.[7-9,13] Restricting where and when alcohol may be used and obtained has been shown to be effective.[10] Restrictions may apply to certain locations[14] and/or the times of sale of alcohol.[15] Restricting access via increased pricing has also been demonstrated to reduce alcohol consumption and modify drinking behaviour.[16] Additionally, meta-analyses[17] and longitudinal[18] studies demonstrate that when bar staff are trained in responsible service of alcohol (RSA) practices, and these practices are supported by management and enforced, fewer patrons become intoxicated.

There is evidence that poor alcohol management strategies in community sports clubs are also linked to increased levels of alcohol consumption. A study of 72 clubs and 1,428 individuals in community sports clubs in Australia identified that practices such as serving intoxicated patrons and having alcohol promotions (e.g. happy hours, alcohol-focused prizes and awards) were associated with increased levels of risky alcohol consumption.[19] A further mediation analysis of these data identified that poor alcohol management practices were also linked to decreased levels of participation and safety at the club.[20] Risky consumption at the club mediated the relationship between poor alcohol practices and decreased levels of participation and safety.

In keeping with the harm reduction approach of reducing demand and supply of alcohol,[21] an Australian-developed program – the Good

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Sports program (www.goodsports.com.au) – has been designed and implemented.[22] The overall aim of the program is to implement evidence-based alcohol management strategies to reduce the incidence of risky alcohol consumption within the sports club setting. A recent randomised control trial (RCT) of the program identified that the program reduced risky consumption by club members.[23] Implemented over a two-year/season period, the trial identified that significantly ($p<0.05$) fewer members in the intervention clubs (19%) reported drinking more than five standard drinks at least once a month at their club, compared to control clubs (24%). Similarly, overall alcohol scores as measured by the AUDIT (score >8) were significantly ($p<0.01$) lower in the intervention club (38%), compared to the control clubs (45%).

To date, no study has examined the impact of an RCT of a sports club alcohol management intervention on safety and participation. This study examines secondary outcomes of the RCT of the Good Sports program. Given there is evidence that alcohol management practices are associated with risky consumption in sports clubs,[19] and there is evidence that this association is also associated with safety and participation,[20] it was hypothesised that the intervention while decreasing risky consumption would also increase participation and safety of club members.

Table 1: Characteristics of participating football clubs and club members.

Characteristic	Control	Intervention
a) Clubs	**N=45**	**N=42 ***
Football code		
Rugby League	31.0%	33.3%
Rugby Union	33.3%	26.7%
Soccer/association football	19.0%	24.4%
Australian Rules football	16.7%	15.6%
Geographical region		
Major city	83.3%	80.0%
Inner/outer regional	16.7%	20.0%
Club size		
Mean number of players (SD)	259 (360)	272 (235)
b) Members who participated in baseline survey	**N=711**	**N=700**
Club role		
Players	60.1%	47.0%
Spectator/other members	13.9%	18.3%
Club committee members	12.1%	18.3%
Coaches/umpires/referees	13.9%	16.5%
Age of members		
Mean (SD)	36.0 (11.9)	32.7 (12.0)
Gender		
Male	77.4%	87.0%
Education		
University educated	21.0%	23.2%
Income		
More than AU$52,000	49.3%	48.0%

Note:
**One club missing due to missing data at baseline*

Methods

A comprehensive description of the study methods has been published previously.[24]

Design

A repeat cross-sectional, parallel group cluster randomised controlled trial was undertaken, with community football clubs (clusters) randomised to either a control or an intervention group. The primary outcomes were: risky drinking at the sporting club and overall alcohol-consumption related harm regardless of drinking setting.[24] A secondary trial outcome was the effect of the intervention on social capital, measured by the constructs of safety and participation. The outcomes were assessed through cross-sectional surveys of club members and club representatives approximately six months pre-intervention and immediately following an intervention that was implemented over 2.5 sporting seasons.

Setting

The study was undertaken with community football clubs located in the Hunter, New England and Sydney regions of the state of New South Wales, Australia. The study area included major cities and rural communities accounting for approximately 75% of the state's population of eight million people and 25% of Australia's overall population.[25]

Participants

Clubs

Characteristics of participating clubs and members are presented in Table 1. Clubs were defined as being community-level and non-elite if they were not a part of a major national league or competition. A representative was nominated by each identified club to participate in eligibility screening and data collection on behalf of the club.

Club members

Club members were eligible to participate in the study if they were at least 18 years of age, spoke English and were current members of the club (e.g. players, committee members, spectators/fans or coaches).

Recruitment

Clubs

The club representatives from all 328 identified clubs within the study area were interviewed by telephone to determine club eligibility and, if eligible, to invite the club to participate in the study.

Club members

A quasi-random selection process was used to recruit club members for both the baseline and post-intervention cross-sectional surveys.[24] Study information sheets and consent forms were printed on institutional letterheads and distributed by clubs' representatives to the 25 members of the club with the most recent birthday. Members who agreed to participate in the study were asked to advise the club representative of their consent to do so. Club representatives provided the telephone details of consenting members to the project team. All of the club members who consented were telephoned by the research team to formally confirm eligibility and participation in the study. Each participating club was provided with a $250 payment at both baseline and post-intervention data collection to compensate for resources required to recruit members.[24] More detail of the recruitment can be found in the protocol.[24]

Random allocation and blinding

Following the completion of baseline data collection from club representatives and members, participating clubs were randomly allocated to intervention or control conditions using simple randomisation in a 1:1 ratio, stratified by football code and geographic area (based on postcode of club).

Intervention

The intervention was based on an existing community sporting club intervention (Good Sports), which aimed to reduce risky alcohol consumption through facilitating the establishment of alcohol service and management policies and practices by clubs. The feasibility and potential efficacy of the Good Sports intervention has been previously demonstrated.[5,26] Greater detail about the intervention is reported elsewhere.[24]

Control group

During the intervention period, control club management received printed resources on topics unrelated to the trial outcomes.[24] The intervention clubs also received these resources.

Data collection procedures and measures

Primary outcomes

At baseline and post-intervention, computer-assisted telephone surveys were conducted with club members from intervention and control groups to assess their alcohol consumption behaviour and risk of alcohol-related harm. Baseline data were collected June–August 2009 and post-intervention data were collected July–October 2012. Survey scripts were pilot-tested prior to use.

Risky alcohol consumption at sporting clubs

As the intervention was delivered at a club level, alcohol consumption was calculated at an individual level and a club level. Club-level consumption was calculated by averaging responses at the club level. Alcohol consumption by club members while at their sporting club was assessed using the graduated frequency index (GFI).[27] The GFI measured whether a club member reported having consumed 5+ standard drinks at their club at least monthly over the past three months (1=yes; 0=no).

The Alcohol Use Disorders Identification Test (AUDIT) was used to measure club members' risk of overall alcohol-related harm; scales included alcohol consumption, alcohol problems and alcohol dependence. The following alcohol-related harm cut-points were used: 1) AUDIT-C: an alcohol consumption score of 6 or more (items 1–3); 2) AUDIT-D: a dependency score of 4 or more (items 4–6); 3) AUDIT-P: an alcohol-related problems score of 1 or more (items 7–10).[28] At the individual level, the cut-points were used as binary variables; at the club level, averages of the continuous scores were used.

Secondary outcome: member-perceived participation and safety

Club participants were asked six questions drawn from the Onyx and Bullen[29] social capital instrument and phrased for a community sports club context. These items were from the 'trust and safety' and 'participation' scales. The other items from the Oynx and Bullen scale were not used as they were judged to not be directly associated with the consequences of alcohol-related behaviour in community sports clubs as outlined in the literature. Responses to each of the six questions were made using a 4-point Likert scale, where 1 indicated strong agreement, and 4 indicated strong disagreement. Higher scores indicated stronger disagreement.

Statistical analysis

Statistical analyses were done with Stata (V.13) and Mplus (V.7.3). Descriptive statistics were produced with Stata. Club postcode was used to classify clubs as being in a 'major city' or 'inner/outer regional' area based on the Australian Standard Geographical Classification (based on the postcode of the club).[30] Fisher's Exact and Wilcoxon tests were used to assess potential bias due to differences in clubs lost to post-intervention across the two treatment groups.

A multilevel analysis was undertaken with Mplus. Mplus separates between and within group variance and permits models to be simultaneously assessed at the individual level (between participants) and at the club level (between groups/clubs). This type of analysis is particularly relevant to interventions that are delivered at a group level but measured at an individual level. It is also relevant to the analysis of constructs that are applicable at the group and individual level but are fundamentally measured at the individual level. Variables measured at the individual level can be separated into within and between group variance and used in either level of the analysis. Variance for variables measured at the group level can only be used at the group level.

The analytical strategy was as follows: First, an analysis confirming the validity of the six items to measure participation and safety at the individual level (within groups) and club level (between groups) was undertaken. Following this, a structural equation model was developed and mediational analyses were undertaken – the mediation path from the intervention through all measures of drinking to participation and safety. Model fit was assessed with the following Fit Indices, CFI (>0.90), TLI (>0.95), SRMR (<=0.06) and RMSEA (<=0.08).[31] Mediated effects were estimated and tested for significance, using the Mplus 'indirect' command. All analyses adjusted for clustering at the community football club level.

Trial registration

The trial was prospectively registered with the Australian New Zealand Clinical Trials Registry: ACTRN12609000224224.

Ethics approval

The study was approved by the University of Newcastle Human Research Ethics Committee on the 29/1/09; no: H-2008-0432.

Results

Baseline

A total of 328 football sports clubs were approached; 70% were eligible to participate (n=244); 36% (n=88) of all eligible clubs participated in the study. Figure 1 portrays the CONSORT process used to recruit clubs and members. The number of consenting and non-consenting clubs did not differ significantly by football code (χ^2=6.68 [1]; p=0.08), or geographical region (χ^2=2.0 [1]; p=0.66). Table 1 outlines the demographic details of the clubs.

In all, 87 clubs and 1,411 members provided data for the club and member surveys, respectively, at baseline. Table 1 outlines characteristics of participating clubs and members. Eight clubs were lost to follow-up. A total of 1,143 members (80 clubs) provided data at follow-up. At follow-up, 25 of the 43 (58%) intervention clubs had completed the full intervention (Level 3 accreditation). The difference between the percentage of clubs in the intervention and control conditions that were lost to follow-up was not significant.

Member characteristics

At baseline, club members were on average 30+ years of age, most were male, and most were players. Club members in intervention clubs were older and more likely to be male compared with members of comparison clubs, otherwise the characteristics of clubs and members were similar between groups. There was an average of 82% consent rate for club members, with no significant differences between intervention and control. The number of participants who did not provide follow-up data was not significantly different between groups.

Alcohol consumption, individual and club level

Alcohol consumption for the GFI and AUDIT and its subscales are presented in Table 2. Consumption levels at the individual level and club level are presented.

Construct validity: participation and safety

The items used to measure participation and safety are presented in Table 2. At baseline, the difference between the mean for each of the social capital items between intervention and control participants were not significantly different. The loadings for each of the items at follow-up are presented

Figure 1: Progress of participants through the trial.

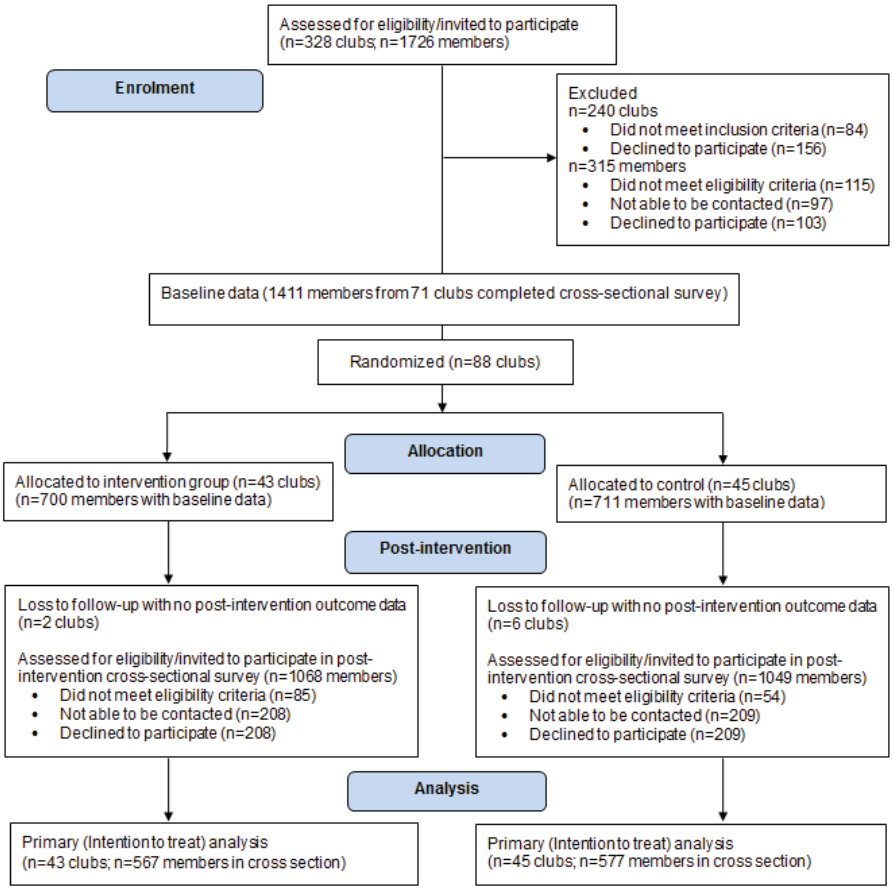


Table 2: Descriptive Details Alcohol Consumption and Secondary Outcomes.

	Baseline		Follow-up	
	Control	Interv.	Control	Interv.
	M	M	M	M
Participation measures				
Soc1: do you help out at club*	1.83	1.87	1.51	1.63
Soc2: How often do you attend club event*	2.29	2.20	2.11	2.23
Soc3: Are you an active member of your club*	1.83	1.85	1.53	1.58
Safety measures				
Soc8: Most people at my club can be trusted*	1.74	1.70	1.65	1.61
Soc9: I feel safe when I am at my sporting club*	1.43	1.40	1.40	1.35
Soc10: My club has a safe reputation*	1.64	1.62	1.53	1.48
Alcohol Measures (club)				
Average Overall Audit club level	7.83	8.54	7.75	6.48
AUDIT-C club level	5.76	6.12	5.78	5.07
AUDIT-P club level	0.55	0.65	0.55	0.33
AUDIT-D club level	1.53	1.76	1.41	1.07
Average Risky 5+ Monthly Club	0.04	0.06	0.03	0.04
Alcohol Measures (individual)	%	%	%	%
Risky 5+ Monthly	25	27	24	19
AUDIT >8	46	54	45	38
AUDIT-C >=6	57	61	55	47
AUDIT-D>=4	3	4	4	1
AUDIT-P >=1	48	54	45	41

Note:
**reported at the individual level; Interv.= intervention; M = mean*

in Table 3. The standardised item loadings for latent variables are presented within Figure 2. At the individual level, all the items for safety and participation loaded significantly. At the group level, all items except the item "attending club events" (Soc2) loaded significantly. The CFI and TLI fit indices for the combined model were all greater than 0.9, and thus indicated that the proposed factor structure was a good fit for the data. The RMSEA and SRMR were also suggestive of a good fit for the data (≤0.05) Removing the item "attending club events" at the group level did not improve the model fit so it was retained in the model. Overall, the magnitude of loadings at the club level was greater than loadings at the individual level.

Examining the effect of the intervention on consumption and safety and participation

A structural equation model examining the effect of the intervention on alcohol consumption and the subsequent effect on safety and participation identified that the intervention was associated with lower average AUDIT-C scores (β=-0.244; p=0.016) and that greater average overall consumption scores were associated with lower levels of participation at the club (β=0.493; p<0.001). A mediation analyses of the indirect effect from the intervention to participation, through average overall consumption, identified that the intervention increased participation through reducing overall risky consumption (β=-0.120; p=0.05).

In contrast, the direct effect of the intervention on participation was a reduction in participation (β=0.249; p=0.047). Overall, results indicated that the intervention alone resulted in a reduction in club members participating (direct effect); however, when the intervention was associated with reduced overall alcohol consumption it was associated with increased participation (indirect effect).

Figure 3 portrays the final model and the estimates for the final model are presented in Table 3. Fit statistics indicated that the model was a good fit for the data (CFI=0.983; TLI=0.971; RMSEA =0.024). None of the other measures of alcohol consumption mediated an effect between the intervention and participation. None of the alcohol consumption measures mediated an association between the intervention and perceived levels of safety.

Discussion

This is the first randomised trial assessing the impact of an alcohol management intervention on safety and participation in community sports clubs. It builds on previous cross-sectional studies that have identified these associations.[19,20,23] The hypothesis that alcohol management practices would be associated with risky consumption at the club and subsequently associated with participation was supported. The hypothesis for safety was not supported. Overall, the findings suggest that responsible alcohol management practices in community sports clubs can reduce overall alcohol club consumption, which in turn can increase the extent that club members participate at their club. These findings are important for Australian community sporting clubs, and indeed sporting clubs across the world, as they are settings traditionally associated with high levels of risky drinking.

Table 3: Standardised Estimates for Structural Equation Model.

Variable	Standardised Estimate	*P*-Value
Within		
Part		
Soc1_1	0.604	0.000
Soc2_1	0.431	0.000
Soc3_1	0.845	0.000
Safe		
Soc4_1	0.597	0.000
Soc5_1	0.724	0.000
Soc6_1	0.651	0.000
Part with Safe	0.612	0.002
Between		
Part_C		
soc1_1	0.971	0.000
soc2_1	0.248	0.161
soc3_1	0.999	0.000
Safe_C		
soc4_1	0.996	0.000
soc5_1	0.740	0.000
soc6_1	0.813	0.000
Part_C with Safe_C	0.600	0.000
Part_C		
Interv	0.249	0.047
AUDIT_C	0.493	0.000
Safe_C		
Interv	-0.099	0.569
AUDIT_C	0.236	0.302
AUDIT_C		
Interv	-0.244	0.016
Indirect effect		
Interv–>Audit –>Part_C	-0.120	0.052

Notes:

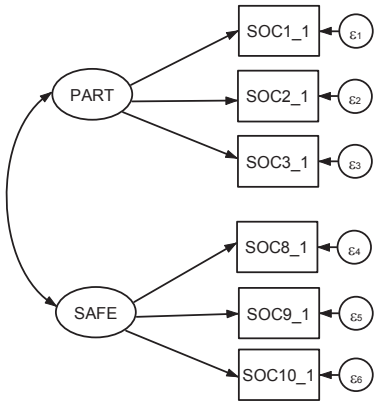
PART_C= participation at club level; SAFE_C: safety at club level; AUDIT_C proportion of high risk drinkers at club on AUDIT-C scale; interv= intervention. Latent variable items are reported in Table 2

Interestingly, average overall alcohol consumption was the only alcohol measure linked with both the intervention and participation. Potentially, this could be due to the fact that participation, while measured at the individual level, is a collective construct.[3] To participate in a community, a person needs to engage with a collective of individuals. Therefore, the impact of alcohol consumption on participation is related to the overall average alcohol consumption at the club. It could also be that participation at a club is possibly more closely associated with perceived levels of alcohol consumption by other members.

Increased level of perceived safety was not associated with the intervention. This is somewhat inconsistent with previous research that has demonstrated that specific alcohol management practices can be predictive of risky consumption in the club, which in turn can be predictive of perceived safety. These practices included having the bar open for extended periods, serving intoxicated individuals and having alcohol promotions.[20] This could be because this study examined the collective impact of all the alcohol management strategies. It is possible that if the strategies were examined individually they may be directly or indirectly associated with perceived levels of safety. Another interpretation could be that it may take longer for the intervention to have an impact on safety.

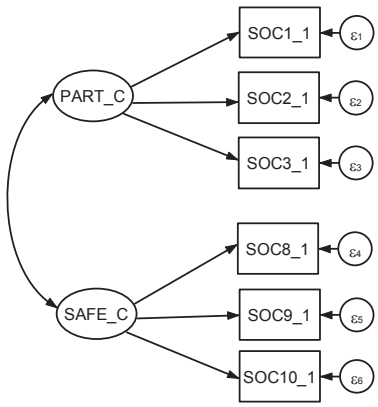
While the indirect effect (through reduced overall consumption) of the intervention was increased participation, the direct effect of the intervention had the opposite

Figure 2: Standardised Latent Variables: Participation and Safety Model, post intervention.



Variable	Standardised Estimate	P-Value
soc1_1	.606	.000
soc2_1	.429	.000
soc3_1	.846	.000
soc8_1	.597	.000
soc9_1	.725	.000
soc10_1	.651	.000
safe w part	.160	.002

Within Clubs



Variable	Standardised Estimate	P-Value
soc1_1	.947	.000
soc2_1	.264	.114
soc3_1	.999	.000
soc8_1	.996	.000
soc9_1	.747	.000
soc10_1	.812	.000
safe w part	.591	.000

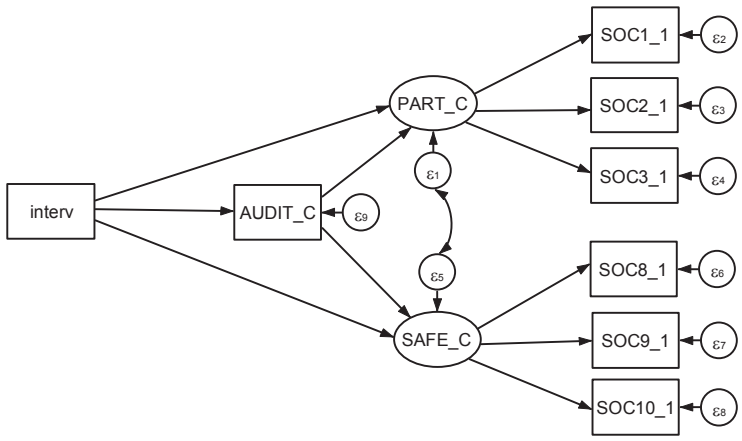
Between Clubs

Notes:

RMSEA: .024; CFI: .986; TLI: .977; SRMR (within): .031; SRMR(between): .053

** soc1: do you help out your club? soc2: how often do you attend club event? soc3: Are you an active member of your club? soc8: most people at my club can be trusted? soc9: I feel safe when I am at my sporting club? soc10: My club has a safe reputation? Part: Reported participation at club; Safety: Perceived safety at club. Correlation and loadings are significant at .05 level. ε*= error term.*

Figure 3: Final Structural Equation Model at Club Level.



Notes:

RMSEA: .024; CFI: .983; TLI: .971; SRMR (within):.031; SRMR (between): .073

PART_C= participation at club level; SAFE_C: safety at club level; AUDIT_C proportion of high risk drinkers at club on AUDIT-C scale; interv= intervention. ε= error term. Latent variable items are reported in Table 2.*

effect – a reduction in participation. One possible explanation for this could be the different effects of the intervention on the different types of drinkers within sporting clubs.[32] There is evidence that a proportion of community sports club members drink at risky levels because they see it as an important part of celebrating success and building club camaraderie. For these individuals, it is possible that the intervention discouraged club participation. For individuals who drink more moderately, perhaps for social reasons, the intervention may be perceived as building a more responsible community and thus they are more inclined to be involved with the club.

The study findings should be considered in light of some limitations. The study was undertaken in New South Wales, only one state of Australia. There is evidence that clubs in other states, such as Victoria, have different consumption levels in their community sports clubs compared to New South Wales clubs.[5] Members of clubs in Victoria also tend to drink more often at their club, compared to members of New South Wales clubs. Thus, the intervention may have a different effect on both consumption and subsequently participation and safety in different states.

Overall, this study is the first in the world to demonstrate that intervening in community sports clubs to reduce alcohol consumption can have secondary effects. This study has shown that implementing harm minimisation strategies in community sports can reduce overall alcohol consumption of club members, and clubs where such strategies are introduced can increase club participation.

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