Improving the implementation of responsible alcohol management practices by community sporting clubs: A randomised controlled trial

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Abstract

Introduction and Aims. *Despite an increased prevalence of risky alcohol consumption and alcohol-related harm among members of sporting groups and at sporting venues, sporting clubs frequently fail to implement alcohol management practices consistent with liquor legislation and best practice guidelines. The aim of this study was to assess the impact of a multi-strategy intervention in improving the implementation of responsible alcohol management practices by sports clubs.* ***Design and Methods.*** *A randomised controlled trial was conducted with 87 football clubs, with half randomised to receive a multi-strategy intervention to support clubs to implement responsible alcohol management practices. The 2-year intervention, which was based on implementation and capacity building theory and frameworks, included project officer support, funding, accreditation rewards, printed resources, observational audit feedback, newsletters, training and support from state sporting organisations. Interviews were undertaken with club presidents at baseline and post-intervention to assess alcohol management practice implementation.* ***Results.*** *Post-intervention, 88% of intervention clubs reported implementing '13 or more' of 16 responsible alcohol management practices, which was significantly greater than the proportion of control groups reporting this level of implementation (65%) [odds ratio: 3.7 (95% confidence interval: 1.1–13.2);* P *= 0.04]. All intervention components were considered highly useful and three-quarters or more of clubs rated the amount of implementation support to be sufficient.* ***Discussion and Conclusions.*** *The multi-strategy intervention was successful in improving alcohol management practices in community sports clubs. Further research is required to better understand implementation barriers and to assess the long-term sustainability of the change in club alcohol management practices.*

Key words: alcohol drinking, sports, implementation, intervention.

Introduction

A number of cross-sectional studies have reported excessive alcohol consumption and alcohol-related problems to be more prevalent among players of nonelite and elite sports than non-sportspeople [1–5]. For instance, studies of college and university students in the USA [1] and Australia [2] found that athletes/sportspeople reported higher rates of binge drinking (USA: 57% 5+ drinks; Australia: 41% 7+ drinks) than non-athletes/sportspeople (USA: 49% 5+ drinks; Australia: 35% 7+ drinks). Similarly, an Irish study of Gaelic footballers found that 54% of players reported binge drinking (6+ drinks) at least once a week, compared with 40% of similarly aged males nationally [3]. This study also reported a significant difference between the proportions of players that reported getting in a fight because of their drinking (32%) compared with the national sample (15%) [3]. Similar patterns have been found in studies in New Zealand [4] and Brazil [5]. A cross-sectional US study also found spectators drank a significantly more drinks on game days (mean: 5.6 drinks) compared with other social occasions (mean: 4.86 drinks) [6]. Subsequently, intervention to address excessive alcohol use in the sports setting has been identified as a priority strategy in action to reduce alcohol-related harm by governments in developed countries [7] and internationally by the World Health Organization [8].

Amateur-level, community sporting clubs have been identified as an opportune setting to modify health risk behaviours, including excessive alcohol consumption [9,10]. A large number of people participate in organised sport, with an estimated 270 million people across the world actively involved in football (soccer) alone [11]. In Australia, 28% of the adult population are involved in organised, non-elite community sports [12], with similar rates of organised sport participation (34%) reported for adults in England [13]. An Australian study reported that 75% of organisers of community football believe that their club could benefit from assistance to encourage responsible alcohol consumption at the club [14].

Three reviews of a range of epidemiological and experimental studies have found that managing the sale, supply, promotion and consumption of alcohol in a way that is consistent with harm minimisation theory [15] and liquor licensing legislation [16] is associated with reduced risky alcohol consumption and harm in licensed drinking venues, such as bars, pubs and taverns [17–19]. For instance, there is a breadth of research evidence supporting differential pricing and availability of alcoholic drinks based on alcohol content [18,19], enforcement of responsible alcohol management policies and practices [17–19], and restrictions on the hours/days of alcohol sales [18,19] in such premises [17–19]. In addition, specifically within sporting clubs, a number of cross-sectional studies in diverse contexts have shown a range of factors to be associated with lower levels of risky alcohol consumption or harm, such as, prohibiting free or cheap alcohol promotions [20,21], ceasing drinking games [22], prohibiting the sale of alcohol via roaming sale in stands [23] and restricting/ceasing alcohol-related sponsorship [24,25]. In addition, studies within Australian community-based clubs have found the implementation of multiple alcohol management strategies (the *Good Sports* program) to be associated with a reduction in risky alcohol consumption and associated harm [26,27]. Unpublished data from a randomised controlled trial conducted by the research team confirmed these findings, with significant reductions in risky drinking and risk of alcohol-related harm found following the implementation of a multiple-strategy alcohol management intervention (Kingsland M, 2013, unpublished data). Despite such evidence, and statutory liquor licensing requirements aligned to such evidence [16,28,29], cross-sectional studies from Europe [30], the USA [31] and New Zealand [32] suggest that sporting clubs and venues fail to implement alcohol management practices comprehensively and consistently. Drygas *et al*. reported that only 22% of 88 sports stadiums across ten European countries had any initiatives to encourage responsible alcohol use [30] and Lenk *et al*. reported that only 27% of 66 professional sports stadiums in the USA implemented '11 or more' of 12 alcohol control policies/practices [31]. Similarly, Lyne and Galloway reported a low level of implementation of alcohol management strategies at 13 sporting events in New Zealand, including the promotion of low/non-alcoholic drinks (23%) and provision of free water (31%) [32]. Studies in Australia have found that, for amateur clubs, limited resources (staff, money, time) [9,14,33,34], other priorities [9], structural impediments (e.g. contractual obligations or limited facility access) [9] and limited support from peak sporting associations [34] are potential barriers to the implementation of such practices.

To our knowledge, there have been no controlled trials of interventions that sought to improve the implementation of alcohol management practices at sporting clubs. A number of studies have reported the outcomes of predominantly sponsorship-based implementation interventions designed to improve responsible alcohol management in sporting clubs and venues; however, they have all employed non-controlled and/or nonrandomised designs. In one such Australian study, an intervention providing financial sponsorship to clubs in return for the implementation of safe alcohol practices failed to significantly increase the implementation of these practices by sports clubs after 18 months (40%) compared with retrospectively recalled pre-sponsorship implementation (30.7%) ($n = 75$; $P = 0.180$) [35]. A larger post-test only study from Victoria, Australia, found that 70% of sports clubs ($n = 380$) had implemented written policies regarding the responsible service and management of alcohol following receipt of financial sponsorship [36].

Despite the lack of empirical evidence in the sporting club setting, theoretical frameworks of capacity building and implementation suggest that a variety of factors including training, recognition and rewards, resource (human, physical and financial) allocation, performance management, peer pressure and external champions may facilitate effective practice implementation in a variety of community settings [37–40]. Trials of interventions based on such theories and frameworks have been found to be effective in improving the implementation of health-promoting programs in settings such as child-care services [41], schools [42], health-care settings [43] and licensed premises [44].

This study aimed to assess the effectiveness of an intervention in increasing the implementation of responsible alcohol management practices by community football clubs. The perceived usefulness of, and satisfaction with, intervention strategies was also assessed.

Methods

Design and setting

A randomised controlled trial was conducted with a group of community football clubs located in the

Hunter, New England and Sydney regions of the state of New SouthWales, Australia.

Participant eligibility and recruitment

All community-level, non-elite football clubs (Australian Rules football, soccer/association football,

Rugby League and Rugby Union) in the study area were eligible to participate if the club had over 40 members and sold alcohol. Between January and May 2009, representatives (e.g. club presidents or vice presidents) from all clubs in the study area were telephoned to assess club eligibility and invite clubs to participate in the study. There was not any follow up of clubs that did not wish to take part.

Random allocation and blinding

Following baseline data collection, participating clubs were randomly allocated (using Microsoft Excel) to intervention or control conditions using simple randomisation in a 1:1 ratio, stratified by football code [45] and geographic area [46]. Randomisation was performed by an independent statistician not involved in intervention delivery or data collection. Research personnel involved in post-intervention data collection were blind to the group allocation of the participating football clubs.

Alcohol management practices

Football clubs allocated to the intervention condition received an intervention to support the implementation of 16 alcohol management practices designed to reduce alcohol-related harm. The 16 practices were based on an existing community sporting club program (*Good Sports*) [33,47] and organised as following into a three tiered accreditation framework:

Level 1

- A club management committee member is always present when alcohol is served.
- All bar servers have undertaken an accredited responsible service of alcohol (RSA) training course.
- An up-to-date register of alcohol-related incidents is maintained.

Level 2

- Bar servers do not consume alcohol while on duty.
- Substantial food is provided when alcohol is served.
- Non-alcoholic drink options are available.
- Low-alcoholic drink options are available.
- Low-alcoholic drink options are cheaper than full strength alcoholic drinks.

Club does not permit/conduct

- Happy hour
- Cheap or discounted alcoholic drinks
- Drinking games
- ‘All you can drink’ promotions
- Free drink vouchers
- Alcohol-only awards and prizes

Level 3

- Club has a written alcohol management policy.
- Club has a written safe transport policy.

Implementation intervention

An implementation intervention was delivered to clubs over a 2-year period (2010 and 2011) to support implementation of the required alcohol management practices (see Table 1). The implementation intervention was based on theoretical frameworks for organisational change [39,40] and included strategies reported to be effective in changing practice in other settings [41–44]. The implementation intervention consisted of project officer support [48], implementation cost recovery [49], accreditation and associated merchandise [50,51], printed resources and newsletters [48,52], observational audits and feedback [53,54], online training [52,55] and letters of support from state sporting organisations [49].

Control group clubs were not provided with any of the implementation strategies outlined in Table 1.

Table 1. *Intervention implementation strategies mapped to key theoretical frameworks*

Strategy	Description	Strategy mapped to action areas and elements in the NSW Health Framework for Building Capacity to Improve Health [47]	Strategy mapped to domains and constructs in the Consolidated Framework for Implementation Research [46]
Project officer support [48]	Each club was allocated a project officer as a resource to enable the club to execute required alcohol management strategies. Assistance was provided in the form of face-to-face meetings with club leadership/management and face-to-face and phone/email contact with key club champions. During these contacts, the project officers aimed to engage club management/leaders/champions in the implementation process and use specific knowledge about the club to appropriately tailor intervention implementation.	Resource allocation: — human resources Organisational development: — management support	Inner setting: — readiness for intervention (available resources) — networks and communications — readiness for implementation (leadership engagement) Characteristics of individuals: — knowledge and beliefs about the intervention Process: — executing — engaging (formal appointed internal implementation leaders)
Implementation cost recovery [49]	All intervention clubs were provided with $500 in each of the two intervention sporting seasons to support the cost of implementing the responsible alcohol strategies. Suggestions were provided to clubs on appropriate ways to spend these financial resources.	Resource allocation: — financial resources	Intervention characteristics: — cost Inner setting: — readiness for intervention (available resources)
Accreditation merchandise [50,51]	Implementation of responsible alcohol management practices were recognised and rewarded through a three-tier accreditation framework, with incentives including a certificate of accreditation and merchandise (e.g. bar mats, posters) provided at each level of accreditation.	Organisational development: — recognition and reward systems	Inner setting: — implementation climate (organisational incentives and rewards) Outer setting: — external policy and incentives
Printed resources [48,52]	All clubs received a comprehensive hardcopy resource kit and electronic versions of resources to support implementation of required alcohol management strategies. Content included: evidence base and external legislative/policy background for responsible alcohol management strategies; advantages to club involvement; decision-making tools, case models and simple steps to implement each strategy; and outline of any associated costs (usually zero).	Resource allocation: — physical resources — decision-making tools and models	Intervention characteristics: — relative advantage — evidence, strength and quality — complexity — cost Outer setting: — external policy and incentives
Observational audit and feedback [53,54]	Observational performance audits of clubs were conducted during football matches before clubs were awarded each level of accreditation. Audits were conducted by research staff that were otherwise independent of intervention implementation. A formal written audit feedback report reflecting on audit results and suggesting strategies to improve intervention implementation was provided to clubs following each audit. A research team member verbally discussed each report with club representatives.	Workforce development: — performance management systems	Process: — reflecting and evaluating
Newsletters [48,52]	Promotion of accreditation status was undertaken via a program newsletter that was distributed to all intervention clubs four times during the course of the intervention period. Newsletter content also included: ladder comparing peer accreditation status; messages of support from peers and champions; and evidence base and policy base for key responsible alcohol management practices.	Organisational development: — recognition and reward systems Partnerships: — relationships Resource allocation: — physical resources	Intervention characteristics: — evidence, strength and quality Outer setting: — peer pressure — external policy and incentives Process: — engaging (champions)
Online training [52,55]	Club staff were engaged and provided with skills to implement responsible alcohol management strategies, through government-accredited responsible service of alcohol training.	Workforce development: — workforce learning	Process: — engaging
Sporting organisation letters of support [49]	Key state sporting associations representing the clubs participating in the study were engaged. Letters of recognition and encouragement were sent from these associations to clubs as they progressed through the accreditation levels.	Partnerships: — relationships Organisational development: — recognition and reward systems	Outer setting: — cosmopolitanism — external policy and incentives Process: — engaging (external change agents)

NSW. New South Wales.

Data collection procedures

Baseline (August–October 2009) and post-intervention (September–November 2011) computer-assisted telephone interview surveys were undertaken by trained telephone interviewers with a club representative (e.g. president) from each intervention and control club (average length: 40 min).

Measures

Club implementation of alcohol management practices.

Self-reported implementation of alcohol management practices was measured at baseline and post-intervention. High levels of corroboration (90–100%) between self-report and visual observation of such practices have previously been reported for licensed premises [56]. Overall implementation of 80% (13 out of 16) of these practices was used as the primary outcome measure and termed 'adequate implementation'. This level of implementation is consistent with levels recommended for use in implementation research [36] [57,58] and recognises that the implementation of multiple strategies targeting different aspects of alcohol management (policy, availability, promotion and service) is more successful in harm minimisation than individual strategies [18,59].

Usefulness of and satisfaction with implementation interventionstrategies.

Respondents were asked to rate the perceived usefulness of the eight individual implementation strategies used in the study (Table 1) (not useful, somewhat useful, very useful) and to rate the amount of implementation support provided by each of these strategies (too little, just right, too much).

Sample size calculations

Assuming 80% power, 50% implementation at baseline and $P = 0.05$, it was calculated that 56 clubs per group would be required to detect a 25% difference in the proportion of clubs reporting adequate implementation.

Statistical analysis

Baseline characteristics and accreditation level.

Descriptive statistics were used to describe club characteristics and level of accreditation reached by intervention clubs. Club postcode was used to classify clubs as 'major city' or 'inner/outer regional' [60] and clubs were classified as 'small' ($\leq$160 players) or 'large' (>160 players).

Implementation of alcohol management practices.

The following measures of alcohol management practices were dichotomised prior to analysis: proportion of staff trained in RSA ('all' or 'most/some/none'); how often staff consume alcohol on duty ('never' or 'rarely/sometimes/usually/always'); how often committee member is present when alcohol is sold ('always' or 'never/rarely/sometimes/usually'); relative pricing of low-alcohol and full-strength alcohol drinks ('full strength alcohol more expensive' or 'low alcohol more expensive/priced the same'); and availability of substantial food when alcohol is sold ('light meals/full meals' or 'snacks').

The prevalence of alcohol management practice implementation was reported for individual practices and the following practice domains: RSA practices; policies and organisational practices; and alcohol promotions.

Intention-to-treat analyses using all available data were used to examine between-group differences over time in the proportion of clubs reporting adequate implementation of alcohol management practices. Between-group differences were assessed through logistic regression analyses using a group and time interaction term. For cases where either 100% or 0% of clubs were undertaking a practice post-intervention, an equivalent exact method of analysis was used. The same method of analysis (using separate logistic regression models) was used to assess whether the results differed by the following subgroups: 'small clubs' or 'large clubs'; 'major city' or 'inner/outer regional'; and 'lower socioeconomic classification (SES)' or 'higher SES' [61]. As the study was not powered to test any hypotheses relating to such subgroups, these results are provided for descriptive purposes. The α-value for significance testing was set at 0.05 for all analyses.

Usefulness of and satisfaction with implementation intervention strategies.

Descriptive statistics were used to assess the reported usefulness of the implementation strategies and the amount of implementation support provided. SAS (version 9.2; SAS Institute Inc., Cary, NC, USA) was used for all statistical analyses.

Ethics approval

The study was approved by The University of Newcastle Human Research Ethics Committee and conforms to the provisions of the Declaration of Helsinki.

Results

Baseline characteristics and accreditation level

Three hundred twenty-eight clubs were identified in the study area, of which 244 were eligible and invited to participate in the trial. Of these, 87 (36%) consented to participate and provided baseline data (Figure 1). Consenting clubs did not differ significantly from non-consenting clubs in terms of football code [$\chi^2 = 6.68$ degree of freedom (df) = 3; $P = 0.0764$] or location (major city, inner regional, outer regional) ($\chi^2 = 0.20$ df = 1; $P = 0.6559$). These clubs were randomised to intervention ($n = 42$) and control ($n = 45$) conditions. At the time of post-intervention data collection, five intervention group football clubs had been granted Level 3 accreditation, 16 clubs Level 2 accreditation and 13 clubs Level 1 accreditation. The remaining eight had not participated in the intervention as they did not sell alcohol at some point during the intervention period. Five control group clubs were lost to follow up for the same reason. Post-intervention data were collected from the 34 intervention group and 40 control group clubs who sold alcohol at the time.

There were more Rugby League (intervention group: 31%; control group: 33%) and Rugby Union (intervention group: 33%; control group: 27%) clubs in both groups compared with soccer (intervention group: 19%; control group: 24%) and Australian Rules football (intervention group: 17%; control group: 16%). The majority of clubs in both groups were from major city areas (intervention group: 83%; control group: 80%) rather than regional/rural areas. Fifty-eight percent of intervention group clubs and 43% of control clubs were ‘large clubs’ with over 160 players.

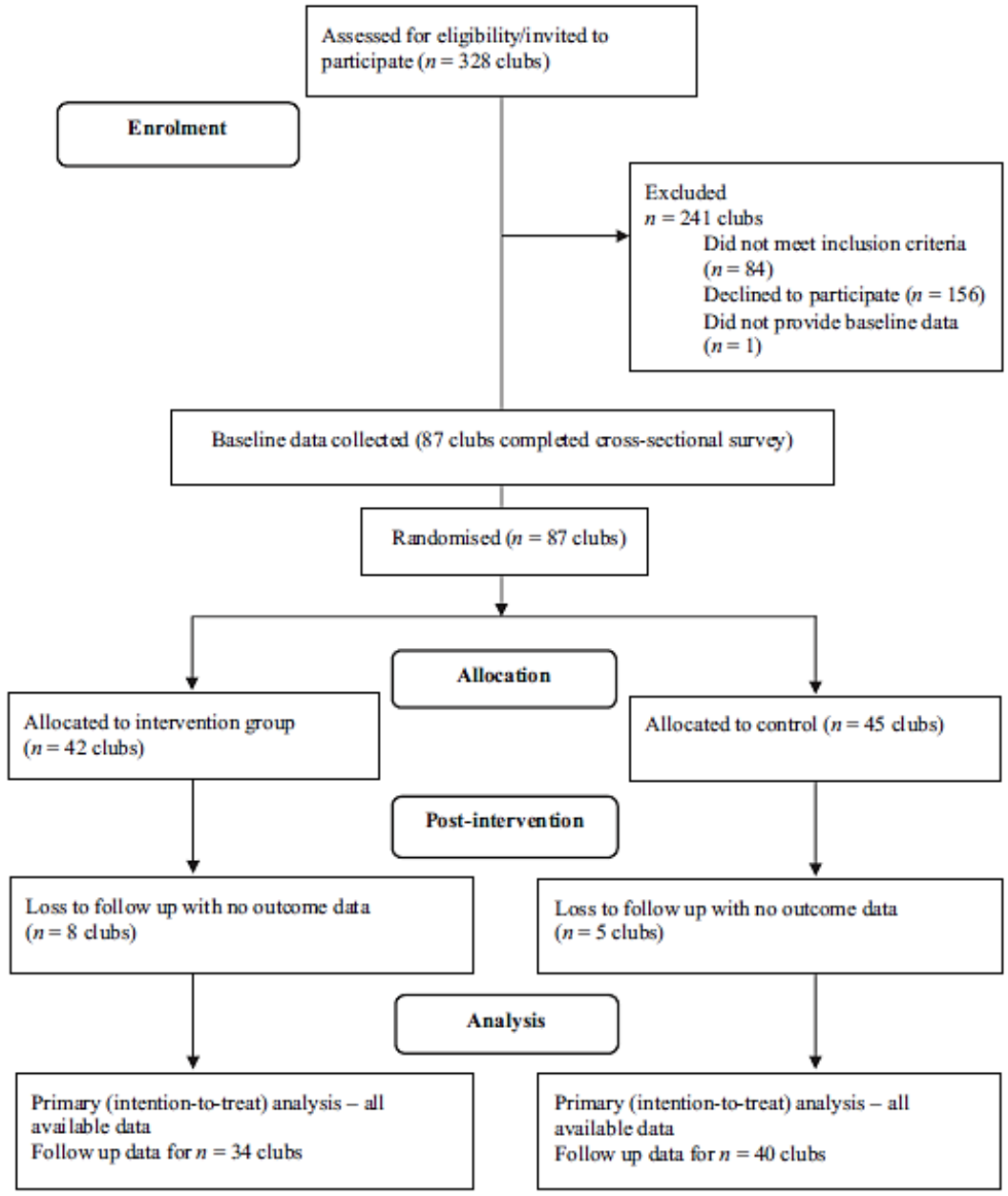

Figure 1. *Participant flow according to CONSORT reporting requirements for randomised trials.*

Implementation of alcohol management practices

Table 2 presents the proportion of clubs in the control and intervention groups that had implemented each of the alcohol management practices at baseline and post-intervention, and Table 3 reports the proportion of clubs across the two groups that reported adequate implementation of alcohol management practices at these time points. Fifty percent and 40% of intervention and control group clubs reported adequate implementation of alcohol management practices at baseline, respectively.

As shown in Table 3, at follow up, a significantly greater proportion of intervention clubs (88%) reported adequate implementation of alcohol management practices compared with clubs in the control group (65%) ($P = 0.04$). A larger intervention effect was found among large clubs, with 100% of such intervention clubs implementing at least 13 practices at post-test compared with 52% of large control clubs ($P = 0.021$), and among clubs in areas of higher SES classification,

with 96% of such intervention clubs implementing at least 13 practices at post-test compared with 58% of high SES control clubs ($P = 0.019$).

Usefulness of and satisfaction with implementation intervention strategies

As shown in Table 4, post-intervention, all implementation strategies were rated by the majority of intervention group clubs (69–94%) to be either 'very' or 'somewhat' useful. Project officer support was rated the most useful and letters of support from state sporting organisations to be the least useful. The amount of each implementation strategy that was provided was rated by the majority of intervention clubs (59–85%) to be 'just right'.

Table 2. *Alcohol management practices: control and intervention groups—2009 and 2011*

Alcohol management practices		Baseline (2009)		Post-intervention (2011)	
		Intervention group % ($n = 42$)	Control group % ($n = 45$)	Intervention group % ($n = 34$)	Control group % ($n = 40$)
Domain: RSA practices	Provide low-alcohol options	95	93	100	98
	Full-strength drinks priced higher than low-alcohol drinks	78 ($n = 40$)[a]	74 ($n = 42$)[a]	88 ($n = 34$)[a]	69 ($n = 39$)[a]
	Substantial food available when alcohol sold	95	98	97	100
	Non-alcoholic drinks sold	98	100	97	95
	Implement all practices in domain	*71*	*69*	*82*	*68*
Domain: policies and organisational practices	Club has a safe transport policy	5	2	32	0
	Staff are never allowed to consume alcohol while on duty	73	57	91	73
	All staff are trained in RSA	67	69	82	80
	Incident register is maintained	55	44	91	60
	Club has a written alcohol management policy	43	44	74	43
	Committee member present when alcohol sold	93	84	94	88
	Implement all practices in domain	*2*	*2*	*26*	*0*
Domain: promotions	Club does **not** conduct the following promotions:				
	Happy hour	95	100	97	98
	Cheap drinks	98	96	100	98
	Drinking competitions	81	84	88	88
	'All you can drink' functions	93	96	100	100
	Alcohol only awards or prizes	88	73	97	88
	Drinking vouchers	86	96	88	93
	Do not conduct any promotions	*64*	*60*	*71*	*73*

[a]This question was preceded by a question regarding whether low-alcoholic drinks were sold at the club, and only people who answered yes received this question on the relative pricing of low- and full-strength alcoholic drinks. RSA, responsible service of alcohol.

Table 3. *Change in the proportion of clubs that undertook '13 or more' of the 16 club practices by intervention and control group clubs between baseline and post-intervention—all clubs and by size, region and socioeconomic classification*

		Baseline		Post-intervention			
		Intervention % (*n*)	Control % (*n*)	Intervention % (*n*)	Control % (*n*)	OR (95% CI)	*P*-value
All clubs		50.0 (21)	40.0 (18)	88.2 (30)	65.0 (26)	3.7 (1.1–13.2)	0.041
By size	Small clubs (≤160 players)	41.7 (10)	42.1 (8)	81.0 (17)	82.4 (14)	0.9 (0.2–5.2)	0.948
	Large clubs (>160 players)	61.1 (11)	38.5 (10)	100 (13)	52.2 (12)	10.2 (1.8–∞)[a]	0.021[b]
By region	Major city	51.4 (18)	30.6 (11)	88.9 (24)	57.6 (19)	5.0 (1.2–20.6)	0.025
	Inner/outer regional	42.9 (3)	77.8 (7)	85.7 (6)	100 (7)	4.0 (0.0–76.0)[a]	1.000[b]
By socioeconomic classification	Lower	42.9 (6)	52.9 (9)	81.8 (9)	80.0 (12)	1.1 (0.1–8.0)	0.937
	Higher	55.6 (15)	33.3 (9)	95.5 (21)	58.3 (14)	14.0 (1.5–127.8)	0.019

[a]Exact odds ratio. [b]Exact method of analysis. CI, confidence interval; OR, odds ratio.

Table 4. *Rating of usefulness and amount of implementation intervention strategies provided to intervention group clubs*

Implementation intervention strategy ($n = 34$)	% clubs who rated strategy as 'very' or 'somewhat' useful	% clubs who rated amount of support[a]		
		Too little	Just right	Too much
Project officer support	94.1	2.9	85.3	2.9
Implementation cost recovery	91.2	26.5	58.8	0
Accreditation merchandise	91.2	17.7	73.5	0
Printed resources	88.2	5.9	85.3	2.9
Observational audit feedback	84.9	11.8	73.5	5.9
Newsletters	81.8	2.9	76.5	0
Online training (safe food handling)	79.4	11.8	55.9	0
State sporting organisation letters of support	68.8	23.5	58.8	0

[a]Total of three columns may not add to 100 as some club representatives responded with 'don't know'.

Discussion

This is the first reported randomised controlled trial of an intervention to improve the implementation of alcohol management practices by community sports clubs. Post-intervention, a significantly greater proportion of intervention group clubs had implemented '13 or more' of the 16 responsible alcohol management strategies than had control group clubs. All intervention components were considered to be highly useful and the majority of clubs indicated that the amount of implementation support was sufficient. The findings provide a basis for public health and sporting policymakers and administrators to implement alcohol management practices in sports clubs and potentially contribute to a change in alcohol-related harm involving players and spectators of community-level sport.

The absolute change in the proportion of intervention clubs implementing at least 13 out of 16 responsible alcohol management practices (13% absolute change relative to control) is slightly greater than the 9% (non-statistically significant) increase in the implementation of safe alcohol practices at sporting organisations following the implementation of a sponsorship-based program by Corti and colleagues [35]. Such findings suggest that solely providing financial resources to community sports clubs may have less of an impact on improving club implementation of alcohol management practices compared with the more comprehensive implementation strategies provided in this study. Theoretical approaches to implementation interventions support the need for such a multi-faceted approach and are based on the assumption that an accumulation of quality resources improves performance [39,40].

While the improvements in responsible alcohol management practices observed in this study are encouraging, there remains opportunity for further improvement. Twelve percent of all intervention clubs and almost 20% of small intervention clubs were found to not have implemented '13 or more' of the required 16 practices post-intervention. Practices within the policies and organisational practices domain were most poorly implemented, with only 26% of intervention group clubs reporting all of these practices to be implemented post-intervention. The development of written

alcohol and safe transport policies was the most poorly implemented practice by intervention group clubs post-intervention (written alcohol policy: 76% of clubs; written safe transport policy: 32% of clubs). Such a finding may indicate the need for clubs to be provided with additional policy training and support resources, such as templates and models.

Despite being a legislative requirement [16], training of staff in RSA was also relatively poorly implemented, with 18% of intervention group clubs failing to implement training with all of their bar staff post-intervention. Previously reported barriers to such training including time constraints and distance to training centres [62,63] may have contributed to this deficit, especially for those clubs in regional and rural areas. The use of different modes and types of training (e.g. online, condensed) has been suggested as a means to overcome this barrier [63].

The intervention appeared to have no impact on drinking games being conducted or the provision of drink vouchers, with the proportion of clubs that were undertaking such practices remaining relatively unchanged. Such activities represent long-held traditions of sporting clubs and competitions and have been specifically linked to increased levels of risky drinking within the sports club setting [20–22]. Implementation theory suggests that such cultural practices are more likely to be changed through the engagement of leaders and champions and through the use of peer pressure strategies designed to modify individual knowledge and perceived behavioural norms [39,40]. Greater emphasis on such strategies may increase the effectiveness of the intervention in modifying such practices.

The results of the study should be considered in the context of its methodology. The internal validity of the study was strengthened by the random assignment of clubs and the blinding of data collection staff and analysis personnel. Although the use of self-reported outcome measures has inherent limitations, previous research in licensed venues has found self-report of alcohol management practices by licensees to have 90–100% corroboration with visual observation [56].

Although participating clubs did not differ significantly from non-consenting clubs in terms of football code or location, the relatively low club participation rate suggests that the participating clubs may have differed in terms of their readiness to change, potentially limiting the external validity of the findings. The participation rate in this study may have been affected by the study requirements, such as club representatives being required to take part in a series of telephone surveys, which for volunteer-based clubs may have been a barrier to participation. While clubs may have also had concerns regarding the perceived negative impact of such interventions on alcohol sales or membership numbers [33,64], the *Good Sports* program (upon which the intervention was based) currently has over 6500 sporting club participants throughout Australia, demonstrating its acceptability to clubs [47]. Nevertheless, a key focus of future research into alcohol management practice implementation should be on effective strategies to recruit clubs into such programs and to maintain their engagement. In addition, while the final sample size was lower than that estimated in the sample size calculations, the proportion of control group clubs adequately implementing alcohol management practices post-intervention (65%) was higher than the conservative pre-study estimate of 50%, enabling the trial to detect a similar effect size as had been hypothesised a priori (25%). As the study was confined to non-elite football clubs operating at a community level in Australia, the generalisability of these findings beyond this group is also unknown.

While the intervention was found to successfully increase the implementation of responsible alcohol management practices in sporting clubs, the sustainability of these improvements needs to be assessed. The extent to which individual intervention strategies impacted on the implementation of alcohol management practices is also unknown and needs to be tested in order to better tailor such interventions to the sports club setting.

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References

[1] Nelson T, Wechsler H. Alcohol and college athletes. Med Sci Sports Exerc 2001;33:43–7.

[2] O'Brien KS, Kolt GS, Martens MP, *et al*. Alcohol-related aggression and antisocial behaviour in sportspeople/athletes. J Sci Med Sport 2012;15:292–7.

[3] O'Farrell A, Allwright S, Kenny S, *et al*. Alcohol use among amateur sportsmen in Ireland. BMC Res Notes 2010; 3:313.

[4] O'Brien KS, Ali A, Cotter JD, *et al*. Hazardous drinking in New Zealand sportspeople: level of sporting participation and drinking motives. Alcohol Alcohol 2007;42:376–82.

[5] Bedendo A, Opaleye ES, Andrade ALM, *et al*. Heavy episodic drinking and soccer practice among high school students in Brazil: the contextual aspects of this relationship. BMC Public Health 2013;13:247. doi: 10.1186/471-2458-13-247.

[6] Glassman T, Werch CE, Jobli E, *et al*. Alcohol-related fan behavior on college football game day. J Am Coll Health 2007;56:255–60.

[7] National Preventative Health Taskforce. Australia the healthiest country by 2020.Technical ReportNo. 3. Preventing alcohol-related harm in Australia: a window of opportunity. Barton, ACT: Commonwealth of Australia, 2009.

[8] World Health Organization. Global status report on alcohol and health. Geneva: World Health Organization, 2011.

[9] Crisp BR, Swerissen H. Critical processes for creating health-promoting sporting environments in Australia. Health Promot Int 2003;18:145–52.

[10] Kokko S, Kannas L, Villberg J. The health promoting sports club in Finland—a challenge for the settings-based approach. Health Promot Int 2006;21:219–29.

[11] International Federation of Association Football. Big count. 2006. Available at: http://www.fifa.com/mm/document/fifafacts/bcoffsurv/bigcount.summaryreport_7022.pdf (accessed December 2010).

[12] Australian Bureau of Statistics. Sport and recreation: a statistical overview. Canberra: Commonwealth of Australia, 2009.

[13] Sport England. How people are involved in sport— the national picture. 2014. Available at: http://www.sportengland.org/media/328828/National_KPIs_16-_APS8Q2_final.xls (accessed March 2014).

[14] Wolfenden L, Kingsland M, Rowland B, *et al*. Addressing alcohol use in community sports clubs: attitudes of club representatives. Aust N Z J Public Health 2012;36:93–4.

[15] Roche AM. The shifting sands of alcohol prevention: rethinking population control approaches. Aust N Z J Public Health 1997;21:621–5.

[16] New South Wales Government. Liquor act 2007. 2007. Available at: http://www.austlii.edu.au/au/legis/nsw/consol_act/la2007107/ (accessed June 2010).

[17] Loxley W, Gray D, Wilkinson C, *et al*. Alcohol policy and harm reduction in Australia. Drug Alcohol Rev 2005;24:559–68.

[18] Barbor T, Caetano R, Casswell S, *et al*. Alcohol: no ordinary commodity—research and public policy. Oxford: Oxford University Press, 2010.

[19] National Drug Research Institute. Restrictions on the sale and supply of alcohol: evidence and outcomes. Perth: National Drug Research Institute, Curtin University of Technology, 2007.

[20] Dietze PM, Fitzgerland JL, Jenkinson RA. Drinking by professional Australian Football League (AFL) players: prevalence and correlates of risk. Med J Aust 2008; 189:479–83.

[21] Kingsland M, Wolfenden L, Rowland B, *et al*. Alcohol consumption and sport: a cross-sectional study of alcohol management practices associated with at-risk alcohol consumption at community football clubs. BMC Public Health 2013;13:762.

[22] Grossbard J, Geisner I, Neighbors C, *et al*. Are drinking games sports? College athlete participation in drinking games and alcohol-related problems. J Stud Alcohol 2007;68:97–105.

[23] Toomey TL, Erickson DJ, Lenk KM, *et al*. Likelihood of illegal alcohol sales at professional sport stadiums. Alcohol Clin Exp Res 2008;32:1859–64.

[24] O'Brien KS, Kypri K. Alcohol industry sponsorship and hazardous drinking among sportspeople. Addiction 2008;103:1961–6.

[25] O'Brien KS, Lynott D, Miller PG. Alcohol industry sponsorship and alcohol-related harms in Australian university sportspeople/athletes. Drug Alcohol Rev 2013;32:241–7.

[26] Rowland B, Allen F, Toumbourou JW. Association of risky alcohol consumption and accreditation in the 'Good Sports' alcohol management programme. Epidemiol Community Health 2012;66:684–90.

[27] Rowland B, Allen F, Toumbourou J. Impact of alcohol harm reduction strategies in community sports clubs: pilot evaluation of the good sports program. Health Psychol 2012;31:323–33.

[28] United Kingdom Government. Licensing (Scotland) act 2005. 2005. Available at: http://www.legislation.gov.uk/asp/2005/16/contents (accessed May 2014).

[29] New Zealand Government. Sale and supply of alcohol act 2012. 2012. Available at: http://www.legislation.govt.nz/act/public/2012/0120/latest/DLM3339333.html (accessed May 2014).

[30] Drygas W, Ruszkowska J, Philpott M, *et al*. Good practices and health policy analysis in European sports stadia: results from the 'Healthy Stadia' project. Health Promot Int 2013;28:157–65.

[31] Lenk KM, Toomey TL, Erickson DJ, *et al*. Alcohol control policies and practices at professional sports stadiums. Public Health Rep 2010;125:665–73.

[32] Lyne M, Galloway A. Implementation of effective alcohol control strategies is needed at large sports and entertainment events. Aust N Z J Public Health 2012;36:55–60.

[33] Duff C, Munro G. Preventing alcohol-related problems in community sports clubs: the good sports program. Subst Use Misuse 2007;42:1991–2001.

[34] Eime RM, Payne WR, Harvey JT, *et al*. Making sporting clubs healthy and welcoming environments: a strategy to increase participation. J Sci Med Sport 2008;11:146–54.

[35] Corti B, Holman CDAJ, Donovan RJ, *et al*. Using sponsorship to create healthy environments for sport, racing and arts venues in Western Australia. Health Promot Int 1995;10:185–97.

[36] Dobbinson SJ, Hayman JA, Livingston PM, *et al*. Prevalence of health promotion policies in sports clubs in Victoria, Australia. Health Promot Int 2006;21:121–9.

[37] Tabak RG, Khoong EC, Chambers DA, *et al*. Bridging research and practice: models for dissemination and implementation research. Am J Prev Med 2012;43:337–50.

[38] National Cancer Institute. Theory at a glance: a guide for health promotion practice. Maryland: National Institutes of Health, 2005.

[39] Damschdoder LJ, Aron DC, Keith RE, *et al*. Fostering implementation of health services research findings into practice: a consolidated framework for advancing implementation science. Implement Sci 2009;4:50. doi:10.1186/1748-5908-4-50.

[40] New SouthWales Health. A framework for building capacity to improve health. Gladsville: Better Health Centre, 2001.

[41] Bell AC,Davies L, Finch M, *et al*. An implementation intervention to encourage healthy eating in centre-based childcare services: impact of the Good for Kids Good for Lifeprogramme. Public Health Nutr 2014. doi:10.1017/S1368980013003364.

[42] Nathan N, Wolfenden L, Bell A, *et al*. Effectiveness of a multi-strategy intervention in increasing the implementation of vegetable and fruit breaks by Australian primary schools: a non-randomised controlled trial. BMC Public Health 2012;12:651.

[43] Wolfenden L, Wiggers J, Campbell E, *et al*. Providing comprehensive smoking cessation care to surgical patients: the case for computers. Drug Alcohol Rev 2009;28:60–5.

[44] Rowe S, Wiggers J, Wolfenden L, *et al*. Evaluation of an educational policing strategy to reduce alcohol-related crime associated with licensed premises. Can J Public Health 2012;103(Suppl. 1):S8–14.

[45] Black D, Lawson J, Fleishman S. Excessive alcohol use by non-elite sportsmen. Drug Alcohol Rev 1999;18:201–5.

[46] Australian Institute of Health and Welfare. 2007 National Drug Strategy Household Survey: detailed findings. Canberra: Australian Institute of Health andWelfare, 2008.

[47] Australian Drug Foundation. Good sports program: healthy clubs, strong communities. 2013. Available at: http://goodsports.com.au/ (accessed August 2013).

[48] Rohrbach LA, Grana R, Sussman S, *et al*. Type II translation: transporting prevention interventions from research to real-world settings. Eval Health Prof 2006;29:302–33.

[49] Greenhalgh T, Robert G, Macfarlane F, *et al*. Diffusion of innovations in service organizations: systematic review and recommendations. Milbank Q 2004;82:581–629.

[50] Pomey M-P, Lemieux-Charles L, Champagne F, *et al*. Does accreditation stimulate change? A study of the impact of the accreditation process on Canadian healthcare organizations. Implement Sci 2010;5:31. doi:10.1186/1748-5908-5-31.

[51] Greenfield D, Braithwaite J. Health sector accreditation research: a systematic review. Int J Qual Health Care 2008;20:172–83.

[52] Bero LA, Grilli R, Grimshaw JM, *et al*. Closing the gap between research and practice: an overview of systematic reviews of interventions to promote the implementation of research findings. BMJ 1998;317:465–8.

[53] Alvero AM, Bucklin BR, Austin J. An objective review of the effectiveness and essential characteristics of performance feedback in organizational settings (1985–1998). J Organ Behav Manag 2001;21:3–29.

[54] Ivers N, Jamtvedt G, Flottorp S, *et al*. Audit and feedback: effects on professional practice and healthcare outcomes. Cochrane Database Syst Rev 2012;(6):CD000259. doi: 10.1002/14651858.CD000259.pub3.

[55] Read CW, Kleiner BH. Which training methods are effective. Manag Dev Rev 1996;9:24–9.

[56] Wiggers J, Considine R, Hazell T, *et al*. Increasing the practice of health promotion initiatives by licensed premises. Health Educ Behav 2001;28:331–40.

[57] Finch M,Wolfenden L, Falkiner M, *et al*. Impact of a population based intervention to increase the adoption of multiple physical activity practices in centre based childcare services: a quasi experimental, effectiveness study. Int J Behav Nutr Phys Act 2012;9:101–13.

[58] Nathan N, Wolfenden L, Butler M, *et al*. Adoption of vegetable and fruit breaks in Australian Primary Schools: prevalence, attitudes, barriers and implementation strategies. Health Educ Res 2011;26:722–31.

[59] Wallin E, Andreasson S. Can I have a beer, please? A study of alcohol service to young adults on licensed premises in Stockholm. Prev Sci 2004;5:221–9.

[60] Australian Bureau of Statistics. 1216.0—statistical geography volume 1—Australian Standard Geographical Classification (ASGC). 2006. Available at:

http://www.abs.gov.au/AUSSTATS/abs@.nsf/Lookup/1216.0Main+Features1Jul%202006?OpenDocument (accessed March 2010).

[61] Australian Bureau of Statistics. 2033.0.55.001—census of population and housing: Socio-Economic Indexes for Areas (SEIFA), Australia, 2011. 2011. Available at: http://www.abs.gov.au/ausstats/abs@.nsf/mf/2033.0.55.001/ (accessed June 2011).

[62] Lang E, Stockwell T, Rydon P, *et al*. Can training bar staff in responsible serving practices reduce alcohol-related harm? Drug Alcohol Rev 1998;17:39–50.

[63] Huseth A. Server training in North Dakota: a comparison and assessment. Fargo: North Dakota State University, 2010.

[64] Hughes C. The paradoxical place of alcohol in rural community sporting clubs: an Australian case study. J Rural Commun Dev 2012;7:142–51.