Addiction

RESEARCH REPORT

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Randomized controlled trial of cognitive–behavioural therapy for coexisting depression and alcohol problems: short-term outcome

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ABSTRACT

Aims Alcohol use disorders and depression co-occur frequently and are associated with poorer outcomes than when either condition occurs alone. The present study (Depression and Alcohol Integrated and Single-focused Interventions; DAISI) aimed to compare the effectiveness of brief intervention, single-focused and integrated psychological interventions for treatment of coexisting depression and alcohol use problems. **Methods** Participants ($n = 284$) with current depressive symptoms and hazardous alcohol use were assessed and randomly allocated to one of four individually delivered interventions: (i) a brief intervention only (single 90-minute session) with an integrated focus on depression and alcohol, or followed by a further nine 1-hour sessions with (ii) an alcohol focus; (iii) a depression focus; or (iv) an integrated focus. Follow-up assessments occurred 18 weeks after baseline. **Results** Compared with the brief intervention, 10 sessions were associated with greater reductions in average drinks per week, average drinking days per week and maximum consumption on 1 day. No difference in duration of treatment was found for depression outcomes. Compared with single-focused interventions, integrated treatment was associated with a greater reduction in drinking days and level of depression. For men, the alcohol-focused rather than depression-focused intervention was associated with a greater reduction in average drinks per day and drinks per week and an increased level of general functioning. Women showed greater improvements on each of these variables when they received depression-focused rather than alcohol-focused treatment. **Conclusions** Integrated treatment may be superior to single-focused treatment for coexisting depression and alcohol problems, at least in the short term. Gender differences between single-focused depression and alcohol treatments warrant further study.

Keywords Alcohol dependence, CBT, comorbidity, depression, integrated, treatment, RCT.

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INTRODUCTION

Affective and alcohol use disorders occur commonly in the community, with 12-month prevalence figures in Australia of 7% and 6%, respectively [1]. Of individuals with a 12-month alcohol use disorder, 18% have a coexisting affective disorder and 17% of those with an affective disorder have an alcohol use disorder [2]. These comorbidities are even more common in clinical settings [3,4]. Even though this high-prevalence comorbidity is associated with poorer treatment outcomes and greater utilization of services [4], existing treatment trials often exclude people with comorbid mental and substance use disorders [4].

Evidence is accumulating to show that an integrated model of treatment of coexisting psychosis and substance misuse is superior to parallel or sequential treatment [5]. However, it is not yet clear that this is true of coexisting depression and alcohol problems. The World Health Organization has suggested that major depression and alcohol use disorders may require simultaneous treatment [6], but at present there are few published

randomized controlled trials [7,8] on simultaneous delivery of psychological treatment for coexisting depression and alcohol problems. In Brown *et al.* [7], 35 people with alcohol dependence who were attending a group day-hospital programme were allocated sequentially to receive eight individual sessions of either cognitive–behaviour therapy (CBT) for depressive symptoms or relaxation training in parallel with the day-hospital programme. Participants receiving CBT showed greater reductions in depressive symptoms at post-treatment on the Modified Hamilton Rating Scale for Depression [9] and Profile of Mood States–Depression [10], but not on the Beck Depression Inventory (BDI: [11]). At 3- and 6-month follow-up assessments, the CBT condition reported more days abstinent and less alcohol consumption, but treatment × time interactions fell short of $P < 0.05$ for both variables. Limitations of the study included its relatively weak and ambiguous results, small sample size, assignment by cohorts, non-blinded outcome assessments, mild entry criteria for depressive symptoms (BDI ≥10) and absence of depression assessments at follow-up. Furthermore, the design did not test whether integrated or parallel treatment is more beneficial.

Kay-Lambkin *et al.* [8] compared a one-session brief intervention (BI) with 10 sessions of computer- or therapist-delivered psychological treatment, in 97 outpatients with coexisting depression and alcohol or cannabis use problems. All participants received an integrated initial session, which comprised assessment feedback, case formulation (covering the development and maintenance of coexisting depression and substance use problems), motivational interviewing (MI: [12]), brief advice to reduce substance use and self-help material for depression. Those allocated randomly to additional treatment received a further nine sessions of integrated MI CBT addressing depression and substance use, and incorporating mindfulness training, delivered by a psychologist, or primarily via computer. Depression improved significantly across all conditions, albeit with therapist-delivered MI CBT demonstrating stronger short-term benefits and with computer-based treatment associated with similarly strong benefits at the 12-month follow-up. Alcohol problems responded well to BI alone and even better to the intensive MI CBT intervention, while intensive MI CBT was significantly better than BI alone in reducing cannabis use.

Neither of these trials compared integrated treatment with traditional, single-focused treatment programmes for depression or alcohol misuse. The results of the trial by Kay-Lambkin *et al.* [8] suggest that BI may be effective in reducing depression and alcohol use problems. We still await a direct test of BI, single-focused psychological treatments and integrated treatment for coexisting depression and alcohol use problems with a large sample. The present study (Depression and Alcohol Integrated and Single-focused Interventions, DAISI) aimed to address this need. Given previous findings that problem drinking among women responds well to BI while problem drinking among men responds comparatively better to a longer therapist intervention [13], therapy outcomes are also reported according to gender.

METHODS

Design and hypotheses

Participants provided written informed consent to take part in the study and assessment was scheduled for baseline and 15 weeks post-baseline (post). All participants were offered a single-session (described later), after which they were randomized to no further treatment (BI, $n = 70$) or to nine further sessions focused on depression ($n = 71$), alcohol ($n = 68$) or alcohol and depression (integrated; $n = 75$). Allocations were stratified by gender and receipt of pharmacotherapy.

We predicted that: (i) 10 treatment sessions would produce greater reductions in depression and alcohol consumption; (ii) integrated treatment would have greater impacts on these variables than single-focused treatment; and (iii) that depression-focused and alcohol-focused treatments would have greater impacts on their relevant domain.

Participants

Inclusion criteria were: (i) aged over 16 years; (ii) a BDI–II [14] score ≥17; and (iii) hazardous alcohol consumption in the month before baseline (≥ an average of four 10 g ethanol drinks per day for men, ≥ two per day for women; [15]). Potential participants were excluded if they: (i) were diagnosed currently with a psychotic disorder; (ii) reported a history of traumatic brain injury; (iii) lacked fluency in English; or (iv) lived too far away to attend sessions. Although participants were not excluded on the basis of current pharmacotherapy, entry to the study was delayed until 4 weeks after commencing any new medications or changing treatment regimens.

Referrals were accepted from a broad range of sources, including self-referrals and referral by a health professional. The study was advertised in a television commercial, in television and print media news stories and by circulating information sheets through relevant health, government and non-government services. Thus, at entry to the study some participants were already engaged in treatment for depression and/or alcohol use and others were community members receiving no formal treatment. Participants were not discouraged from engaging in treatments other than the DAISI project. The study was implemented between October

2005 and April 2007 across two east-coast Australian cities: Newcastle, New South Wales and Brisbane, Queensland. Participants attended sessions in research clinics or community mental health centres.

Measures

The Structured Clinical Interview for DSM-IV-TR (SCID: [16]) provided current and life-time diagnoses of major depressive episode, alcohol abuse and alcohol dependence. Depressive symptoms were assessed using the BDI–II [14], and the Global Assessment of Functioning (GAF: [17]) provided a clinician-rated indicator of functioning.

Alcohol consumption was assessed using the Alcohol Use Disorders Identification Test (AUDIT: [18]) and a 2-week time-line follow-back (TLFB: [19]). Average 10 g ethanol drinks and drinking days per week were computed, together with maximum daily consumption. The Opiate Treatment Index (OTI: [20]) estimated the average occasions of daily use for 11 substance groups (alcohol, tobacco, cannabis, heroin, other opiates, amphetamines, cocaine, tranquillizers, barbiturates, hallucinogens, inhalants) in the previous month. A Severity of Alcohol Dependence Questionnaire (SADQ: [21]) assessed degree of dependence on alcohol over the preceding 6 months.

Interventions

The treatment manual [22] was adapted from that evaluated in the study by Kay-Lambkin *et al.* [8,23]. The initial 90-minute session is described below and included MI and provision of self-help materials. Where nine weekly 1-hour sessions followed, therapy consisted of MI CBT, which had the same duration and general structure in each condition. Single-focused therapy conditions (depression-focused or alcohol-focused) applied MI CBT to either depression or problem drinking, while integrated therapy focused on both problems concurrently. Baseline assessment and therapy were conducted by intern psychologists, psychologists or clinical psychologists who met weekly for supervision, where selected audiotaped sessions and issues in applying treatments were discussed.

Each session was carried out individually with client and therapist, and commenced with a review of the previous week including homework completion, a suicide risk assessment and negotiation of the session agenda. MI was employed thematically throughout therapy to consolidate commitment to change. Session 1, which all participants received, comprised assessment feedback, case formulation (covering the development and maintenance of coexisting depression and alcohol problems), MI, planning of behaviour change and education about depression and hazardous alcohol use. In session 2, participants in the longer therapy conditions received a rationale for CBT and began mood and/or craving monitoring, activity scheduling and mindful walking. Session 3 saw an introduction to thought monitoring, assessment of change and mindful listening. In session 4, participants developed an activity list, clarified their change plan, received information about coping with impulsive thoughts or cravings and undertook mindfulness of pleasant activities. Session 5 focused on identifying and managing unhelpful automatic thoughts and application of mindful breathing, while session 6 introduced problem solving and mindful visual experiences. In session 7, participants identified and examined evidence for problematic schema and core beliefs, and practised using a 3-minute breathing space. In session 8 they continued cognitive therapy, incorporating 'allowing and letting be', practised assertiveness or alcohol refusal skills and developed an emergency plan. Session 9 applied relapse prevention techniques based on the work of Marlatt & Gordon [24] and had further mindfulness practice. In session 10, participants applied MI to relapse prevention and wrote a management plan for relapse risk. Integrated sessions addressed the way in which depression and alcohol use impacted on each other as well as addressing the two conditions in parallel. With the exception of session 9, in which the integrated average session was significantly longer than the average depression session (mean integrated = 63.3 minutes; mean depression = 53.2 minutes; $F_{(2,16)} = 7.07$, $P < 0.01$), the integrated sessions were no longer than the corresponding alcohol-focused and depression-focused sessions.

Procedure

Following informed consent, baseline assessments were completed typically over two sessions a week apart, and reimbursement of up to $A20 was given for travel and other costs. Participants were informed that if they failed to attend three consecutive treatment sessions without adequate explanation, they would be considered to have discontinued treatment. These participants then progressed to the follow-up phase of the study.

Randomizations were generated at the beginning of the study by the research manager at the Newcastle site and linked to a unique identification code. Allocations were concealed in individual sealed envelopes labelled with the code, which were opened by participants at the end of session 1, ensuring that the content and experience of the initial session would be unaffected by knowledge of the allocation. Randomization was stratified by study site, gender and presence of concurrent antidepressant or anticraving medication.

Future contact details for participants and an alternative contact person were sought at baseline to enable re-contact for the follow-up assessment. Where possible,

post-assessment appointments were made at the last treatment appointment. Independent psychologists, blind to treatment allocation, completed follow-up assessments face to face (22%) or by telephone (78%), offering up to $A20 as reimbursement. On average, the post-assessment occurred 18.0 weeks post-baseline [standard deviation (SD) = 3.12]. Time to the post-assessment did not differ between conditions.

Statistical analysis

Analyses of variance (ANOVAs) tested for baseline differences between conditions. Multiple hierarchical linear regressions were then conducted, with three orthogonal a priori contrasts, testing: (a) one-session versus 10-session treatments; (b) single-focused versus integrated interventions; and (c) depression- versus alcohol-focused treatment. Dependent variables were change scores pertaining to the average number of drinks per week, drinking days per week and maximum number of standard drinks in one day (from a TLFB over 2 weeks), mean drinks per day in the previous month (from the OTI), depression level (from the BDI–II) and functioning (from the GAF). Covariates were baseline BDI–II depression and average daily alcohol use on the OTI, and the baseline measure of the dependent variable. We also tested predictive effects of other variables that may have impacted on outcome, specifically age, gender, use of antidepressants and whether the participant lived with another adult (living arrangement). At step 1, age, gender and living arrangement were entered. At step 2, the baseline measure of the dependent variable was entered, together with baseline measures of BDI–II, OTI average daily alcohol consumption and use of antidepressants, the three condition contrasts, and interactions between gender and treatment allocation. Analyses were carried out with and without missing data substitution (using last observation carried forward). As the results did not differ significantly between the methods, only analyses using data substitution are presented.

RESULTS

Recruitment and attrition profiles are presented in Fig. 1.

Sample characteristics

The project received 682 referrals from October 2005 to April 2007 (Fig. 1). Of 204 who were ineligible to participate, 68 people (33%) did not meet the threshold for alcohol use, 75 (37%) did not meet depression criteria and five (2%) failed to meet both. Sixteen (8%) had a history of psychotic disorder, 23 (11%) lived out of the area, two people (<1%) were excluded for medical reasons, one person (<1%) due to non-fluency in English and one person (<1%) for not meeting the age requirements. Reasons for exclusion were not recorded for 13 (6%). After receiving information about the study, 149 people chose not to participate, and 45 could not be contacted subsequently to arrange further assessment.

A total of 284 were admitted to the study. Most (76%) self-referred after seeing advertisements in local media,

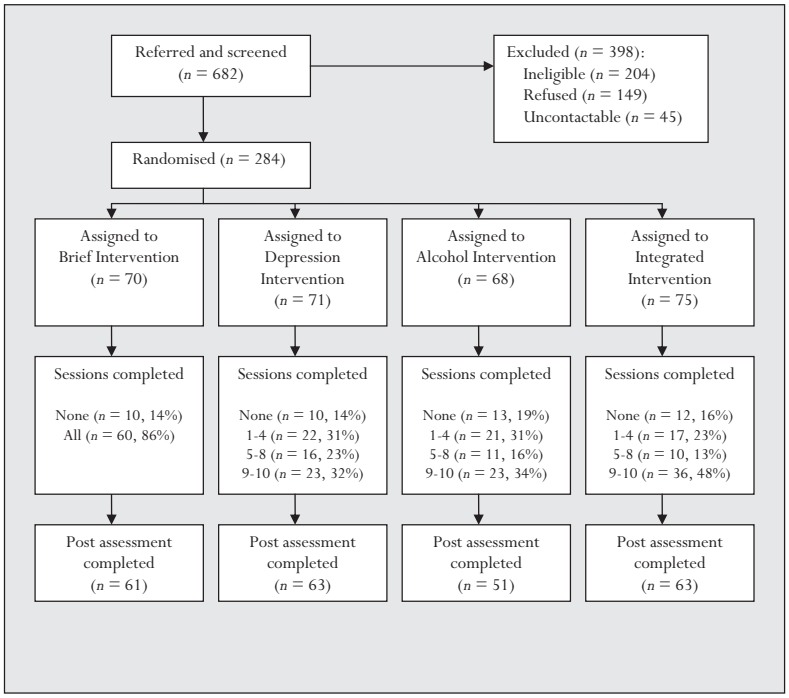

Figure 1 Consort diagram

and another 7% heard about the study from others. Referrals also came from other agencies (3% from services for substance misuse, 7% other health providers, 1% employment or other government agencies, 3% non-government organizations). Referral source was not recorded for 3%. Baseline demographic data, symptoms and alcohol consumption are presented in Table 1.

Treatment attendance and completion of post-assessment

Of 70 participants assigned to BI, 60 (86%) attended the session (Fig. 1). For the 214 assigned to remaining conditions, 35 (16%) attended no treatment sessions, 60 (28%) attended one to four, 37 (17%) attended five to eight and 82 (38%) attended nine or 10 sessions. On average, people offered 10 sessions attended 5.76 (SD = 4.07). Number of attended sessions and days in treatment did not differ significantly between conditions. An ANOVA was carried out to compare symptom outcomes of participants who were assessed but did not start treatment with those who did some treatment and those who completed treatment. This analysis showed a trend for participants who completed all offered sessions to have lower BDI–II total scores at 18 weeks than those who did not start treatment (mean all treatment = 19.0; mean no treatment = 25.3; $F_{(2235)} = 3.17$, $P < 0.05$). No significant differences in key outcome variables were identified for people based on level of attendance.

Post-assessments were obtained from 238 participants (84%), and participation did not differ by condition. Gender, age, age of onset of depression and of hazardous alcohol use did not affect either attendance or completion of post-assessments significantly.

Predictors of treatment outcome

Alcohol-related variables

Mean scores at baseline and post for alcohol-related outcome variables are in Table 2. In the prediction of change in average daily use of alcohol (number of drinks per day based on the OTI), the only treatment effect to make a significant unique contribution to the multivariate prediction was the interaction between gender and alcohol versus a depression-focused treatment (see Table 3; $t_{(258)} = 2.84$, $\beta = 0.15$, $P = 0.005$). Men reduced their drinking more if they received alcohol-focused treatment (mean change = 4.62 versus 0.34 drinks), while women reduced their drinking more if they received the depression-focused intervention (mean change = 0.24 versus 4.22).

In the prediction of average reductions in drinks per week from TLFB, the contrast of single-session versus 10-session treatment was significant after controlling for age and living arrangement (Table 3; $t_{(236)} = -2.54$, $\beta = -0.14$, $P < 0.001$). Ten sessions (mean change = 22.93 drinks) were associated with a greater reduction in average drinks per week compared with BI (mean change = 10.80 drinks). The interaction of gender and alcohol-versus depression-focused treatment was also significant ($t_{(236)} = 2.05$, $\beta = 0.11$, $P = 0.042$). As observed on the OTI, men reduced consumption more in the alcohol-focused condition (mean change = 30.23 versus 18.00 drinks/week), while women reduced their average drinks per week more if they received the depression-focused treatment (mean change = 20.24 versus 6.82 drinks/week).

After entry of potentially confounding variables (age and living arrangement), 10 sessions of treatment were associated with a greater reduction in average drinking days per week using TLFB data (mean change = 1.29 days/week) than the BI (mean change = 0.58 days/week; $t_{(236)} = -2.42$, $\beta = -0.15$, $P = 0.016$). Furthermore, integrated treatment was associated with a greater reduction in drinking days (mean change = 1.83 days/week) than single-focused interventions (mean change = 0.92; $t_{(236)} = -2.47$, $\beta = -0.15$, $P = 0.014$) (Table 4).

After control for potential confounders, maximum alcohol consumption on 1 day showed a greater reduction after 10 sessions of treatment (mean change = 5.75 drinks) than BI (mean change = 2.17 drinks; $t_{(236)} = -2.48$, $\beta = -0.14$, $P = 0.014$).

Depressive symptoms

Mean BDI–II scores at baseline and post are shown in Table 5, and the prediction of changes in scores is in Table 6. After controlling for age and living arrangement, participants receiving integrated treatment reported greater reductions in BDI–II (mean change = 11.49) compared with those offered single-focused interventions (mean change = 8.23) ($t_{(267)} = -1.98$, $\beta = -0.12$, $P = 0.048$).

Functioning on the GAF

Mean GAF scores are shown in Table 5. The interaction between gender and integrated versus single-focused treatment was a significant predictor of change ($t_{(237)} = 2.13$, $\beta = 0.13$, $P = 0.034$). Men showed a greater improvement in GAF scores if in a single-focused treatment (mean change = 7.52) than in integrated treatment (mean change = 4.15), while for women integrated treatment (mean change = 7.29) was associated with greater improvement than single-focused treatment (mean change = 3.46). The interaction between gender and the alcohol- versus depression-focused treatment was also significant ($t_{(237)} = -2.03$, $\beta = -0.12$, $P = 0.044$). Men had a greater improvement in GAF scores if in alcohol-focused

Table 1 Characteristics of the Depression and Alcohol Integrated and Single-focused Interventions (DAISI) study sample at baseline ($n = 284$).

Demographic characteristics	*M (SD, range) or n (%)*
Mean age (years)	45.51 (10.93, 20–73)
Male	149/284 (53%)
Australian born	224/284 (79%)
Single, never married	73/284 (26%)
≥1 child	199/284 (70%)
Of those with children—mean number ($n = 199$)	2.41 (1.39, 1–8)
Living with another adult	153/274 (56%)
Mean age left school (years) (SD, range) ($n = 281$)	16.09 (1.40, 11–21)
Post-school qualification	200/277 (72%)
Receiving welfare support	136/282 (48%)
Current symptomatology	
Mean BDI–II total	31.19 (8.87, 17–55)
Mean AUDIT total	25.77 (6.59, 7–40)
Mean SAD-Q total ($n = 253$)	17.60 (11.05, 0–51)
TLFB mean drinks per week ($n = 260$)	61.6 (42.95, 6.3–280)
TLFB maximum drinks in one day ($n = 260$)	17.29 (9.44, 3–60)
TLFB mean drinking days/week ($n = 260$)	5.42 (1.88, 1–7)
Mean GAF score ($n = 260$)	56.99 (9.89, 21–75)
SCID-I diagnoses	
Major depressive episode: current (life-time)	199/280 (71%) [211/279 (76%)]
Alcohol abuse without dependence: current (life-time)	11/269 (4%) [15/269 (6%)]
Alcohol abuse with dependence: current (life-time)	181/269 (67%) [208/269 (77%)]
Patterns of substance use (OTI past month)	
Alcohol status: ≥ hazardous use (NHMRC)	282/282 (100%)
Cannabis status: ≥ weekly use	36/276 (13%)
Amphetamine status: ≥ weekly use	4/278 (1%)
Substance use history	
Age first used alcohol (years) ($n = 258$)	15.31 (4.43, 2–48)
Age first used tobacco (years) ($n = 228$)	15.27 (4.56, 6–43)
Age first used cannabis (years) ($n = 197$)	19.27 (7.69, 10–58)
Age first used amphetamines (years) ($n = 94$)	23.32 (6.71, 16–49)
Age first used hallucinogens (years) ($n = 90$)	21.34 (6.23, 14–44)
Illness factors	
Mean age of onset of depressive illness (years) ($n = 283$)	25.98 (14.22, 3–68)
Course of depressive illness:	
Single episode, good or unknown recovery	6/279 (2%)
Multiple episodes, good recovery	95/279 (34%)
Multiple episodes, partial recovery	119/279 (43%)
Continuous chronic, little or no deterioration	30/279 (11%)
Continuous chronic, clear deterioration	29/279 (10%)
Course of alcohol use:	
Multiple hazardous use episodes, with abstinence	120/279 (43%)
Multiple hazardous use episodes, with non-hazardous use	49/279 (18%)
Continuous hazardous use, no increase in use	29/279 (10%)
Continuous hazardous use, increase in use	81/279 (29%)
Treatment (previous 12 months)	
Current medication	
Any prescribed medication	170/280 (61%)
Antidepressant	147/281 (52%)
Antipsychotic	14/281 (5%)
Anticraving	17/281 (6%)
Anxiolytic	47/281 (17%)
Mood stabilizers	5/281 (2%)
Mean weeks on antidepressant medication (SD, range) ($n = 142$)	104.73 (133.42, 4–728)
Hospital admissions	
At least one admission	76/281 (27%)
Of those with at least one—mean admissions ($n = 76$)	1.83 (1.54, 1–10)
Of those with at least one—mean total stay (weeks) ($n = 68$)	2.34 (2.86, 0.14–14)
Mean number of visits to general practitioner ($n = 275$)	6.67 (7.80, 0–52)

AUDIT: Alcohol Use Disorders Identification Test; BDI: Beck Depression Inventory; GAF: Global Assessment of Functioning; NHMRC: National Health and Medical Research Council; OTI: Opiate Treatment Index; SAD-Q: Severity of Dependence Questionnaire; SCID: Structured Clinical Interview for DSM-IV Axis I Disorders; SD: standard deviation; TFLB: time-line follow-back.

Table 2 Alcohol use patterns from baseline to post by gender and allocation to treatment condition.

	Daily alcohol consumption on the OTI			*Mean drinks per week (TLFB)*			*Mean drinking days per week (TLFB)*			*Maximum drinks on one day (TLFB)*		
Condition/phase	*n*	*Mean*	*(SD)*	*n*	*Mean*	*(SD)*	*n*	*Mean*	*(SD)*	*n*	*Mean*	*(SD)*
Males												
Baseline												
Brief	39	11.03	(7.83)	36	69.95	(59.38)	36	5.27	(1.98)	36	18.38	(12.15)
Depression	35	10.03	(6.58)	32	74.16	(53.12)	32	5.54	(1.96)	32	19.81	(9.87)
Alcohol	33	11.60	(10.03)	28	68.60	(39.73)	28	5.31	(1.89)	28	20.27	(11.76)
Integrated	42	12.65	(7.58)	36	78.53	(42.41)	36	5.88	(1.78)	36	20.41	(8.59)
Post												
Brief	39	9.35	(7.94)	36	59.07	(52.88)	36	4.84	(2.53)	36	17.95	(17.15)
Depression	35	9.69	(9.05)	32	56.15	(46.33)	32	4.67	(2.31)	32	15.82	(8.49)
Alcohol	33	6.98	(5.65)	28	38.37	(40.47)	28	4.02	(2.66)	28	12.46	(9.92)
Integrated	42	9.16	(8.62)	36	45.54	(49.26)	36	3.94	(2.58)	36	13.21	(10.87)
Females												
Baseline												
Brief	31	8.15	(6.64)	26	54.48	(34.29)	26	5.88	(1.84)	26	15.23	(7.58)
Depression	36	8.82	(5.85)	35	47.63	(27.84)	35	5.21	(1.81)	35	13.55	(6.12)
Alcohol	35	7.20	(4.31)	34	44.19	(23.61)	34	5.08	(1.91)	34	14.19	(6.29)
Integrated	33	8.27	(6.93)	33	54.28	(38.57)	33	5.22	(1.92)	33	16.54	(9.28)
Post												
Brief	31	6.23	(5.28)	26	43.79	(36.40)	26	5.10	(2.34)	26	10.66	(6.60)
Depression	36	4.60	(3.85)	35	27.39	(23.76)	35	4.13	(2.45)	35	8.29	(5.09)
Alcohol	35	6.96	(10.38)	34	37.36	(43.75)	34	4.32	(2.43)	34	11.63	(10.82)
Integrated	33	4.32	(5.40)	33	24.29	(24.63)	33	3.39	(2.46)	33	8.61	(7.97)
Total												
Baseline												
Brief	70	9.75	(7.42)	62	63.47	(50.64)	62	5.53	(1.93)	62	17.06	(10.52)
Depression	71	9.42	(6.21)	67	60.30	(43.62)	67	5.37	(1.87)	67	16.54	(8.66)
Alcohol	68	9.34	(7.90)	62	55.21	(33.92)	62	5.19	(1.89)	62	16.94	(9.59)
Integrated	75	10.72	(7.58)	69	66.93	(42.13)	69	5.57	(1.86)	69	18.56	(9.07)
Post												
Brief	70	7.96	(7.02)	62	52.66	(46.96)	62	4.95	(2.44)	62	14.89	(14.14)
Depression	71	7.11	(7.33)	67	41.13	(38.84)	67	4.39	(2.38)	67	11.89	(7.85)
Alcohol	68	6.97	(8.36)	62	37.82	(41.96)	62	4.19	(2.52)	62	12.01	(10.35)
Integrated	75	7.03	(7.72)	69	35.38	(40.60)	69	3.68	(2.52)	69	11.01	(9.80)

OTI: Opiate Treatment Index; SD: standard deviation; TFLB: time-line follow-back.

Table 3 Prospective prediction of change in Opiate Treatment Index (OTI) alcohol score and mean drinks per week from baseline to post, from baseline factors and allocation to treatment condition.

		Change in daily alcohol consumption on the OTI (n = 271)					*Change in drinks per week on the TLFB (n = 250)*				
		Prediction at step			*Final equation*		*Prediction at step*			*Final equation*	
	Predictor	*β*	*t*	ΔR^2	*B*	*SE*	*β*	*t*	ΔR^2	*B*	*SE*
	Constant				3.305	2.501				18.476	13.129
Step 1				0.010					0.014		
	Age	–0.004	–0.067		–0.023	0.038	–0.058	–0.906		–0.280	0.200
	Gender	–0.013	–0.211		–1.005	0.434	0.056	0.876		–3.494	2.309
	Social support	–0.101	–1.650		–1.078	0.413	–0.081	–1.274		–5.381	2.174
Step 2				0.296***					0.288***		
	Baseline BDI–II total	0.025	0.469		0.022	0.048	0.030	0.517		0.130	0.252
	Baseline daily alcohol consumption on the OTI	–0.526***	–9.614		–0.566	0.059	–0.121	–1.519		–0.652	0.429
	Baseline mean drinks per week (TLFB)	—	—		—	—	–0.420***	–5.169		–0.382	0.074
	Antidepressant use	–0.032	–0.602		–0.252	0.419	–0.014	–0.245		–0.538	2.195
	One session versus 10 sessions	–0.052	–0.991		–0.234	0.237	–0.139*	–2.541		–3.151	1.240
	Integrated versus single-focused	–0.030	–0.572		–0.188	0.329	–0.088	–1.599		–2.758	1.725
	Alcohol versus depression	–0.012	–0.234		–0.136	0.581	–0.007	–0.133		–0.404	3.048
	Interaction: gender × one session versus 10 sessions	0.013	0.255		0.060	0.237	0.033	0.605		0.752	1.243
	Interaction: gender × integrated versus single-focus	–0.043	–0.833		–0.275	0.330	–0.055	–1.001		–1.733	1.731
	Interaction: gender × alcohol versus depression	0.148**	2.838		1.652	0.582	0.113*	2.050		6.282	3.065

Probabilities uncorrected for the number of analyses. *$P < 0.05$, **$P < 0.01$, ***$P < 0.001$. BDI: Beck Depression Inventory; SE: standard error; TFLB: time-line follow-back.

Table 4 Prospective prediction of change in mean drinking days per week and maximum drinks on one occasion from baseline to post, from baseline factors and allocation to treatment condition.

		Change in drinking days per week on the TLFB (n = 250)					*Change in maximum drinks per day on the TLFB (n = 250)*				
		Prediction at step			*Final equation*		*Prediction at step*			*Final equation*	
	Predictor	*β*	*t*	ΔR^2	*B*	*SE*	*β*	*t*	ΔR^2	*B*	*SE*
	Constant				−0.037	0.861				8.837	3.546
Step 1				0.037*					0.018		
	Age	0.043	0.680		0.014	0.012	−0.047	−0.735		−0.117	0.053
	Gender	−0.012	−0.189		−0.039	0.139	−0.038	−0.598		−1.695	0.598
	Living arrangement	−0.183**	−2.899		−0.373	0.133	−0.127*	−1.996		−1.672	0.556
Step 2				0.116**					0.261***		
	Baseline BDI–II total	−0.023	−0.358		−0.006	0.015	−0.008	−0.133		−0.009	0.065
	Baseline daily alcohol consumption on the OTI	−0.029	−0.439		−0.009	0.020	−0.202**	−2.617		−0.275	0.105
	Baseline mean drinks per week (TLFB)	−0.235***	−3.710		−0.271	0.073	—	—	—	—	—
	Baseline maximum drinks on one occasion (TLFB)	—	—		—	—	−0.303***	−3.749		−0.317	0.085
	Antidepressant use	−0.041	−0.659		−0.088	0.134	0.011	0.185		0.104	0.565
	One session versus 10 sessions	−0.146*	−2.421		−0.184	0.076	−0.138*	−2.477		−0.789	0.319
	Integrated versus single-focused	−0.150*	−2.474		−0.261	0.105	−0.069	−1.233		−0.574	0.444
	Alcohol versus depression	−0.018	−0.296		−0.055	0.186	−0.010	−0.175		−0.137	0.783
	Interaction: gender × one session versus 10 sessions	0.035	0.580		0.044	0.076	0.104	1.874		0.599	0.320
	Interaction: gender × integrated versus single-focus	−0.040	−0.656		−0.069	0.106	−0.061	−1.091		−0.487	0.447
	Interaction: gender × alcohol versus depression	0.061	1.010		0.189	0.187	0.105	1.884		1.482	0.787

Probabilities uncorrected for the number of analyses. *$P < 0.05$, **$P < 0.01$, ***$P < 0.001$. BDI: Beck Depression Inventory; OTI: Opiate Treatment Index; SE: standard error; TFLB: time-line follow-back.

Table 5 Mental health functioning from baseline to post by gender and allocation to treatment condition.

	BDI–II total			*GAF*		
Condition/phase	*n*	*Mean*	*(SD)*	*n*	*Mean*	*(SD)*
Males						
Baseline						
Brief	39	28.36	(8.01)	37	55.78	(10.37)
Depression	35	30.00	(8.72)	34	54.12	(10.36)
Alcohol	33	31.30	(9.31)	29	57.76	(10.60)
Integrated	42	30.31	(9.04)	40	56.68	(10.08)
Post						
Brief	39	21.41	(12.70)	37	61.22	(10.89)
Depression	35	21.97	(14.15)	34	60.32	(14.14)
Alcohol	33	21.58	(12.12)	29	66.59	(10.63)
Integrated	42	20.40	(11.51)	40	60.83	(11.88)
Females						
Baseline						
Brief	31	31.65	(8.07)	26	59.19	(11.83)
Depression	36	34.03	(10.26)	32	56.41	(9.53)
Alcohol	35	32.17	(8.89)	34	59.56	(8.91)
Integrated	33	32.24	(7.97)	28	57.21	(6.52)
Post						
Brief	31	23.10	(12.94)	26	62.96	(13.64)
Depression	36	24.56	(12.37)	32	62.00	(10.22)
Alcohol	35	26.40	(12.04)	34	60.88	(11.86)
Integrated	33	18.73	(14.05)	28	64.50	(10.10)
Total						
Baseline						
Brief	70	29.81	(8.14)	63	57.19	(11.03)
Depression	71	32.04	(9.68)	66	55.23	(9.96)
Alcohol	68	31.75	(9.04)	63	58.73	(9.68)
Integrated	75	31.16	(8.58)	68	56.90	(8.74)
Post						
Brief	70	22.16	(12.74)	63	61.94	(12.03)
Depression	71	23.28	(13.24)	66	61.14	(12.33)
Alcohol	68	24.06	(12.23)	63	63.51	(11.58)
Integrated	75	19.67	(12.63)	68	62.34	(11.25)

BDI: Beck Depression Inventory; GAF: Global Assessment of Functioning; SD: standard deviation.

treatment (mean change = 8.83) than in depression-focused treatment (mean change = 6.20), while women in the depression-focused treatment (mean change = 5.59) improved more than women who received an alcohol-focused intervention (mean change = 1.32).

DISCUSSION

There was differential support for the hypotheses across the dependent variables. There was support for the first hypothesis, that 10 sessions of treatment were more effective than BI in alcohol-related outcomes (mean drinks per week, drinking days per week, maximum drinks on one occasion), although a significant benefit of 10 sessions over BI was not evident on the OTI, a measure of average drinking occasions per day in the previous month. However, there was no significant benefit of more extensive treatment on depressive symptoms or global functioning. This finding is in contrast to that of Kay-Lambkin *et al.* [8], who found that a longer intervention had superior effects on depression than BI. This may be due to sampling differences, as Kay-Lambkin *et al.* [8] included subjects with alcohol and cannabis use disorders in their sample.

The second hypothesis, that integrated treatment would be more effective than single-focused treatment, received support in relation to depressive symptoms, drinking days per week and in the case of women, general functioning. It seems that integration may be more important in addressing depression and occasions of alcohol use (some of which may be triggered by depressive symptoms) than in changing the amount consumed per drinking occasion.

The third hypothesis stated that depression- versus alcohol-focused treatment would be more effective in the relevant domain and less effective in the untreated domain. This prediction was supported in relation to changes in average drinks per day on the OTI and mean drinks per week on the TLFB, but only for men. In addition, improvements in general functioning were significantly greater for men after alcohol-focused than after depression-focused treatment. However, women showed greater improvements on each of these variables when they received depression-focused rather than alcohol-focused treatment. It may be that women with both alcohol and depressive problems accord greater priority to depression treatment than to interventions for alcohol problems, whereas men find the alcohol treatment more acceptable or easier to undertake. Unfortunately, we did not collect data on the nature of treatment that participants preferred or expected. This fascinating set of results warrants further examination in mixed-gender samples with co-occurring problems.

The results of this study provide the first evidence that integrated treatment may be superior to a single-focused treatment for coexisting depression and alcohol problems. However, the absence of differences between brief and longer interventions on improvements in depressive symptoms and evidence of gender differences in alcohol- versus depression-focused intervention is suggestive of a more complicated picture. We suggest tentatively that where integrated treatment is available, it may be the treatment of choice for both men and women. Where it is not available, treatment may commence with a brief, integrated session incorporating both a comprehensive case formulation and MI. An alcohol-focused intervention could perhaps follow for men who continued to drink above recommended levels, and a depression-focused intervention could follow for women with continued drinking problems.

Table 6 Prospective prediction of change in Beck Depression Inventory (BDI–II) total and Global Assessment of Functioning (GAF) score from baseline to post, from baseline factors and allocation to treatment condition.

		Change from baseline to post BDI–II total (n = 271)					*Change from baseline to post GAF score (n = 251)*				
		Prediction at step			*Final equation*		*Prediction at step*			*Final equation*	
	Predictor	*β*	*t*	ΔR^2	*B*	*SE*	*β*	*t*	ΔR^2	*B*	*SE*
	Constant				5.415	4.246				30.749	7.122
Step 1				0.021					0.007		
	Age	–0.019	–0.304		–0.063	0.065	0.016	0.245		0.023	0.060
	Gender	–0.035	–0.578		–0.029	0.736	–0.067	–1.043		–0.331	0.690
	Living arrangement	–0.146*	–2.384		–1.834	0.701	0.038	0.600		1.081	0.655
Step 2				0.112***					0.164***		
	Baseline GAF	—	—	—			–0.389***	–5.365		–0.424	0.079
	Baseline BDI–II total	–0.289***	–4.766		–0.387	0.081	–0.057	–0.825		–0.069	0.084
	Baseline daily alcohol consumption on the OTI	0.033	0.533		0.053	0.100	–0.009	–0.141		–0.014	0.097
	Antidepressants	0.035	0.578		0.411	0.711	0.040	0.646		0.434	0.672
	One session versus 10 sessions	–0.036	–0.623		–0.250	0.402	0.030	0.503		0.187	0.372
	Integrated versus single-focused	–0.116*	–1.984		–1.108	0.558	–0.005	–0.078		–0.040	0.517
	Alcohol versus depression	0.024	0.416		0.410	0.986	0.021	0.343		0.317	0.923
	Interaction: gender × one session versus 10 sessions	0.029	0.505		0.203	0.403	–0.028	–0.469		–0.175	0.374
	Interaction: gender × integrated versus single-focus	–0.110	–1.894		–1.061	0.560	0.127*	2.131		1.107	0.519
	Interaction: gender × alcohol versus depression	0.051	0.879		0.869	0.989	–0.121*	–2.025		–1.855	0.916

Probabilities uncorrected for the number of analyses. *$P < 0.05$; ***$P < 0.001$. OTI: Opiate Treatment Index; SE: standard error.

The present paper examines only short-term treatment outcomes. Further follow-up points will provide more information on the maintenance of treatment effects. Another limitation of the present study was that while almost all (86%) the sample had completed (or discontinued) treatment by the assessment point scheduled for 15 weeks following baseline (to allow for completion of the 10-session intervention), a small proportion remained in treatment. This is an indication of the difficulty in treating people with coexisting depression and alcohol problems, with irregular attendance and the need for a flexible and accepting attitude to missed appointments.

Results on depressive symptoms were in the context of relatively high remaining symptoms after treatment. Because the average number of sessions attended by participants was only five or six, greater effects on depression may have been obtained if participants had maintained engagement in treatment for a longer period. Inclusion of more effective strategies to maintain treatment engagement or additional sessions via telephone may improve the response. On the other hand, the present sample represented a particularly difficult-to-treat group, in that mean baseline depression levels were severe, 64% had experienced only partial recovery from depression since their first episode, 39% had experienced a continuous course of hazardous drinking, and more than half the sample were taking antidepressants, for a mean of just over 2 years.

Further large studies evaluating the effectiveness of MI CBT and other treatments for coexisting depression and alcohol problems appear warranted. These might evaluate the effectiveness of: stepped-care approaches, with brief integrated interventions being followed by single-focused interventions that may differ by gender; and MI CBT with longer interventions available via face-to-face, telephone or internet delivery in order to improve outcome.

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Declarations of interest

None.

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