Testing the Initial Efficacy of a Mailed Screening and Brief Feedback Intervention to Reduce at-Risk Drinking in Middle-Aged and Older Adults: The Comorbidity Alcohol Risk Evaluation (CARE) Study

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Abstract

Background/Objectives—To determine the initial efficacy of a mailed screening and brief intervention to reduce at-risk drinking among persons aged 50 years and older.

Design—Pilot randomized controlled trial.

Setting—UCLA Department of Medicine Community Offices and Primary Care Network. Participants: 86 adults aged 50 years and above who were identified as at-risk drinkers by the Comorbidity Alcohol Risk Evaluation Tool (CARET).

Intervention—Participants were assigned randomly to receive personalized mailed feedback outlining their specific risks associated with alcohol use, an educational booklet on alcohol and aging, and the NIH *Rethinking Drinking: Alcohol and Your Health* booklet (intervention group) or nothing (control group).

Measurements—Alcohol-related assessments at baseline and at 3 months. CARET assessed at-risk drinking, number of risks, and types of risks.

Results—At 3 months, relative to controls, fewer intervention group participants were: at-risk drinkers (66% versus 88%), binge drinking (45% versus 68%), used alcohol with a medical or psychiatric condition (3% versus 17%) or with symptoms of such a condition (29% versus 49%).

Conclusion—A mailed brief intervention may be an effective approach to intervening with at-risk drinkers aged 50 and older.

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Keywords

brief intervention; alcohol; older adults; mailed feedback

INTRODUCTION

The baby boom generation (born 1946–1964) is contributing to explosive growth in the population of adults aged 50 years and older.[1]. Data from the National Survey on Drug Use and Health, 2012[2] show 10.4 million people, including 12% of men and 8% of women aged 50 years and older, drink in excess of the low risk drinking limits recommended by the National Institute of Alcohol Abuse and Alcoholism (NIAAA) (e.g., men < 65 years old: >14 drinks per week or 4 drinks on any day; women of all ages and men 65 years old: >7 drinks per week or 3 drinks on any day).[3] Even if the prevalence of unhealthy alcohol use remains stable, this population growth means there will be many more older individuals who consume alcohol at unhealthy levels.

Physiological changes resulting from aging, such as decreases in lean body mass and total body water and increased blood brain barrier permeability and neuronal receptor sensitivity to alcohol, cause older adults to experience higher blood alcohol concentrations and increased impairment compared to younger adults[4–5]—even at equivalent consumption levels and with less awareness of their impairment[6]. The most common risks among older drinkers are interactions of alcohol and medications (e.g., antihypertensives, sedatives) and alcohol and comorbid medical or psychiatric conditions and/or their symptoms (e.g., hypertension, insomnia)[7]. We previously defined unhealthy or at-risk drinking among older adults as the use of alcohol that increases risk for harm, due both to the amount consumed and concurrent use of alcohol with medications and comorbidities[8].

Screening and brief interventions (SBI) with unhealthy drinkers in primary care settings have demonstrated efficacy in reducing both alcohol consumption and prevalence of unhealthy drinking[9]. Among the few studies examining SBI in a primary care setting among older adults, findings generally demonstrate that older adults reduce their drinking when provided with brief advice or feedback about their drinking[7, 10–12]. Unhealthy drinkers, however, are rarely identified in primary care, resulting in frequent missed opportunities for early identification and brief intervention[13].

Interventions that do not rely on in-person interactions (e.g., mail or computer-based) avoid many of the limitations of interventions targeting unhealthy drinking in clinical settings. For example, such interventions may: provide persons who do not regularly participate in the healthcare system access to important health information; offer flexibility of use; allow the user to maintain anonymity, thereby reducing potential stigma; provide a unique opportunity to individually tailor the intervention; and be far less costly than in-person interventions[14]. Further, postal services provide access for those who do not have access to a computer and the Internet. Studies employing mailed, written, personalized advice have reduced alcohol consumption in problem drinking college students[15, 16], employees[17], the general population[18, 19], and those who visited an emergency department[20]. Evidence also suggests

that unhealthy drinkers are more interested in receiving alcohol-related self-help materials compared to drinkers who drink at low risk levels[21].

To our knowledge, no program has intervened with unhealthy or at-risk drinking among primary care patients aged 50 and over by using a standalone mail-based intervention to both recruit and assess participants. This study aimed to test the feasibility and initial efficacy of an entirely mailed SBI, personalized for adults 50 and older that was connected to primary care but not dependent on the participant having an appointment or seeing a primary care provider.

METHODS

Study design

The Comorbidity Alcohol Risk Evaluation (CARE) Study was a small randomized trial testing the feasibility and efficacy of a mailed SBI among unhealthy drinkers aged 50 years and older recruited from a community-based, academic, primary care network. The primary aims of the study were to reduce unhealthy or at-risk drinking and alcohol use at 3 months. The Institutional Review Board of the University of California at Los Angeles approved this study. All enrolled study participants provided written informed consent.

Participants

Between January, 2011 and October, 2012, 3,300 potential participants aged 50 years and older were identified using patient panel data from primary care clinics of 13 participating physicians belonging to the UCLA Department of Medicine Community Offices and Primary Care Network and sent a letter introducing the study as one investigating health behaviors; a survey with questions about fruit and vegetable intake, prescription and non-prescription medication use, exercise habits, and alcohol and tobacco use. Questions on behaviors other than alcohol consumption were used to legitimize alcohol use as a health issue[22] and to mask the true purpose of the study to potential participants pre-randomization.

One thousand twenty-nine persons returned the survey (31.2% of those sent surveys) and 165 participants (16.0% of those returning surveys) met drinking criteria (i.e., drank at least 2 drinks, 3–4 times per week; Figure 1). These 165 respondents were sent: a second letter inviting them to participate in a study to test if giving information about healthy behaviors would improve or maintain health; a consent form; and a baseline survey. The survey included items on demographics (i.e., marital status, education completed, occupational status, race/ethnicity, age, and gender) current self-rated health status, and a variety of health behaviors (i.e., frequency and type of exercise, amount of fruits and vegetables consumed). The baseline survey also included the Comorbidity Alcohol Risk Evaluation Tool (CARET), used to identify unhealthy drinkers.[7, 12]

Identification of at-risk drinkers

The CARET includes questions on past 12 month, (a) quantity and frequency of alcohol use, (b) existing co-morbidities and symptoms of medical and psychiatric disorders, and (c) use of medications. Types of risk include: (1) exceeding particular quantity and frequency of

drinking (e.g., 3 drinks 4 times per week); (2) binge drinking (>4 drinks on one occasion at least monthly); (3) alcohol use with co-morbid medical or psychiatric condition (e.g., >8 drinks per week with depression or >12 drinks with high blood pressure or diabetes); (4) alcohol use with symptoms of medical or psychiatric conditions (e.g., >4 drinks per week and frequently experiencing problems sleeping, memory problems, stomach pain or vomiting), and (5) alcohol use with medications (e.g., >12 drinks per week and using blood pressure medication; >8 drinks per week and using sedatives, pain medications, nitrate medicines, or blood thinners). For the CARET's scoring rules, see Ettner et al.[12]. Responses were scored to designate a potential participant as either an at-risk (score 1–5) or not at-risk drinker (score 0). Not at-risk drinkers were not contacted again.

Randomization and blinding

Identified at-risk drinkers (N=86) were randomly assigned to the intervention (n=44) or control group (n=42). Research staff used consecutively numbered, sealed envelopes containing assignment information using a computer-generated set of random numbers to select permutated blocks of 2 and 4. Within each block, equal numbers were assigned to intervention or control groups..

Control group

Control group participants received a letter informing them the study was testing whether giving information on healthy behaviors would help reduce health risks, $5 gift card, and a reminder that they would be sent a follow-up survey in 3 months.

Intervention group

Intervention group participants received a letter informing them the study was testing whether giving information on healthy behaviors would help them reduce risks associated with alcohol use, a $5 gift card, a personalized feedback report, two alcohol education booklets (i.e., *Healthy Drinking as You Age,* and the National Institutes of Health Publication, *Rethinking Drinking*[23]) and reminder they would be sent a follow-up survey in 3 months. The feedback report outlined participant's alcohol-related risks from their CARET responses and potential consequences. The *Healthy Drinking as You Age* booklet included information on recommended drinking limits and risks of combined use of alcohol with medications and comorbid conditions. Both the feedback report and the *Healthy Drinking as You Age* booklet were used in two prior studies[7, 12].

Follow-up

All participants were sent a follow-up survey three months after baseline including questions about health behaviors over the past 3 months and the CARET. Returned surveys were scored to determine risk status. Participants were sent letters informing them of their risk status and all control group participants were informed that the study was testing whether giving information on healthy behaviors would help them reduce risks associated with alcohol use. Control group participants who were no longer at risk were sent the two alcohol education booklets and those who were still at–risk were given a personalized feedback report and the two alcohol education booklets. Intervention group participants who were still

at-risk were given another personalized feedback report. All participants received a $10 gift card for completing the follow-up survey. Participant follow-up concluded in April 2013.

Statistical analyses

Participant characteristics are reported for the total sample and by group as frequencies (percentages) and mean and standard deviations (SD). T-tests and Chi Square tests were used to compare groups at baseline for continuous and categorical variables respectively. Among the 86 participants who completed the baseline survey, 79 (91.9%) completed the follow up assessment (Figure 1); 38 respondents (86.4%) of the intervention group and 41 respondents (97.6%) of the control group.

Using data from both time points, analyses were conducted using the LOGISTIC and REG procedures in SAS version 9.3 (SAS Institute, Cary NC, USA). The primary outcomes were at-risk drinker status, CARET risk score; drinks per week; and type of risk. Analysis of covariance models were fit for at-risk drinking status and for each type of risk. Linear regression models were fit for drinks per week and CARET risk score. For all models, baseline values of each of the outcome variables, except for at-risk drinking status were entered as covariates.

RESULTS

Baseline sample characteristics

Respondents had a mean age of just under 65 years, were primarily male (66%), White, non-Hispanic (88%), had graduated college or higher (77%), married (64%), and working full or part-time (64%) (Table 1). More than half of the respondents (56%) reported health status as very good or excellent.

Respondents reported consuming a mean 15.1 drinks (*SD* = 7.9) per week and had a mean CARET risk score of 2.4 (*SD* = 1.4). Fifty-five persons (64%) had two categories of risk or more. Most respondents were identified as at-risk drinkers because of binge drinking (72%), followed by alcohol use with medications (56%), alcohol use with symptoms (50%), quantity and frequency of alcohol use (42%) and alcohol use with comorbidities (24%). There were no significant group differences for any baseline variable.

Three Month Outcomes

Table 2 shows descriptives for the three month follow up assessment and results from the <u>ANCOVA and</u> linear regression analyses. The number of drinks per week was reduced for all participants by about two standard drinks, yet there were no significant differences between the groups. CARET risk score was also reduced in both groups, but the intervention group demonstrated a statistically significant reduction compared to those in the control group. To address missing data at the 3-month follow-up we conducted sensitivity analyses using Last-Observation-Carried-Forward (LOCF) method[24]. These results were similar to those from the base model estimates. (Table 2)

Intervention group participants were 73% less likely to be an at-risk drinker compared to control group participants. Only 66% of the intervention group remained at-risk compared to

88% of the control group. Within type of risk, significant differences by condition emerged for binge drinking, alcohol use with a medical or psychiatric condition, and alcohol with symptoms of a medical or psychiatric condition. Intervention group participants were 72% less likely to be an at-risk binge drinker and 92% less likely to be at-risk due to a medical or psychiatric condition. Only one person in the intervention group compared to seven in the control group was at-risk due to alcohol use with a medical or psychiatric condition at follow up. Finally, intervention group participants were 69% less likely to be at-risk due to alcohol use with symptoms.

DISCUSSION

This is the first study to test the feasibility and efficacy of a standalone mailed SBI targeting adult drinkers aged 50 and older enrolled in primary care practices and the first to focus on at-risk or unhealthy drinking, specifically alcohol use that increases risk for harm due to the quantity consumed and/or concurrent use of alcohol with medications and comorbidities. This pilot trial demonstrated that at three months, compared to an assessment-only condition, a mailed SBI targeting a small sample of middle-aged and older at-risk drinkers did not reduce amount of weekly drinking but reduced the prevalence of at-risk drinking compared to the control group. The intervention also reduced the total number of risks and some categories of risk relative to the control group.

Our findings are consistent with studies of mailed SBI implemented with younger samples of drinkers[18, 19, 25], as well as studies of more intensive SBI with older adults[7, 10–12]. Most studies on mailed interventions with younger populations demonstrate that all participants reduce their drinking, but there is a small significant reduction in drinking among participants who receive the intervention compared to a control group[18, 19, 25]. Among studies of in-person SBI on older adults in primary care settings, all had some degree of success in reducing alcohol use and/or alcohol-related outcomes[7, 10–12]. These studies differed from the current study in their much greater intensity of intervention, and all included some physician contact.

Limitations of the current study are primarily due to its being a pilot study. The sample size was small, indicating results should be interpreted with caution; however, the intent of this study was to gather data on initial efficacy and feasibility to plan for a larger study. In addition, similar to other studies among older adults in primary care[7, 10–11], the sample was primarily Caucasian, male, well educated and in good health, thus limiting generalizability to other populations. Finally, the response rate to the initial screening survey was only 31%, however, this may still be a reasonable response rate as, unlike any of the other mailed interventions, no pre-screening aside from identifying those aged 50 years and older was conducted to identify potential respondents.

Overall, findings suggest that a standalone mail-based intervention may be an efficacious intervention with at-risk drinking older adults and potentially address some of the limitations of in-person SBI. While it is increasingly recognized that older adults should be routinely screened for alcohol misuse[26], screening and subsequent identification of risky alcohol use are hampered by limited time in the office; potential discomfort among patients and

providers assessing for unhealthy alcohol use; the similarities of symptoms of alcohol misuse with other illnesses common in later life; or that symptoms experienced by use of alcohol are a part of normal aging rather than resulting from the substance use itself[27]. A mail based intervention takes advantage of the relative anonymity of intervening outside the medical office and can intervene for those who may not otherwise come in for a visit, or may not choose to discuss drinking directly with their physician.

Future studies of standalone mailed brief interventions among older adult at-risk drinkers need to be done to confirm this small study's preliminary and promising findings. Other studies should also address substances beyond alcohol, such as misuse of prescription pain medications or illegal drugs, particularly given the level of use of such substances among the Baby Boom generation[28–29].

ACKNOWLEDGMENTS

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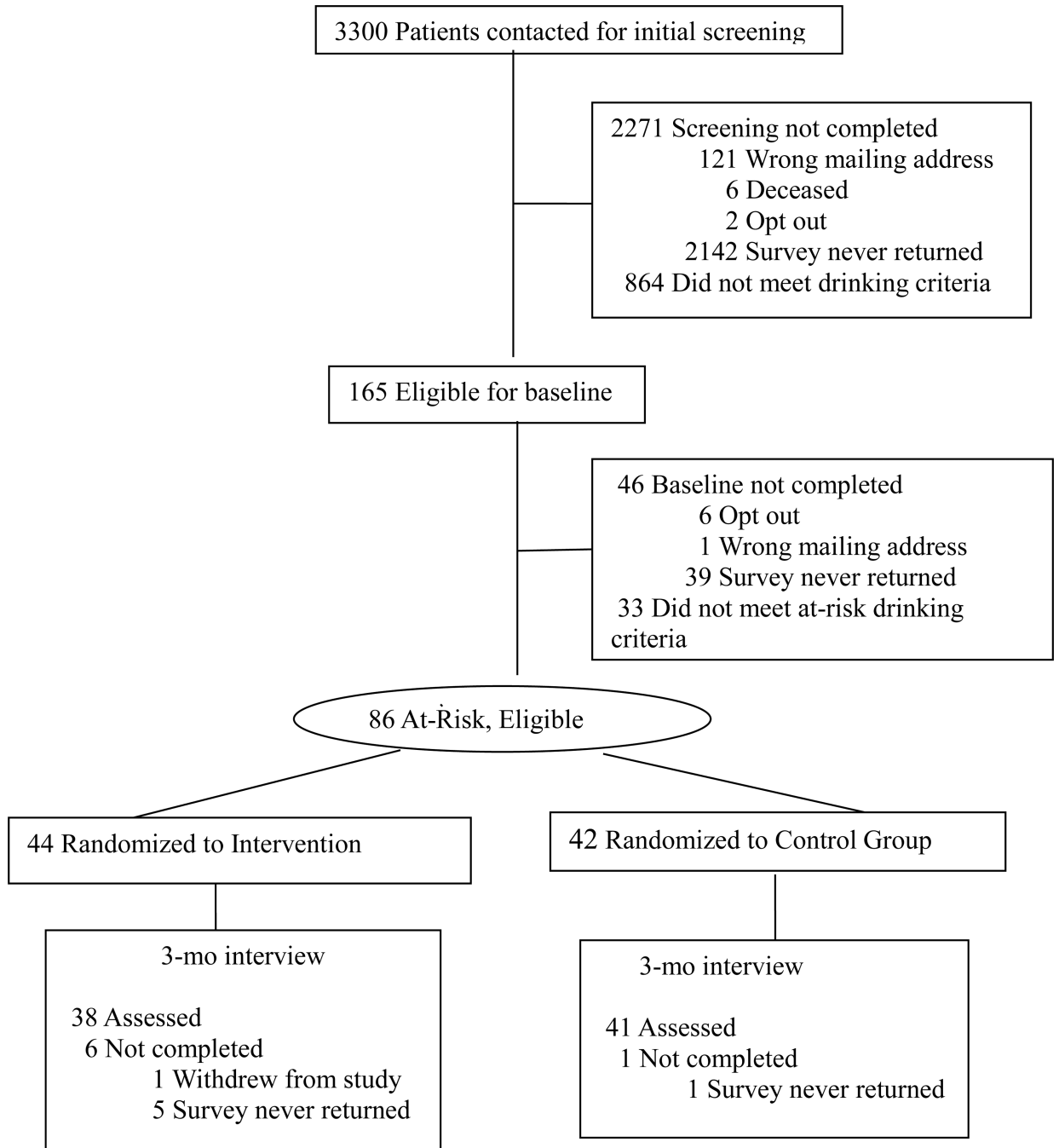
Figure 1.
Flow of individuals in the Comorbidity Alcohol Risk Evaluation Study

Table 1

Baseline Participant Characteristics

Characteristics	Intervention (N=44)	Control (N=42)	Total (N=86)
Age, Mean (SD)	63.2 (7.3)	66.3 (9.2)	64.7 (8.4)
Male gender	30 (68)	27 (64)	57 (66)
Race			
White, non-Hispanic	37 (84)	38 (93)	75 88)
Hispanic/Latino	6 (14)	2 (5)	8 (9)
Other	1 (2)	1 (2)	2 (2)
Education			
High school or less	5 (11)	1 (2)	6 (7)
Technical or trade school	0 (0)	2 (5)	2 (3)
Some college	7 (16)	5 (12)	12 (14)
College degree or more	32 (73)	34 (81)	66 (77)
Marital Status			
Married	31 (70)	24 (57)	55 (64)
Widowed, divorced, separated, never married	13 (30)	18 (43)	31 (36)
Employment Status			
Retired or homemaker	14 (33)	17 (40)	31 (36)
Working full or part time	29 (67)	25 (60)	53 (64)
Self Reported Health Status			
Excellent or very good	22 (50)	26 (63)	48 (56)
Good	16 (36)	13 (32)	29 (34)
Fair or poor	6 (14)	2 (5)	8 (9)
Alcohol Related Variables			
Drinks per week, mean (SD)	15.6 (8.8)	14.4 (7.0)	15.1 (7.9)
CARET[a] risk score (range 1 to 5), mean (SD)	2.6 (1.6)	2.3 (1.3)	2.4 (1.4)
Type of Risk			
Quantity and frequency of drinking[b]	22 (50)	14 (33)	36 (42)
Binge drinking (4 or more drinks per occasion at least monthly)	33 (75)	29 (69)	62 (72)
Alcohol use with medical, psychiatric condition	12 (27)	9 (21)	21 (24)
Alcohol use with symptoms	24 (55)	19 (45)	43 (50)
Alcohol use with medications	22 (50)	26 (62)	48 (56)

Data are presented as No. (%) unless otherwise indicated.

Abbreviations: SD, Standard Deviation.

[a] Comorbidity Risk Evaluation Tool. This tool uses information on the domains described in each type of risk to determine if a respondent is an at-risk or not at-risk drinker. If a respondent meets at-risk criteria for two domains (e.g., they meet at-risk criteria for quantity and frequency of drinking because they report drinking 3 drinks per day 4 times a week, and for alcohol use with medications because they report also regular use of medications for sleep) they have a risk score of 2.

[b] Those meeting the criterion for this risk drink three or more drinks per occasion at least four times a week, four or more drinks per occasion at least twice a week or five or more drinks per occasion at any frequency.

Table 2

Three Month Outcomes: Descriptives and Model Results

Characteristics	Descriptives			Base Model Estimates		Estimates from LOCF[a]	
	Intervention N=38 N(%)	Control N=41 N(%)	Total N=79 N(%)	Beta Coefficient (95%CI)	p-value	Beta Coefficient (95%CI)	p-value
Alcohol Related Variables							
Drinks per week, mean (SD)	12.1 (7.0)	13.5 (6.0)	12.8 (6.5)	−1.95 (−4.37, +0.46)	0.11	−1.18 (−3.57, 1.21)	0.33
CARET risk score (range 1 to 5), mean (SD)	1.6 (1.7)	2.1 (1.4)	1.9 (1.5)	−0.83 (−1.32, −0.32)	<0.01	−0.67 (−1.15, −0.19)	<0.01
				Odds Ratio (95% CI)	p-value	Odds Ratio (95% CI)	p-value
At-risk drinker	25 (66)	36 (88)	61 (77)	0.27 (0.09, 0.84)	0.03	0.32 (0.10, 1.00)	0.05
Type of risk							
Quantity and frequency of drinking	13 (34)	17 (41)	30 (38)	0.39 (0.12, 1.25)	0.11	0.42 (0.14, 1.33)	0.14
Binge drinking	17 (45)	28 (68)	45 (57)	0.28 (0.10, 0.79)	0.02	0.33 (0.12, 0.90)	0.03
Alcohol use with medical, psychiatric condition	1 (3)	7 (17)	8 (10)	0.08 (0.01, 0.82)	0.03	0.28 (0.06, 1.38)	0.12
Alcohol use with symptoms	11 (29)	20 (49)	31 (39)	0.31 (0.11, 0.90)	0.03	0.38 (0.14, 1.07)	0.07
Alcohol use with medications	15 (39)	19 (46)	34 (43)	1.14 (0.35, 3.71)	0.83	1.30 (0.41, 4.12)	0.66

Data are presented as No. (%) unless otherwise indicated. Abbreviations: SD, Standard Deviation

[a] Last Observation Carried Forward