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Alcohol screening and brief intervention in primary care: Absence of evidence for efficacy in people with dependence or very heavy drinking

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Abstract

Issues—Although screening and brief intervention (BI) in the primary-care setting reduces unhealthy alcohol use, its efficacy among patients with dependence has not been established. This systematic review sought to determine whether evidence exists for BI efficacy among patients with alcohol dependence identified by screening in primary-care settings.

Approach—We included randomised controlled trials (RCTs) extracted from eight systematic reviews and electronic-database searches published through September 2009. These RCTs compared outcomes among adults with unhealthy alcohol use identified by screening who received BI in a primary-care setting with those who received no intervention.

Key Findings—Sixteen RCTs including 6839 patients met the inclusion criteria. Of these, 14 excluded some or all persons with very heavy alcohol use or dependence; one in which 35% of 175 patients had dependence found no difference in an alcohol severity score between groups; and one in which 58% of 24 female patients had dependence showed no efficacy.

Conclusion and Implications—Alcohol screening and BI has efficacy in primary care for patients with unhealthy alcohol use but, there is no evidence for efficacy among those with very heavy use or dependence. Since alcohol screening identifies both dependent and non-dependent unhealthy use, the absence of evidence for the efficacy of BI among primary-care patients with screening-identified alcohol dependence raises questions regarding the efficiency of screening and BI, particularly in settings where dependence is common. The finding also highlights the need to develop new approaches to help such patients, particularly if screening and BI are to be disseminated widely.

Keywords

alcohol; alcohol dependence; primary care; brief intervention; systematic review

Background

Alcohol brief intervention (BI) has proven efficacy in primary-care patients with non-dependent unhealthy alcohol use identified by screening [1–4]. Systematic reviews of controlled trials have found a reduction in alcohol consumption of 38 g per week [2] and a 12% reduction in the proportion of patients drinking risky amounts[1] among patients

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receiving BI compared with those receiving no intervention. However, screening identifies people with the range of unhealthy alcohol use, from risky use without consequences through dependence, and the efficacy of BI for patients with very heavy use or dependence, particularly those identified by screening, has not been established. This observation is important, since 20% of primary-care patients with unhealthy alcohol use identified by screening have dependence [5].

Furthermore, readiness to change and effectiveness of treatment should not be assumed to be the same for people seeking help versus those identified by screening. People with non-dependent unhealthy use may simply be unaware of the consumption amounts that risk health consequences or may have experienced few, if any, consequences related to drinking. As a result, they often are not seeking help or advice. In that circumstance, and without loss of control over their drinking, one would expect them to respond to brief advice from their physician, whom they see for preventive and primary care, when it is offered appropriately. On the other hand, people with dependence who seek help often *do* benefit from treatment, including BI [6]. In such cases, the patient has already taken the first steps towards change, unlike the patient identified by screening. Although patients with dependence often report high readiness to change [7], by definition (i.e. dependence criteria), they have great difficulty doing so. Those identified through screening are not actively seeking help and, therefore, are less likely to be amenable to change. Thus, the literature on efficacy of treatment for people with alcohol dependence may not apply to those identified by screening. The widespread and continued existence of (not brief) specialty care for alcoholism confirms that experts have not concluded that BI is sufficient treatment for dependence. Furthermore, some believe that severity of unhealthy use is an explanation for negative studies of alcohol BI [8].

In clinical practice, the severity of alcohol use is not known until after screening, and clinicians need something efficacious to offer all patients identified as having unhealthy use, including those with greater severity or with dependence. The solution has been to perform BI among patients with dependence with a goal of motivating change, including referral and treatment. Yet it remains unknown whether BI in such patients leads to a decrease in use or alcohol-related consequences or to linkage with treatment. This systematic review of randomised controlled trials (RCTs) sought to find evidence to determine whether BI among patients identified by screening in primary-care settings as having alcohol dependence decreases consumption or alcohol-related consequences or increases initiation of, or engagement in, further alcohol treatment.

Methods

Inclusion criteria

This analysis included randomised controlled trials published in English in the peer-reviewed literature through September 2009 that compared primary-care patients with unhealthy alcohol use identified by screening who received BI with patients who received no intervention. Brief interventions were conducted in-person (not by telephone, mail, or computer). Each could include up to four follow-up sessions. The goal of the BI could be to reduce drinking and/or alcohol consequences or to provide a referral to additional care.

Exclusion criteria

Studies conducted among hospital inpatients or in emergency departments, trauma centers, or other settings not considered primary care per the US Institute of Medicine definition (i.e. integrated, accessible health care by clinicians who are accountable for addressing a large majority of personal health-care needs, who develop a sustained partnership with patients,

and who practice in the context of family and community [9]) were excluded, as were studies including patients with comorbid conditions (e.g. gastrointestinal disease, hypertension, or pregnancy). Studies that compared BI to another active treatment (versus usual care or no intervention) were also excluded, as were studies among patients not identified by screening, since motivation for change and severity of use can be substantially different in such patients. Additional exclusions were duplicate reports of results from the same study and studies with methodological flaws as defined in Whitlock *et al.* [4]. They used internal-validity [10] and quality [11] criteria to exclude trials of poor quality. Major quality problems were non-random assignment, non-comparable baseline conditions, attrition greater than 30%, inadequate or unavailable consumption data, or lack of data on alcohol-related consequences or treatment linkage outcomes) [4].

Search strategy

Studies were selected from two recent exhaustive, high-quality systematic reviews by Kaner *et al.* [3] and Whitlock *et al.* [4], which identified RCTs of alcohol BI among primary care patients through 2006. References from six other systematic reviews of alcohol BI in primary care were examined to identify additional studies [1,2,12–15]. Other systematic reviews may exist but were not identified and, therefore, were not included in this review. Finally, an electronic literature search was conducted to identify RCTs published from 2006 through September 2009 using an inclusive search strategy that combined relevant keywords and medical subject headings (MeSH) across five relevant and comprehensive online databases (Appendix 1).

Study selection

Thirty-three studies were identified by Whitlock *et al.* [4] and Kaner *et al.* [3]. Of these, 19 were excluded from this analysis, the reasons for which are listed in Appendix 2. The remaining 14 studies [16–29] were included in this analysis. Examination of the six additional systematic reviews [1,2,12–15] identified one RCT [30] meeting inclusion criteria (found in Bertholet *et al.* [2]), which was also included in this analysis.

The electronic search of Medline and the Cochrane Database of Systematic Reviews identified 227 potential articles published between 2006 and September 2009, of which eight were studies of alcohol BI. Seven of the eight studies did not meet inclusion criteria. The reasons for exclusion are listed in Appendix 2. Searches of four additional relevant databases yielded a number of potential additions but no additional studies meeting inclusion criteria. Thus, one study [31] was included from this search. Combined with the RCTs identified in the previously published systematic reviews, a total of 16 studies (N=6839 patients) were included in this analysis (Table 1).

Findings

Of the 16 RCTs meeting inclusion criteria, 14 excluded some or all subjects with very heavy alcohol use or dependence, the definitions of which were specific to each study (Table 2). Only two studies included patients with dependence or did not exclude people based on an upper limit of consumption (Table 3). In the study by Burge *et al.* [30], 10–15 minute BI by resident family physicians was compared with six weekly 90-minute educational sessions, receipt of both interventions, or receipt of no intervention among 175 Mexican Americans (75% of whom were men, 35% of whom had dependence, and 65% of whom had abuse). Follow-up occurred over 18 months. No difference was found between groups on drinks per week or Addiction Severity Index (ASI) alcohol scores. An interaction between BI and ASI alcohol score was not significant, suggesting a similar lack of response to intervention across the range of severity. The ASI family scale score improved among all subjects at 12

months, but at 18 months, BI was associated with a loss of this initial improvement among women. All groups showed improvement in the ASI medical score at 12 months, but only those in either intervention group continued to improve at 18 months, while those who received both interventions or no intervention did not. There were no group outcome differences in employment, legal-problem severity, psychiatric severity, or laboratory test results (mean corpuscular volume, gamma-glutamyl-transferase or alanine or aspartate aminotransferase levels). In the study by Chang *et al.* [17] including 24 women (58% of whom had dependence, 8% of whom had abuse, and 21% of whom had a past alcohol use disorder), no difference in alcohol consumption was observed between groups, the BI was done by an experienced addiction psychiatrist, and duration was not specified. Both study samples were recruited from single clinic sites. Neither study addressed treatment linkage as a goal of BI, although in Chang *et al.*, referral to treatment was the control condition. Despite this, no control patients followed through on the referral in that study, and linkage to treatment was not reported for the BI group.

Conclusions

Results of the two studies identified in this systematic review offer no evidence to support alcohol screening and BI efficacy among primary-care patients with very heavy drinking or dependence. Further, the studies were of limited generalisability. Patient samples were small in both studies; one study included only women, and the other included only Mexican Americans; results were not specifically analysed by dependence; the range of outcome measures could have been greater; and, in one of the studies, the intervention was conducted by an expert.

Other evidence in the literature suggests that screening and BI has efficacy for those who drink too much but do not have dependence. It may turn out to have efficacy for those with more severe unhealthy use, but evidence to date is not available to support this. There is a difference between an absence of evidence and evidence for absence of effect: the circumstance here is the former. Regardless, it is clear that we cannot conclude, on the basis of high-quality evidence in the scientific literature, that BI among those identified by alcohol screening in primary care works for people with very heavy drinking or dependence.

This study had several limitations. Ideally, systematic reviews are conducted by at least two independent raters, and inter-rater reliability is reported. Such a process might have strengthened this paper. Second, the findings relied largely on prior systematic reviews, exclusion criteria in original articles were sometimes not clearly specified, and non-English language studies were not included. However, of the four non-English studies included in the prior systematic reviews, two excluded patients with dependence and patients who had received treatment for alcohol problems [32,33], one excluded patients who had received treatment [34], and one excluded people with heavy drinking (≥ 95 units per week) and failed to provide clear data on randomisation methods [35]. As such, these studies would have either been excluded from the current review based on criteria other than language or, if included, would have appeared among the studies that excluded patients with very heavy use or dependence (and thus would not have contributed information on efficacy of BI in such patients).

One might wonder whether the BI literature beyond primary care might inform the question asked in this review. However, the context of care appears to be quite important for BI. In the literature on BI in emergency departments, most studies found no impact of BI on drinking [36–38]. Severity may be an explanation for inconsistent results on BI efficacy in other settings, such as hospitals [39]. For example, one of the few BI studies in any setting that did not exclude people with dependence found no efficacy for BI in hospitalized

patients; 77% of patients in the sample had dependence, because that was the nature of the population found in the hospital [7,40]. A subgroup analysis from the same study found there may have been an impact of BI on drinking among those without dependence only [41]. Another hospital study that excluded patients with dependence or alcohol-related conditions found the effectiveness of BI for decreasing consumption was comparable to that achieved by providing a self-help booklet compared with controls who received no intervention [42]. An additional analysis of BI in the hospital setting by Freyer-Adam *et al.* [43] found no difference in consumption or alcohol-related consequences among the 45% of patients with dependence. Studies that compare BI to more extensive interventions could theoretically be informative, but they have generally not included people identified by screening [6]. In such studies, BI has similar efficacy to longer interventions among those seeking help. It is not known how such results would translate to BI among people with dependence who are not necessarily seeking help.

One might consider the use of categorization of patients as having dependence a simplification of what is likely a spectrum of severity. Although it is probably true that severity of unhealthy use is on a spectrum rather than a dichotomous phenomenon, it also remains likely that, when patients are categorized as “dependent,” such categorisation includes patients with greater severity. Continuous measures of severity could be used in future studies to better identify those patients for whom BI does or does not have efficacy, but, generally speaking, studies to date have not done so.

This review has methodological strengths as well. Many systematic reviews of BI in primary care have preceded this one, making it likely that few, if any, studies have been missed. Experts in systematic-review methodology have recently encouraged the appropriate inclusion of prior systematic reviews in those that follow [44]. This review focused on the primary-care setting as defined by the US Institute of Medicine and used a wide range of electronic databases. It also excluded studies with substantial methodological limitations.

Based on this review, it is clear that most randomised trials of alcohol BI for screen-identified patients in primary-care settings published to date have excluded patients with very heavy alcohol use or dependence. In the two studies that did include patients with dependence, the efficacy of BI for such patients remains unknown.

Implications

In clinical practice, most do not advocate BI for patients with alcohol dependence, recognizing it will likely be insufficient to address this more complex and severe condition. Yet such patients often receive no intervention, whether BI or more extensive treatment. Although BI is expected to lead to referral, treatment initiation, and reductions in alcohol consumption and related problems, these results and those of other studies in other settings suggest this is unlikely. In a study of hospitalized patients by Elvy *et al.* [45], BI decreased alcohol-related consequences and increased treatment enrolment (14% of patients in the BI group enrolled in treatment versus 4% of patients who got no BI); however, most participants did not have dependence. In a study by Saitz *et al.* involving general hospital patients, no differences in treatment entry were seen, although hypothesis-generating subgroup analyses showed some promise for women and younger men with dependence [40].

Bischof *et al.* [46] compared computerized feedback and telephone-based care with no intervention among primary-care patients with unhealthy alcohol use, including dependence. They found a decrease in heavy drinking only among those with risky use or abuse, but no other outcome differences were observed, and no benefits were observed among patients

with dependence. (Specifically, BI did not increase help-seeking.) D'onofrio *et al.* [47] conducted a study among emergency-department patients without dependence and found no difference in substance-abuse or mental-health treatment utilization among those receiving BI versus those receiving no intervention. Finally, although success of drug and alcohol treatment varies depending on rapid availability of treatment, the nature of treatment (e.g. opioid agonist treatment for opioid dependence versus naltrexone for alcohol dependence), and the availability of support services (e.g. transportation), US programs that provide alcohol screening, BI, and referral to treatment (SBIRT) [48] report that most patients with dependence referred to treatment do not accept the referral and, thus, do not enter treatment (Daniel Alford and Jennifer Smith, Personal Communication, December 14, 2009).

In sum, screening, even when the goal is BI for people with non-dependent unhealthy use, identifies patients with dependence, and the rationale for implementing BI universally among such patients is questionable considering the lack of evidence for its efficacy. We should not “throw the baby out with the bathwater,” however. Clearly, BI has efficacy for primary-care patients with less severe unhealthy alcohol use, and that should continue. The question is whether such screening should be universal if evidence for benefit in an important subgroup is lacking. Some might conclude that it should, because BI will eventually be proven to have efficacy among those with dependence. Others will disagree. Nonetheless, research is needed to determine what, if anything, may have efficacy for patients with alcohol dependence identified by screening in primary care as well as in other health-care settings. Such studies of BI should assess subjects with continuous measures of unhealthy alcohol use severity; be widely generalisable, with few exclusion criteria; and measure important clinical outcomes (e.g. consumption, consequences, cost, referral completion, and other health-care utilization).

The absence of evidence for the efficacy of BI among primary-care patients with screening-identified alcohol dependence raises questions regarding the efficiency of screening and BI, particularly in settings where dependence is common. The finding also highlights the need for developing new approaches to help such patients, particularly if screening and BI are to be disseminated widely.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Summary of alcohol screening and brief intervention trials included in the systematic review

Table 1

Author (year)	Setting	Participants (age)	Intervention
Anderson & Scott (1992) [16]	8 primary-care group practices in England	154 men (17–69 years)	10-min BI including advice and feedback from usual physician provider
Burge <i>et al.</i> (1997) [30]	US family-practice outpatient clinic	175 Mexican-American adult men and women (18+ years)	10–15 min BI from physician and 6 group psychoeducational sessions (90 min each)
Chang <i>et al.</i> (1997) [17]	US general internal medicine clinic	24 women (average age, 39 years)	BI with psychiatrist (duration not reported)
Curry <i>et al.</i> (2003) [18]	US urban primary-care clinic	307 men and women (mean, 47 years)	BI from usual physician provider plus and up to 3 telephone follow-up sessions and self-help booklet
Fleming <i>et al.</i> (1997) [19]	17 US primary-care practices	774 men and women (18–30 years)	2–15-min BI from usual physician provider 1 month apart plus follow-up phone call from nurse 2 weeks after each visit and self-help booklet
Fleming <i>et al.</i> (1999) [20]	24 US primary care practices	158 men and women (65–75 years)	2 10–15 min BI from usual physician provider 1 month apart plus follow-up phone call from nurse 2 weeks after each visit and self-help booklet
Lock <i>et al.</i> (2006) [21]	40 UK primary-care practices	127 men and women (mean, 44 years)	5–10 min BI from nurse and self-help booklet
Maisto <i>et al.</i> (2001) [22]	12 US primary-care clinics	301 men and women (mean, 46 years)	Intervention 1: 30–45 min BI from staff with motivational enhancement plus 2 15–20 min follow-up sessions and self-help booklet; Intervention 2: 10–15 min BI from staff and self-help booklet
Nilssen (1991) [23]	University community-health center in Norway	290 men and 48 women (12–62 years)	Intervention 1: single BI from physician and self-help booklet plus follow-up letter; Intervention 2: more extensive intervention from physician plus self-help booklet and offer of follow-up consultations
Ockene <i>et al.</i> (1999) [24]	4 primary-care academic medical centers in the US	530 men and women (mean, 44 years)	5–10 min BI from trained interventionist and self-help booklet
Richmond <i>et al.</i> (1995) [25]	40 primary-care practices in Australia	378 men and women (mean, 38 years)	Intervention 1: 5-min session from physician and self-help booklet plus additional 15–20 min BI 1 week later, additional 5–25 min BI 1 month later, and 2 additional 5-min follow-up sessions; Intervention 2: 5-min BI from physician and self-help booklet
Schaus <i>et al.</i> (2009) [31]	college student-health center	363 men and women (mean, 20 years)	2 20-min BI sessions from trained providers
Scott & Anderson (1991) [26]	8 primary-care practices in England	226 men and women (mean, 45 years)	10-min BI from physician and self-help booklet
Senft <i>et al.</i> (1997) [27]	3 primary-care group practices in the US	516 men and women (mean, 42 years)	30-sec advice from physician, physician's assistant, or nurse immediately followed by 15-min BI from health counselor plus self-help booklet
Wallace <i>et al.</i> (1988) [28]	47 primary-care group practices in the UK	909 men and women (17–69 years)	BI from physician plus 1–4 follow-up sessions and self-help booklet
WHO (1996) [29]	10 primary-care settings in 8 countries	1260 men (average, 37 years) and 299 women (average, 36 years)	Intervention 1: 5-min BI Intervention 2: 15-min BI with behavioral techniques plus up to 3 follow-up visits

Table 2

Alcohol screening and brief intervention trials included in the systematic review that excluded patients with very heavy alcohol use or dependence

Author (year)	Exclusion criteria
Anderson & Scott (1992) [16]	Heavy use (>105 drinks per week) or advice to cut down in past year
Curry <i>et al.</i> (2003) [18]	AUDIT score >15
Fleming <i>et al.</i> (1997) [19]	Heavy use (>50 drinks per week), past-year alcohol treatment or withdrawal, receipt of physician advice to reduce alcohol use
Fleming <i>et al.</i> (1999) [20]	Heavy use (>50 drinks per week), past-year alcohol treatment or withdrawal, receipt of physician advice to reduce alcohol use
Lock <i>et al.</i> (2006) [21]	AUDIT score >15 for men or >13 for women, or severe dependence
Maisto <i>et al.</i> (2001) [22]	Acute dependence symptoms or recent substance abuse treatment
Nilssen (1991) [23]	Dependence
Ockene <i>et al.</i> (1999) [24]	In an alcohol treatment program
Richmond <i>et al.</i> (1995) [25]	Severe dependence, alcohol-related problems, any past alcohol treatment
Schaus <i>et al.</i> (2009) [31]	Consumption of >200 drinks in the last 30 days
Scott & Anderson (1991) [26]	Consumption of >71 drinks per week and/or past-year advice to cut down or abstain
Senft <i>et al.</i> (1997) [27]	AUDIT score >21
Wallace <i>et al.</i> (1988) [28]	Recent health-professional advice to reduce drinking and/or gamma- glutamyl transferase level of 150 IU/L
WHO (1996) [29]	Known or suspected dependence or very high daily consumption, liver damage, prior alcohol treatment, prior health-professional warning to abstain

AUDIT=Alcohol Use Disorders Identification Test

Table 3

Alcohol screening and brief intervention trials included in the systematic review that did not exclude subjects with very heavy alcohol use or dependence

Author (year)	Description
Burge <i>et al.</i> (1997) [30]	<i>Sample:</i> N=175 Mexican-American men and women; 65% had abuse and 35% had dependence. <i>Results:</i> No difference in alcohol severity scores by intervention group
Chang <i>et al.</i> (1997) [17]	<i>Sample:</i> N=24 women; 71% had lifetime dependence (58% with current dependence) and 8% had abuse (8% with current abuse); past alcohol treatment was an exclusion. <i>Results:</i> Brief intervention not associated with reduced alcohol consumption