

Identifying and Intervening With Drinking Drivers in Various Venues: A Research Review

E. Wells-Parker and M. Williams

Mississippi Alcohol Safety Education Program, Social Science Research Center, Mississippi State University, Mississippi State, Mississippi, USA

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Abstract

Research on intervention (e.g., treatment, education, probation) effectiveness with drinking drivers has a long history in the criminal justice context. Recently, interventions with high risk drinking drivers in other settings (e.g., medical) have been investigated. Definitive research on intervening to reduce drinking driving/crashes faces difficulties that influence what we know/do not yet know about intervening in DUI systems. Furthermore, as intervention venues for drinking drivers expand beyond traditional criminal justice settings, it is important to understand unique aspects of research design in each venue for comparison of results across venues.

Introduction

Reviewing literature for policy decisions.

The advent of quantitative review techniques such as meta-analysis has heightened awareness of the elements necessary to draw conclusions from a body of literature. The development of systematic quantitative review techniques for defining, codifying and analyzing the literature that relates to specific questions to be answered, such as the effectiveness of particular interventions, has focused awareness of qualities and standards that apply to any literature review, including traditional qualitative reviews (1, 2). As a result, quality standards for any review, whether quantitative or qualitative, have emerged (3). Quality standards suggest guidelines for such issues as selection of studies for the review, whether there is publication bias within the set of reviewed studies, whether treatments are similar enough to combine, whether control groups are similar enough to combine, whether outcomes are related to characteristics of the research venue, design, or participants and whether outcomes are similar enough to justify combination. We suggest that these guidelines apply not only to a review of literature on a focused topic but also to comparisons of two separate bodies of literature, each of which focuses on different interventions or strategies in different sub-populations. Such comparisons between two different bodies of literature are often undertaken to answer policy questions--for example the question of which alternative policy or intervention is more effective even though each may target different groups. The relevant case in point is the important comparison of what we know from studies of intervention effectiveness with drinking drivers identified through the legal system to what we

know about intervention effects with drinking drivers who are identified in medical settings. We argue that it is critical to take into account important differences in sub-populations and in types of interventions found in each venue, as well as differences in study characteristics, methodology, and outcome measurements, when making comparisons and drawing inferences from those comparisons.

Differences between sub-populations of impaired drivers in different venues.

There is increasing interest in identifying and intervening with drinking drivers in venues other than legal settings. Correspondingly, there is a current research interest in screening for alcohol problems in medical settings (4) and a recognition that many drinking/drivers who are not identified through the legal system can be identified in medical settings (5). Conversely, impaired drivers who are identified in court systems may not have had previous contacts with the medical system in venues in which alcohol screening might occur. In this regard, we found that only 27% of adjudicated first offenders in an intervention study reported being treated for any injury in an emergency room or hospital since age 18 or in the five years preceding the arrest. Only 15 additional offenders (less than 1% of the sample) reported ever being treated for liver, pancreatic or other frequently alcohol-related diseases. Drinking/drivers identified in judicial settings and drinking/drivers identified in medical settings, such as emergency rooms and trauma centers, are likely to be distinct though overlapping sub-populations of impaired drivers. A few studies of patients in emergency or trauma care settings have focused only on those who had a DUI charge (4), but most intervention studies have adopted inclusion criteria not related to legal status (6). Therefore most brief interventions in medical venues use samples that are not selected for impaired driving behavior or risk per se. Additionally, sub-populations in the different venues may differ on personal characteristics that are related to intervention response as well as to impaired driving risk. When comparing intervention effects in legal versus medical venues, sociodemographic and psychological differences that could specify intervention response should be taken into account. For example, a recent study (7) found that depression specified the effectiveness of different intervention strategies for reducing recidivism in a court referred program. In the adjudicated first DUI offender sample, 25% reported depression. Thus, in generalizing to sub-populations in medical settings, any differences in depression rates should be taken into account.

Alcohol Intervention differences between legal and medical settings.

In addition to differences in sub-populations between judicial and medical settings, the interventions that are evaluated in these venues are different. In judicial settings, interventions that have been evaluated with impaired drivers have varied from simple didactic educational programs consisting primarily of lectures or home study programs, to combination strategies that incorporate education, group discussions, personal feedback and counseling, to traditional alcohol treatment modalities and self-help programs. Risk screening and assessments for intervention decisions in court referred settings vary from simple classifications based on driver history records, to a combination of records based assessments and simple risk screening questionnaires that often incorporate information on other problems such as depression, to elaborate clinical assessments (8, 9). In concert with an interest in relatively inexpensive interventions that do not interfere with primary medical care, most interventions that are evaluated in medical settings, especially ER/trauma settings that provide “windows of opportunity” to intervene with problem drinkers, have been brief interventions consisting of one

or two short sessions (10) that incorporate feedback using short alcohol specific instruments such as the MAST, the AUDIT or other short screens and/or medical information such as results of blood screens (6, 11).

Methodological issues

Methodological issues when comparing different sets of intervention studies.

Other important distinctions between evaluations of alcohol interventions in medical and in legal settings relate to differences in the methods quality and integrity of the research design, the outcome criteria used, and the completeness of the literature upon which the inferences and comparisons are based. Issues with respect to the set of studies used and the methodology of the research design that have emerged within meta-analysis also apply to comparisons between the results of meta-analyses conducted on different studies—in this instance a meta-analysis of interventions in the DUI literature (1) and a meta-analysis of brief alcohol interventions in medical settings (6).

Outcome criteria and methodological characteristics—DUI meta-analysis.

In a meta-analysis of DUI interventions most studies reported records-based recidivism outcomes, while relatively few outcome measures were based on self-reported behaviors at follow-up (1). In the DUI meta-analysis sample, among studies with acceptable research designs, 33 reported a records-based recidivism outcome, whereas only 4 included outcomes of self-reported drinking/driving and 5 included self-reported drinking outcomes. Studies reporting recidivism outcomes frequently involved larger samples with a median sample size of 1145 and longer follow-up intervals, typically more than one year, with two or more years being the mode. In contrast, studies using self-reported drinking/driving or drinking outcomes typically used small samples of less than 100 and shorter follow-up periods of one year or less. Within the DUI meta-analysis, records based recidivism outcomes were not compared to or combined with self-reported outcomes in order to avoid the “combining apples and oranges” problem. Conceptually DUI recidivism is distinct from measures of reduced drinking. Records-based recidivism, although having some notable advantages (12), has the disadvantage of providing a conservative estimate of effect size relative to other measures (1); thus, combining effects derived from recidivism outcomes with those based on self-report measures would pose problems because of the conservative bias of the recidivism outcomes. Furthermore, self-reported outcomes tended to be based on published small sample studies, whereas recidivism outcomes from longer studies were based on both published and unpublished sources, such as agency reports (1, 2, 13). The notable differences between recidivism and self-reported outcomes, particularly those focusing on alcohol consumption, precluded their combination or direct comparison in terms of magnitude of effect.

Outcome criteria and methodological characteristics-- meta-analysis of brief alcohol interventions in medical settings.

In the meta-analysis of published studies on brief interventions in medical settings, eight studies met methodological quality criteria and reported data allowing calculation of effect sizes. All of the studies were restricted to heavy drinkers with less severe drinking problems, and all effect sizes were based on self-reported drinking outcomes. Of these eight studies, five had sample sizes of less than 200 and all used follow-ups of 12 months or less. Common methodological

flaws noted in the analysis included elimination of withdrawals without analysis of resulting biases (8 of 12) (6).

Comparison of results from the DUI meta-analysis and the brief alcohol intervention meta-analysis.

Within the DUI meta-analysis, recidivism and self-reported drinking driving outcomes were summarized separately. The average recidivism effect size (using probit transformations) for studies with adequate methodology was .08 for all types of remedial interventions and .12 for combination interventions; for self-reported drinking driving outcomes the average effect size across the four applicable studies with adequate methods was .21. Within the meta-analysis of brief interventions in medical settings, eight study effects (for studies deemed to have adequate methodology) were summarized using odds ratios, and the estimated average effect was 1.91;95% CI 1.61-2.27 (6, page 277).

Concerns that precluded combining records based recidivism outcomes with self-reported outcomes within the DUI meta-analysis are relevant to attempts to compare the magnitude of effect size for the DUI interventions in the Wells-Parker et al. (1) meta-analysis and the magnitude of the effect size for medical setting interventions with patients at high risk for alcohol impairment in the Wilk et al. (6) study.

If one compared the findings of the DUI intervention meta-analysis (1) and the meta-analysis of medical setting interventions (6), differences that would moderate an apparent conclusion that brief interventions in medical settings are more effective than interventions in judicial setting include: (1) different populations (DUI offenders vs heavy drinkers), (2) different outcomes (recidivism, which is conservative, versus self-reported drinking in moderation), (3) different follow-up (long, generally two or more years versus short, ≤ 12 months), (4) different methods of calculating effect size, (5) differences in sample sizes of included studies, (6) differences in literature selection strategies (extensive search for and inclusion of studies not published [1] versus restriction to published literature [6]), (7) differences in types of methodological flaws of excluded studies (despite the fact that both studies used objective ratings of study quality) and (8) differences in methodology of quantitative summary.

Based on these differences, the average effect size of the DUI meta-analysis cannot be directly compared to the average effect size of the meta-analysis of brief interventions because (a) recidivism is inherently different from rates of heavy drinking, (b) recidivism effect sizes tend to underestimate effect sizes related to effect sizes based on other outcomes (1), (c) the effect sizes estimate from the brief intervention meta-analysis may be biased toward a larger effect because no attempt to identify or estimate effect sizes from unpublished studies was made, and most of the included studies use relatively small samples, (d) if intervention effects dissipate over time, shorter follow-ups will not reflect the reduction in effectiveness over time.

Discussion

Issues that are applicable to comparisons involving qualitative reviews.

While the comparison that is the subject of the current paper is between two meta-analyses, the same considerations would apply for comparisons between two qualitative reviews of different literature or comparisons between a qualitative traditional review and a meta-analysis. However,

because qualitative reviews seldom address how literature is selected, how methodology is accessed, or how conclusions as to magnitudes of effects are drawn, it is less obvious and more difficult to see how these issues affect qualitative reviews.

A final caveat.

It should be noted that the intention of this critical review is not to provide an exhaustive review of either the literature on DUI interventions or on brief interventions in medical settings. For example, new studies of brief intervention effectiveness have been published since the meta-analysis of brief alcohol interventions in medical settings was published, and many of these more recent studies have focused more on assessment of harm reduction outcomes, such as reduction of impaired driving, rather than on reduction in drinking per se (e.g., 1, 10, 14) Furthermore this critique is not intended to discourage the application of knowledge gained from studies in either venue to the other venue. The purpose is merely to emphasize that comparisons must be made with a careful consideration of differences in the body of studies to be compared, including inherent differences in the sub-populations, interventions, and context provided by these very different venues.

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Elisabeth Wells-Parker, Ph.D., Box 5287, Social Science Research Center, Mississippi State University, Mississippi State, Mississippi 39762