Harm reduction among at-risk elderly drinkers: a site-specific analysis from the Multi-Site Primary Care Research in Substance Abuse and Mental Health for Elderly (PRISM-E) study

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SUMMARY

Objectives   To assess the efficacy of a harm-reduction based intervention to enhance access to treatment and clinical outcomes among elderly at-risk drinkers.
Design   A site-specific secondary data analysis of Primary Care Research in Substance Abuse and Mental Health for Elders study (PRISM-E).
Participants   Thirty-four at-risk drinkers age 65 or older who were randomized into one of two treatment conditions: an integrated care condition which incorporated a harm-reduction based approach to treatment and an enhanced referral condition.
Measures   Access to subsequent services and clinical outcomes were examined 6 months post index-interview date. Clinical outcomes included changes in the number of drinks in the week prior to assessment, changes in the number of binges in the past 3 months prior to assessment, and changes in scores on the Short Michigan Alcoholism Screening Test-Geriatric Version (SMAST-G).
Results   At-risk drinkers in the integrated care condition were more likely to access treatment than at-risk drinkers assigned to the enhanced referral condition (93% *vs* 35%; $\chi^2 = 11.38$, df = 1, $p = 0.001$). Among those who received treatment, there were no differences in the total amount of treatment visits or in the number of brief alcohol interventions received among at-risk drinkers in the two conditions. However, those in integrated care condition received services sooner than those in the referral condition. Those in the integrated care condition showed a significant decrease in the number of drinks in the past week and in the number of binge drinking episodes in the past 3 months while there were no significant changes in these outcomes among the at-risk drinkers in the enhanced referral condition.
Conclusions   At-risk drinkers in the integrated care condition were more likely to access treatment and decrease harmful drinking behaviors than those in the enhanced referral condition. Implications for future research and treatment are discussed. Copyright © 2008 John Wiley & Sons, Ltd.

KEY WORDS — access to care; geriatrics; harm-reduction; mental health services; older adults; substance abuse services

INTRODUCTION

Psychiatric disorders among older adults are under-treated and under-detected (Glasser and Gravdal,

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1997; Davidson and Meltzer-Brody, 1999). Substance abuse disorders are no exception. As the baby boom population increases in age in the United States so will the need for tailored substance abuse treatment. It is estimated that older adults in need of substance abuse treatment services will increase to 4.4 million in 2020, an increase from 1.7 million in 2000 (Gfroerer *et al*., 2003). Unfortunately, there are few studies that have

investigated the best way to manage alcohol use in older adults, particularly among low-income elderly.

The Primary Care Research in Substance Abuse and Mental Health for Elderly (PRISM-E) study responded to this deficit in knowledge by comparing effects of mental health and substance abuse services integrated into primary care and enhanced referral to an outside agency on participation, engagement, clinical outcomes, and cost-effectiveness for anxiety, depression, and/or at-risk drinking for those aged 65 and over (Levkoff et al., 2004). The PRISM-E study reveals much about treatment outcomes for all older adults, but the aggregate analyses do not speak to receptivity to treatment type in certain populations. For older adults, two forms of treatment exist to manage at-risk drinking: the traditional 12-step, abstinence model and the harm reduction model that advocates safe drinking. However, neither have been studied in low-income elderly.

The data from the Oakland, CA site offers additional information about the acceptance and effectiveness of these two models of substance abuse care in low-income older adults seen in a federally funded health care setting. Our site's integrated care model was a harm-reduction oriented model and was compared to a 12-step program embedded in a community center that was highly respected by the surrounding community and offered other social and activity based services to the low-income older adults living in that area. Therefore, while other sites in the PRISM-E study had offered generic referrals to their older, at-risk drinkers, out site had referred older at-risk drinkers to a program with an excellent reputation in the community with a 12-step program that had greater cultural congruence for those who are religious and spiritual, as many of the participants at our site were.

The purpose of this article is to compare service utilization (i.e. access) and clinical outcomes of at-risk drinkers among a sub-sample of participants in the PRISM-E study who were sampled from Lifelong Medical of Alameda County, a federally funded health center. We hypothesized that: (1) individuals in the harm-reduction integrated care treatment would have improved access to treatment than those in the enhanced referral condition and (2) individuals in the harm reduction integrated care treatment would have better clinical outcomes than those in the enhanced referral condition.

METHODS

Data for this study come from the Primary Care Research in Substance Abuse and Mental Health

for the Elderly (PRISM-E) project, a multi-site randomized trial comparing service use, outcomes, and costs of integrated care and enhanced specialty referral treatment models for older persons with depression, anxiety, or at-risk alcohol consumption. Detailed descriptions of PRISM-E have been previously published. Because the University of California, San Francisco (UCSF) site of this study incorporated aspects of harm reduction into their integrated care model, we limited our analyses to participants from this site.

Study sample

Persons age 65 or older who had primary care appointments at the UCSF site between 2001 and 2005 were eligible for screening to participate in the study. The program site of interest here is Lifelong Medical, a federally funded geriatric healthcare agency located in Alameda County in northern California. At the time of the study, it offered comprehensive care (i.e. primary care, dentistry, podiatry, mental health, case management, health education, and services for the homeless). Staff included physicians, registered nurses, nurse practitioners, a physician assistant, social workers, a substance abuse counselor, social work and psychology interns, psychologists, and a psychiatrist.

The site served a clientele that was 36% male. Fifty-two percent were categorized as African American, 37% as Caucasian, 4% as Latino/Latina, 3% as Asian, 3% as Other, and 1% as Native American. Sixty-two percent earned less than $9,999 per year and 19% earned between $10,000–$19,000 per year, the remainder lived at or below 30% of the area median income, the Department of Housing and Urban Development (i.e., HUD) definition of financial strain.

Physicians preliminarily screened eligible participants, to help identify patients with active diagnoses of dementia, psychosis, and acute physical frailty, exclusion criteria for the study. Eligible participants were then screened by a staff member at the front desk and the research assistant approached eligible participants and explained the details of participation in the study. All recruitment and consent procedures were reviewed and approved by the Committee on Human Research at the UCSF.

Six hundred and thirty-one primary care patients over age 65 were screened for participation (see Figure 1). The screening consisted of a brief set of questions about health and mental status, current use of mental health and substance abuse treatment, as well as alcohol use and suicide risk. Clients were
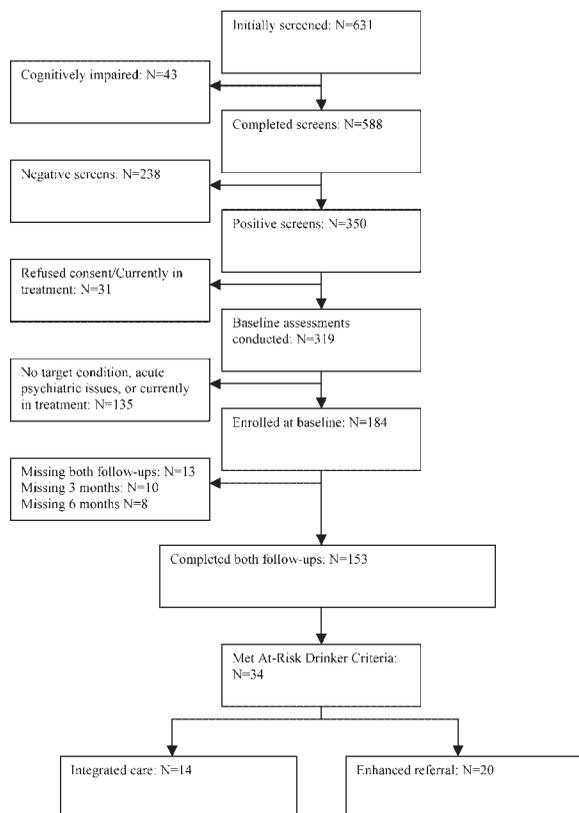
Figure 1. PRISM-E Participant Flow at the UCSF Site.

Table 1. San Francisco Site Sample Characteristics For Respondents with Baseline & Follow-up Data

	Full Sample (N = 153)		Normal Drinkers (N = 119)		At-Risk Drinkers (N = 34)	
	n	%	n	%	n	%
Gender**						
Male	59	38.8	39	33.1	20	58.8
Female	93	61.2	79	67.0	14	41.2
Age: Mean (SD)	74.9	8.0	75.4	8.2	72.9	6.8
Marital Status**						
Married/Partnered	24	15.8	13	11.0	11	32.4
Single	128	84.2	105	89.0	23	67.7
Race						
Non-Hispanic White	60	39.5	43	36.4	17	50.0
African American	68	44.7	56	47.5	12	35.3
Other	24	15.8	19	16.1	5	14.7
Current Smoker**	35	23.0	21	17.8	14	41.2
CESD $\geq$ 16***	84	54.9	76	63.9	8	23.5
Beck $\geq$ 17	26	17.0	22	18.5	4	11.8
Self-Reported Health Status**						
Excellent-Good	74	49.3	49	42.2	25	73.5
Fair/Poor	76	50.7	67	57.8	9	26.5

NOTES: Percentages are presented by column. Overall Ns for some characteristics vary due to missing data (one case was missing data on all demographic variables except age). For categorical variables, tests of differences between normal and at-risk drinkers and between at-risk drinkers assigned to different treatments are based on Pearson Chi-square tests. For continuous variables, tests of differences between normal and at-risk drinkers and between at-risk drinkers assigned to different treatments are based on two-sample Wilcoxon Rank-Sum (Mann-Whitney) tests.
*=$p < .05$.
**=$p < .01$.
***=$p < .001$.

eligible to participate in the study if they exhibited significant psychological distress as measured by the responses to the General Health Questionnaire (Goldber, 1986) a positive response to suicidal ideation questions modified from the PRIME-MD (Spitzer *et al.*, 1994), or at-risk alcohol consumption defined as drinking more than 14 drinks per week for men, more than 12 drinks per week for women, or four or more drinks four or more times during the past 3 months (binge drinking). Because of the concern with cross-tolerability and drug-alcohol interactions, use of benzodiazepines or opioids and drinking seven or more drinks per week also qualified as at-risk drinking. Clients who had received mental health or substance abuse treatment in the preceding 3 months and clients with severe cognitive impairment, as measured by the Brief Orientation Memory Concentration Task (Katzman *et al.*, 1983), were excluded from the study.

Baseline data were collected by study interviewers on 319 participants. Of these, 184 were enrolled in the

study. A total of 153 clients completed additional follow-up assessments three months and 6 months later and were included in this study. Chi-square and Mann–Whitney tests were run to determine whether the 31 cases absent at any of the follow-up points differed from those with complete data with respect to key demographic and clinical variables. No differences were found with respect to gender, age, marital status, smoking status, or current health, mental health status or at-risk drinking status. However, those who completed all three assessments differed in race/ethnicity ($\chi^2 = 7.69$, df = 2, $p = 0.021$). Completers were less likely to be African American and more likely to be non-Hispanic White.

Table 1 lists characteristics of the full sample and by at-risk drinking status. The majority were female (61%). African Americans represented the largest race/ethnic group (45%). Approximately 55% met criteria for depression based on a score of 16 or on the

Center for Epidemiology Studies Depression Scale (CES-D) (Radloff, 1977) and 26% met criteria for anxiety based on a score of 17 or greater on the Beck Anxiety Inventory (Beck *et al.*, 1988).

A total of 34 participants met criteria to be considered at-risk drinkers (22%). At risk-drinkers differed from their non-at-risk counterparts on a variety of measures. At-risk drinkers were more likely to be male ($\chi^2 = 7.38$, df $= 1$, $p = 0.007$), married or partnered ($\chi^2 = 9.04$, df $= 1$, $p = 0.003$), and current smokers ($\chi^2 = 8.14$, df $= 1$, $p = 0.004$). However, they also tended to report that they were in better health ($\chi^2 = 10.30$, df $= 1$, $p = 0.001$) and fewer were at-risk for depression based on their CES-D score ($\chi^2 = 17.38$, df $= 1$, $p < 0.000$).

Study intervention

At-risk drinkers were randomly assigned to one of two conditions: integrated care and enhanced referral. The PRISM-E coordinating center at Harvard randomly assigned participants to treatment condition through a random number generator. Few differences emerged between those assigned to the different treatment conditions. However, those assigned to the enhanced referral condition were more likely to be female ($\chi^2 = 3.83$, df $= 1$, $p = 0.050$) and to report being in fair or poor health ($\chi^2 = 4.57$, df $= 1$, $p = 0.033$). In order to test the effects of models of treatment, we attempted to make the settings and access to services as similar as possible by relying existing transportation services in each setting to ease access barriers, by selecting a health center and a senior center that is highly respected by the community and involves community stakeholders in designing service delivery (both settings have an active consumer advocacy board). The differences between treatment then were: (1) setting type (medical *vs* community); (2) treatment construction (individual *vs* group) and (3) treatment philosophy (harm reduction *vs* total abstinence). Details about each condition are provided below.

Integrated care model

In the integrated care model, primary care providers screened patients for substance abuse and mental health problems. Services available for treatment of mental illness are detailed in Ayalon *et al.* (in press). The substance abuse treatment model employed in this arm of treatment was a harm reduction model developed for older adults with alcohol misuse. The model consists of a motivational interviewing strategy that takes place over three sessions; the first session

determines motivators for reducing alcohol intake, specifically health reasons, and helps participants set goals to reduce drinking. Subsequent sessions review participant progress and encourage more planning on how to minimize drinking. Social workers who delivered the intervention in the clinic were trained by Drs. Blow and Oslin. Although we did not collect audio-recordings of sessions in the PRISM-E study, our team did meet weekly to discuss cases and ensure that providers saw the at-risk drinkers for no more than the number of times permitted in the manual, and that the motivational strategy detailed in the manual was followed. The health center provided transportation to the health center for participants who were disabled or did not feel safe in the neighborhood, a standard practice in the clinic.

Enhanced referral model

Alcohol services for participants in the enhanced referral arm were provided in a non-profit community-based, non-residential, 8-week, peer-oriented program for adults over age 55, based on the 12-step model of abstinence. Treatment occurred in a setting that had a strong reputation in the community for helping older adults in need. Individual and group recovery planning; psychiatric care; addiction education; and case management were provided. The program was staffed by staff, faculty, and volunteers from local universities including physicians, nurses, mental health and substance abuse clinicians who are trained in working with low-income, geriatric, multicultural populations. Transportation to the site was also provided through the center to those who were disabled or did not feel safe traveling in the neighborhood.

Outcomes

Our hypotheses pertained to access to treatment and reduction in the use of alcohol. Access to treatment was defined as attendance at an appointment with a mental health/substance abuse provider following randomization at the index primary care visit. For every mental health/substance abuse encounter, a check-off treatment tracking form was completed by a research assistant by medical record review over the 6-month period of the study follow-up period. For each participant, the number and type of services were tallied. Our analyses focused on the total number of services received and the number of brief alcohol interventions received. We also calculated the number

Table 2. Engagement Outcomes for At-Risk Drinkers by Treatment Condition (N = 34)

	Integrated Care		Enhanced Referral	
	n	%	n	%
Received Treatment***	13	92.9	7	35.0
Number of Visits				
1–2	4	30.8	0	0.0
3–4	4	30.8	2	28.6
>=5	5	38.5	5	71.4
Number of Alcohol Interventions				
1–2	8	72.7	2	66.7
>=3	3	27.3	1	33.3
	M	SD	M	SD
# Days Between Screening and Engagement*	33.1	28.8	71.6	46.1

NOTES: Amount of services received were analyzed only among those at-risk drinkers who received treatment (N = 20). For categorical variables, tests of differences between at-risk drinkers assigned to different treatments are based Pearson Chi-square tests.

of days between the index assessment and first treatment visit.

Primary alcohol-related outcomes were the number of drinks 7 days before the baseline and 6 month follow-up assessments and the number of binge drinking episodes in the 3 months prior to these assessments. Episodes of binge drinking were defined as drinking four or more drinks in 1 day. At each assessment point we collected data on alcohol related problems using the Short Michigan Alcoholism Screening Test-Geriatric Version (SMAST-G) (Blow *et al.*, 1998).

Data analysis

Due to the relatively small pool of at-risk drinkers in each study condition, we used non-parametric statistical analyses, primarily Pearson Chi-Square tests and Wilcoxon tests. Tests of access outcomes among at-risk drinkers assigned to different treatments were based on Pearson Chi-Square tests. Amount of services received were analyzed only among those at-risk drinkers who received treatment. Two-sample Wilcoxon Rank-Sum (Mann–Whitney) tests were used to test of differences in the amount of time to receive services among at-risk drinkers assigned to different treatments. Wilcoxon matched pairs tests (Signed-Rank tests) were used to examine differences among at-risk drinkers within each treatment condition at the baseline and 6-month follow-up points. Two-sample Wilcoxon Rank-Sum (Mann–Whitney) tests were used to examine differences in the magnitude of change between at-risk drinkers assigned to different treatments (i.e. group by time effects).

RESULTS

Access to treatment

Table 2 displays the engagement outcomes for the at-risk drinkers in the two treatment conditions. Only 20 of the 34 at-risk drinkers (59%) received services by the 6-month time point; significantly more of these individuals were in the integrated care condition (93% *vs* 35%; $\chi^2 = 11.38$, df = 1, $p = 0.001$). Among those who received treatment, there were no differences in the total amount of treatment visits or in the number of brief alcohol interventions received among at-risk drinkers in the two conditions. However, there was a significant difference in the amount of time between the index assessment and first treatment visit for individuals in the two treatment conditions ($z = 2.14$, $p = 0.03$). Those in integrated treatment received services faster than those in the referral condition.

Clinical outcomes

Table 3 displays results from the analyses of drinking outcomes for at-risk drinkers in the two treatment conditions. Among the at-risk drinkers in the integrated care condition, the average number of drinks in the prior week and the average number of binge drinking episodes in the prior 3 months measured at 6 months and at baseline decreased, and were significantly different at the two time-points ($z = 2.83$, $p = 0.005$ and $z = 2.98$, $p = 0.003$, respectively). There were no differences in SMAST-G scores measured at the two time-points. Among the at-risk drinkers in the enhanced referral condition, there were no significant differences in any of the clinical outcomes between the two time-points.

Table 3. Change in Drinking Outcomes for At-Risk Drinkers by Treatment Condition (N = 34)

Measure	Baseline		Six Months		Change		Within	Between
	Mean	SD	Mean	SD	Mean	SD	p	p
Number of Drinks in the Past Week								0.022
Integrated Care	25.2	17.9	7.1	8.1	−16.8	21.3	0.005	
Enhanced Referral	17.1	12.6	14.0	18.0	−0.6	18.3	0.463	
Number of Binge Episodes in the Past 3 Months								0.033
Integrated Care	28.7	32.5	6.8	11.3	−21.7	32.3	0.003	
Enhanced Referral	14.2	22.0	16.7	32.4	2.6	20.8	0.523	
SMAST-G Score								0.132
Integrated Care	3.4	2.0	4.0	2.0	0.6	1.8	0.111	
Enhanced Referral	4.1	2.6	3.8	2.9	−0.4	2.3	0.771	

Means and standard deviations are displayed for descriptive purposes. Tests of differences among at-risk drinkers within treatment conditions are based on Wilcoxon matched pairs (Sign-Ranked) tests. Tests of differences between at-risk drinkers assigned t.

The amount of change among the at-risk drinkers in the two conditions as measured by the number of drinks in the past week and the number of binge drinking episodes in the prior month between the two treatment conditions was statically significant ($z = 2.29$, $p = 0.022$ and $z = 2.13$, $p = 0.033$, respectively). There was no difference in the amount of change in the SMAST-G scores between the two groups.

DISCUSSION

Our results confirmed that low-income patients receiving harm reduction experienced greater access to substance abuse treatment and better clinical outcomes. The harm reduction model used in our study resulted in decreased binge drinking episodes and was as good at limiting the number of drinks per week as the 12-step model. It is likely that the harm reduction model in this study reached more people because of its co-location with medical services, essentially reducing stigma and overcoming instrumental barriers to service use. However, certain elements of harm reduction may be more appealing to some older adults than are 12-step models. The harm reduction model in this study was based on motivational interviewing, in particular the importance of reducing alcohol intake on health outcomes. Older adults are more likely to reduce alcohol consumption for medical reasons than any other reason (Satre and Arean, 2005). It is also likely that the harm reduction model may be a better conceptual fit for older at-risk drinkers who may not see their drinking as an addiction requiring total abstinence in the way that a 12-step program conceptualizes at-risk drinking.

Limitations

While the results from this study are compelling, they are limited primarily by sample size. Our results may not be generalizable to all low-income, elderly seeking treatment or in the community. Further research comparing the two approaches is needed, but this study provides preliminary evidence of the value of pursuing this research agenda.

CONCLUSIONS

The integration of substance abuse treatment into primary care is a viable method for ensuring older low-income adults access to services. Beyond integration, this study provides preliminary evidence that a harm reduction model aimed at older adults may be as effective as 12-step programs in reducing alcohol intake, and may be more helpful in reducing binge drinking.

CONFLICT OF INTEREST

AUTHOR CONTRIBUTIONS

Study concept and design: Areán, Lee, Mericle. Acquisition of subjects and data: Areán, Ayalon.

Analysis and interpretation of data: Mericle, Areán, Preparation of manuscript: Lee, Areán, Mericle.

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