

At-Risk Drinking in an HMO Primary Care Sample: Prevalence and Health Policy Implications

ABSTRACT

Objectives. This study was designed to determine the prevalence of at-risk drinking using varying alcohol use criteria.

Methods. A period prevalence survey was conducted in 22 primary care practices (n=19372 adults).

Results. The frequency of at-risk alcohol use varied from 7.5% (World Health Organization criteria) to 19.7% (National Institute on Alcohol Abuse and Alcoholism criteria). A stepwise logistic model using National Institute on Alcohol Abuse and Alcoholism criteria found male gender, current tobacco use, never married status, retirement, and unemployment to be significant predictors of at-risk alcohol use.

Conclusions. Public health policy needs to move to a primary care paradigm focusing on identification and treatment of at-risk drinkers. (*Am J Public Health.* 1998;88:90-93)

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Introduction

Alcohol use is associated with certain adverse health effects, including liver cirrhosis, cancer, cardiovascular disease, depression, and trauma. Many of these adverse effects are causally related to the quantity and pattern of alcohol use.¹⁻⁴ For example, the relative risk of liver cirrhosis, based on a pooled estimate of published research, is 2.2 times greater for men who consume more than 20 g of alcohol per day⁵ (one standard US drink contains 12 to 14 g of alcohol). The relative risk for women is even greater.^{6,7}

Several studies have found a dose-response relationship between stroke mortality and alcohol consumption.^{8,9} Shaper found that for every 10 g of alcohol consumed per day, there was an increase of 1 to 2 mm Hg in both systolic and diastolic blood pressure.¹⁰ Rowe et al. examined individuals' levels of depression in the previous 30 days and noted higher levels for men and women who consumed above 48 g per day (four US standard drinks per day).¹¹

This dose-response relationship is the basis for the concept of at-risk alcohol use.¹² The selection of alcohol use limits based on health risk is necessary to establish alcohol screening and intervention programs. A number of groups have developed specific criteria to define at-risk use. Cutoff limits range from more than 7 drinks per week to more than 21 drinks per week.¹³⁻¹⁶ This paper reports the prevalence of at-risk drinking in primary care practices using varying criteria, discusses the screening implications of these criteria, and examines differences in the prevalence of at-risk alcohol use by age, gender, race, educational level, smoking status, and occupation.

Methods

A convenience sample of 110 physicians located within 100 miles (160 km) of Madison, Wis, was invited to participate in this study, which was part of a large clinical trial designed to test the efficacy of brief physician advice on problem drinking. Physician criteria included board certifica-

tion in family or internal medicine, at least half-time practice in a community-based site, and willingness to follow the protocol. Eighty-nine physicians at 22 clinics in Milwaukee, Madison, and surrounding rural communities participated. Most practiced in one of four staff model health maintenance organizations (HMOs) in Milwaukee and Madison.

From April 1992 to April 1994, trained reception staff in each clinic offered the Health Screening Survey¹⁷ to all regularly scheduled patients 18 to 60 years of age. Screening regularly scheduled patients prevented enrollment of one-time patients who were not part of the clinic's regular patient panel, avoided screening acute care patients too ill or injured to thoughtfully fill out the questionnaire, and allowed the most conservative point prevalence estimate. A survey cover letter guaranteed confidentiality, and patients were asked to sign a consent form approved by the University of Wisconsin Internal Review Board. The surveys, deposited in sealed collection boxes as patients departed the clinics, were collected by trained researchers from the University of Wisconsin Department of Family Medicine who scored the alcohol section. Patient refusal to complete the survey varied by clinic; the refusal rate ranged from 5% to 30% and the weighted mean was 13%, for an overall response rate of 87%. The most common reason given for refusal was feeling too ill to complete the questionnaire.

The four-page, 17-question Health Screening Survey, designed as an imbedded alcohol screening instrument, included parallel questions regarding exercise, tobacco

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This paper was accepted March 24, 1997.

use, weight control, and alcohol use. Questions regarding gender, age, racial heritage, educational level, marital status, occupation, and number of people in the household were also incorporated. The alcohol use section included questions on quantity, frequency, and binge drinking; the four questions from the CAGE¹⁸; a query as to whether the patient's primary care physician was concerned about the patient's alcohol use; and a question regarding past alcohol use problems. (The CAGE is a standard screening instrument used to assess the possibility of a drinking problem through four questions: Have you ever felt you should cut down on or stop drinking? Have people annoyed you by criticizing your drinking? Have you felt guilty or bad about your drinking? and Have you been waking up in the morning wanting an alcoholic drink [eye opener]?) Subjects were asked about quantity and frequency of beer, wine, and liquor consumption per week and also about the number of episodes of binge drinking during the previous 3 months.

SPSS^x was used in summarizing and statistically analyzing data. Gender differences for all categorical data were initially analyzed via Mantel-Haenszel chi-square tests adjusting for age. A stepwise multivariate logistic regression model was used to further examine factors associated with at-risk drinking.

Results

The Health Screening Survey was completed by 19 372 adults. Two thirds of the subjects were female, and the mean age was 41 years. While the majority were Caucasian, 4% were African Americans and 2% were persons of Hispanic descent. The population was well educated, 60% having attended college. Nearly 75% were married or living with a partner.

Table 1 is divided into three sections. The first presents the average amount of alcohol reported by the sample in drinks per week. The second reports the frequency of binge drinking as defined by six or more drinks per occasion. The third section reports the prevalence of at-risk use according to four different criteria. Thirty-nine percent of the sample had no alcohol to drink in the 3 months prior to the survey. Men were three times more likely than women (17.7% vs 5.7%) to drink 15 or more drinks per week (odds ratio = 1.90, 95% confidence interval [CI] = 1.82, 1.97). The frequency of binge drinking was also markedly higher for men; 17% reported three or more episodes of binge drinking in the previous 90 days,

TABLE 1—Alcohol Use, Binge Drinking, and Frequency of At-Risk Alcohol Use in a Community-Based Primary Care Sample in Wisconsin, 1992 through 1994, by Gender

| | Men (n = 7144), % | Women (n = 12 228), % | Total (n = 19 372), % |
|--|----------------------|--------------------------|--------------------------|
| Alcohol use, drinks/week in previous 90 days | | | |
| 0 | 32.3 | 43.0 | 39.1 |
| 1–7 | 28.8 | 37.7 | 34.5 |
| 8–14 | 21.1 | 13.5 | 16.3 |
| 15–21 | 17.7 | 5.7 | 10.2 |
| Binge drinking, no. of times consuming 6 or more drinks/occasion in past 90 days | | | |
| 0 | 64.7 | 83.8 | 76.8 |
| 1–2 times | 18.6 | 11.7 | 14.2 |
| 3–5 times | 8.4 | 2.9 | 4.9 |
| >5 times | 8.2 | 1.6 | 4.1 |
| At-risk drinking ^a | | | |
| Criterion A | 20.0 | 19.5 | 19.7 |
| Criterion B | 20.0 | 12.2 | 15.1 |
| Criterion C | 20.0 | 10.2 | 13.8 |
| Criterion D | 10.6 | 5.7 | 7.5 |

^aCriterion A (National Institute on Alcohol Abuse and Alcoholism): Women, >7 drinks/week; men, >14 drinks/week; binge drinking.¹⁴ Criterion B: Women, >9 drinks/week; men, >14 drinks/week; binge drinking.¹³ Criterion C: Women, >11 drinks/week; men, >14 drinks/week; binge drinking.¹⁵ Criterion D (World Health Organization): Women, >14 drinks/week; men, >21 drinks/week; binge drinking.¹⁶

as compared with 4.5% of women (OR = 2.13, 95% CI = 2.03, 2.28).

The frequency of at-risk drinking varied by the cut-off value chosen to define such drinking. When limits recommended by the National Institute on Alcohol Abuse and Alcoholism (>14 drinks/week for men, >7 drinks/week for women, or binge drinking) were used, the rates of at-risk drinking were 20.0% for men and 19.5% for women. The prevalence of at-risk drinking using three other criteria is also illustrated in Table 1.

Table 2 examines alcohol use and binge drinking by age; minimal differences were found in average weekly consumption. The frequency of moderate and heavy drinking was highest in patients 22 to 25 years of age, with 20.8% consuming 8 to 14 drinks per week and 11.7% reporting 15 to 21 drinks per week. Persons 51 to 60 and 18 to 21 years if age had similar moderate and heavy consumption levels. There was, however, nearly a threefold difference in the frequency of binge drinking between patients 18 to 21 years old and patients 51 to 60 years old (7.1% vs 2.2%).

A stepwise model was developed to examine factors that predict at-risk drinking using the criteria established by the National Institute on Alcohol Abuse and Alcoholism.¹⁶ Primary variables included gender, age, ethnicity, occupation, marital status, education, and smoking status. Men,

current smokers, and those who were single, retired, or unemployed were all significantly ($P < .05$) more likely to be at-risk drinkers.

The largest increase in at-risk drinking was associated with smoking status. The odds for at-risk drinking for current smokers were 1.75 times greater than those for non-smokers. Odds ratios for several other variables also raised the likelihood of at-risk drinking by at least one half: never having been married (OR = 1.55, 95% CI = 1.37, 1.77), retired status (OR = 1.65, 95% CI = 1.52, 1.87), and unemployment (OR = 1.52, 95% CI = 1.33, 1.71). Women were found to be at a lower risk for drinking problems; their odds for at-risk drinking were slightly more than half as large as the odds for men (OR = 0.59, 95% CI = 1.45, 1.73). Age, ethnicity, and education were not significantly associated with at-risk drinking.

Discussion

This is one of the few large-scale epidemiological surveys of at-risk drinkers attending US community-based primary care clinics. The large sample provides stable estimates of alcohol use and drinking patterns for more than 19 000 adults 18 to 60 years of age. Prevalence rates varied from 7.5% to 19.7% depending on the limits selected. When National Institute on Alcohol Abuse and Alcoholism criteria are

TABLE 2—Alcohol Use and Binge Drinking in a Community-Based Primary Care Sample in Wisconsin, 1992 through 1994, by Age

| | Age, y, % | | | | | |
|---|-----------|-------|-------|-------|-------|-------|
| | 18–21 | 22–25 | 26–30 | 31–40 | 41–50 | 51–60 |
| Alcohol use, drinks/week | | | | | | |
| 0 | 40.3 | 25.6 | 30.9 | 36.2 | 43.2 | 49.1 |
| 1–7 | 32.7 | 41.9 | 40.0 | 37.9 | 31.7 | 26.5 |
| 8–14 | 15.7 | 20.8 | 19.7 | 15.8 | 15.4 | 14.0 |
| 15 or more | 11.4 | 11.7 | 9.4 | 10.1 | 9.6 | 10.5 |
| Binge drinking, 6 or more drinks/occasion in past 90 days | | | | | | |
| 0 | 66.3 | 62.8 | 66.4 | 75.7 | 81.8 | 87.3 |
| 1–3 | 19.2 | 22.9 | 21.8 | 14.8 | 10.7 | 7.9 |
| 3–5 | 7.3 | 7.4 | 6.9 | 5.5 | 3.8 | 2.6 |
| >5 | 7.1 | 6.9 | 4.8 | 4.0 | 3.6 | 2.2 |

applied, the findings suggest that one in five adults will screen positive for at-risk alcohol use. This has important implications for the US health care system. Managed care organizations need prevalence estimates of alcohol use disorders to allocate resources for prevention and treatment.

Providers interested in primary prevention and early intervention should consider using the National Institute on Alcohol Abuse and Alcoholism limits. Those wishing to focus on persons at high risk for alcohol-related events should consider higher cutoffs, as suggested by the World Health Organization (see Table 1). Practices with limited resources should focus on persons who consume more than 21 drinks per week and/or engage in binge drinking on a regular basis. Other providers may limit screening to persons who have one or more risk factors (e.g., male gender, smoking, never having been married, and retirement or unemployment).

The definitions of at-risk use established by the National Institute on Alcohol Abuse and Alcoholism and the World Health Organization are based on a clear dose-response relationship between alcohol use and adverse health effects. A weakness in the current research base is the absence of criteria and data that take into account duration of alcohol use. For example, someone drinking heavily for 20 years may be at greater risk for certain health effects than someone drinking heavily for 5 years. As clinicians and health policymakers consider the four at-risk drinking criteria used here (see Table 1), they should also consider duration of use and patient age when developing treatment plans.

Strengths of this study include a large sample size, recruitment of subjects from a large number of community-based primary care practices, a high response rate, and the

application of validated questions and scales. The use of community-based physicians increases the external validity of the findings and allows comparison with community physician practices in other states with high alcohol use rates. Study limitations include the use of a screening survey to estimate the quantity and pattern of alcohol use and the uncertainty of the generalizability of these findings to primary care practices in other parts of the United States.

To date, the US health care system has concentrated on the identification and treatment of persons who are alcohol dependent. Since the majority of alcohol-related problems occur in at-risk nondependent drinkers,¹⁹ public health policy must shift toward a primary care paradigm focusing on the identification of this population. Practitioners should avoid exclusive use of screening tests such as the CAGE and the Michigan Alcohol Screening Test, which were developed to detect lifetime alcoholism, and adopt screening tools such as consumption questions and the Alcohol Use Disorders Inventory Test²⁰ to detect at-risk nondependent drinkers. □

Acknowledgments

This work was supported by the National Institute on Alcohol Abuse and Alcoholism (grant R01 AA08512-02), the Wisconsin Institute of Family Medicine, the Wisconsin Research Network, the Dean Foundation, and the Family Health Plan Cooperative—Milwaukee.

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ABSTRACT

Objectives. The relationship between smoking cessation, subsequent weight gain, and cardiovascular disease risk factors from premenopause to postmenopause was studied.

Methods: Healthy Women Study participants were assessed for changes in coronary heart disease risk factors from a premenopausal baseline assessment to first- and second-year postmenopausal assessments.

Results. Although ex-smokers gained substantially more weight than nonsmokers and smokers, they did not experience a greater increase in cardiovascular risk factors. In fact, the results indicated a trend toward ex-smokers' high-density lipoprotein cholesterol levels increasing slightly more than those of nonsmokers and smokers.

Conclusions: Smoking cessation in perimenopausal to postmenopausal women is associated with greater weight gain but appears to be modestly associated with certain positive changes in cardiovascular risk factors. (*Am J Public Health* 1998;88:93–96)

Smoking Cessation, Weight Gain, and Changes in Cardiovascular Risk Factors during Menopause: The Healthy Women Study

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Introduction

From perimenopause to postmenopause, weight and other cardiovascular risk factors increase, resulting in an increased prevalence of atherosclerosis and subsequent clinical cardiovascular disease.¹ Thus, potential benefits of reducing coronary heart disease risks might make smoking cessation most important during this time. Alternatively, the effects of cessation on weight may contribute to already-increasing weight from perimenopause to postmenopause.

The present study examined the relationship between smoking cessation and weight gain from premenopause to the first and second years postmenopause in participants of the Healthy Women Study, the first prospective study to track individual women through menopause measuring coronary heart disease risk factor changes. It was expected that women who maintained cessation for 2 years postmenopause would experience substantially more weight gain than either continuing smokers or nonsmokers but that their coronary heart disease risk factors would not increase substantially more than either smokers' or nonsmokers'.

Methods

Participants

Subjects were participants in the Healthy Women Study. Five hundred forty-one women were initially entered into the Healthy Women Study between 1983 and 1984. Recruitment procedures and inclu-

sion/exclusion criteria have been reported elsewhere.¹

Nonsmokers reported that they did not smoke at either the premenopausal baseline clinic visit or at 1- and 2-year postmenopausal visits. Nonsmokers at baseline for whom no follow-up data were available were assumed to be continuing nonsmokers and were included in the baseline analyses. Continuing smokers reported smoking at all three assessments. Baseline smokers for whom data were unavailable at postmenopausal visits were assumed to be continuing smokers and were included in the baseline analyses. Baseline smokers who reported quitting at only one follow-up assessment were considered continuing smokers. Ex-smokers included only those participants who reported smoking at baseline and reported not smoking at years 1 and 2 postmenopause. Groups did not differ by age or race. However, nonsmokers were more likely to be married and to have a college degree or higher, and a greater percentage of nonsmokers and ex-smokers than continuing smokers had household incomes of \$50 000 or greater.

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This paper was accepted May 6, 1997.