

Pattern of Alcohol Use Associated with Self-Identified Problem Drinking

MARTHA SANCHEZ-CRAIG, PHD, AND YEDI ISRAEL, PHD

Abstract: To estimate the pattern and level of alcohol consumption leading to problem drinking, the drinking histories of 70 early stage problem drinkers were examined. An average consumption of four drinks (54 g/ethanol), on an average of three days/week, was the pattern that best separated the phase when patients were problem free from the phase when their drinking led to problems. (*Am J Public Health* 1985; 75:178-180.)

Introduction

Health professionals are often asked to give advice about the types of drinking practices that can be harmful, or that may contribute to the onset of serious problems. Available literature does not completely address this question. It indicates that a wide variety of physical morbidities tend to occur, or are likely to occur, with chronic consumption of high doses of ethanol.¹⁻³ However, by the time physical morbidities are observed, most chronic alcoholics have already suffered many adverse social consequences⁴; physical consequences can result from single episodes of acute intoxication.⁵ Our objective was to attempt to delineate the pattern of sustained or chronic alcohol consumption associated with the *initial* onset of serious problems with data obtained from a group of early stage problem drinkers requesting treatment for their drinking problem for the first time.

Methods

Subjects were 70 problem drinkers (52 males, 18 females) in a preventive treatment program.⁶ They were selected using criteria for social stability, good physical and mental health, and normal cognitive functioning. In all cases, the medical history was uneventful and a complete physical examination showed no abnormalities. On average, subjects were 34.8 years old (SD = 10.5) and had 13.9 years of education (SD = 3.1). The majority (78 per cent) had been employed full time over the previous year, and 47 per cent were married or living in a stable common law relationship. On tests of intellectual functioning, including the Raven's Progressive Matrices,⁷ the WAIS Vocabulary and Digit Symbol tests,⁸ and the Benton Visual Retention Test,⁹ age scaled scores were above average and within normal range. On average, subjects had been drinking regularly for approximately 14 years, but their history of self-defined problem drinking was only 4.9 years (SD = 3.8).

The Lifetime Drinking History¹⁰ was used to record quantity and frequency of drinking over time, as well as life events associated with changes in drinking. In a chronological fashion, the interviewer traced the individual's drinking

behavior from the inception of regular drinking to the present.

Results

Reported Alcohol Consumption

Quantity (Q) and frequency (F) measures were obtained at three stages of drinking: inception of drinking (time when regular consumption was initiated at least once per month); onset of problem-drinking (time when drinking began to interfere with work, family, social life, or health); and pre-treatment (a three-month period prior to treatment). The (Q)-(F) measures used were: mean number of drinks per drinking day, and number of days drinking per week. One drink was defined as 1.5 oz liquor, 12 oz of beer, 5 oz of wine, 3 oz of fortified wine (13.6 g of ethanol per drink). Figure 1 shows the distribution of subjects on the intervals chosen for the Q-F measures, and the mean and median scores for each time period studied.

Cutoff Pattern of Hazardous Drinking

It was assumed that all subjects were problem-free at the inception of drinking, and that all had problems at the alleged onset of problem drinking. To determine the drinking pattern that would best separate problem drinking from nonproblem drinking, cross tabulation analyses were conducted with Q measures on one axis (range 1-12 drinks at inception of drinking and 2-23 at the onset of problem drinking) and F-measures on the other axis (range for both periods 0.5-7 days).

A frequency count showed that an average consumption of four drinks, on an average of three days/week, was the pattern that best differentiated the phase of drinking that was problem-free from the phase at which the onset of problem drinking was recognized: at inception of regular drinking 4/70 subjects reported drinking above this level, whereas at the onset of problem drinking and at pre-treatment, the ratios were 50/70 and 60/70, respectively. This pattern was defined as the best cutoff because the rate of misclassifications was at minimum at about this level. Furthermore, increments of the cutoff by one unit of either Q or F produced the sharpest increase in misclassifications of the onset of problem drinking. Specifically, one unit increase from Q4/F3 resulted in a rate of change of misclassifications of the onset phase that was at least 33 per cent higher (20 vs 15 patients) than the rates of change produced by the same increments from Q3/F3, Q3/F4, and Q4/F4.

Peer pressure was mainly associated with the inception of regular drinking, while the onset of problem drinking was more frequently associated with demands arising from work. Prior to treatment, work demands were also more frequently identified, followed by marital-family changes and emotional problems.

Drinking Pattern at Inception

The variability of the Q-F distributions at inception of drinking suggested that these patterns might be predictive of subsequent drinking, as well as the time at which the onset of problem drinking or the request for treatment occurred. To test these hypotheses, four drinking patterns were derived by splitting the Q and F distributions at inception of drinking at the median score (see Figure 1 for values). From the 70

Address reprint requests to Martha Sanchez-Craig, PhD, Department of Behavioral Science, University of Toronto, Addiction Research Foundation, 33 Russell Street, Toronto, Ontario, M5S 2S1, Canada. Dr. Israel is with the Departments of Pharmacology and Medicine, University of Toronto, and the Addiction Research Foundation. This paper, submitted to the *Journal* June 6, 1983, was revised and accepted for publication January 3, 1984.

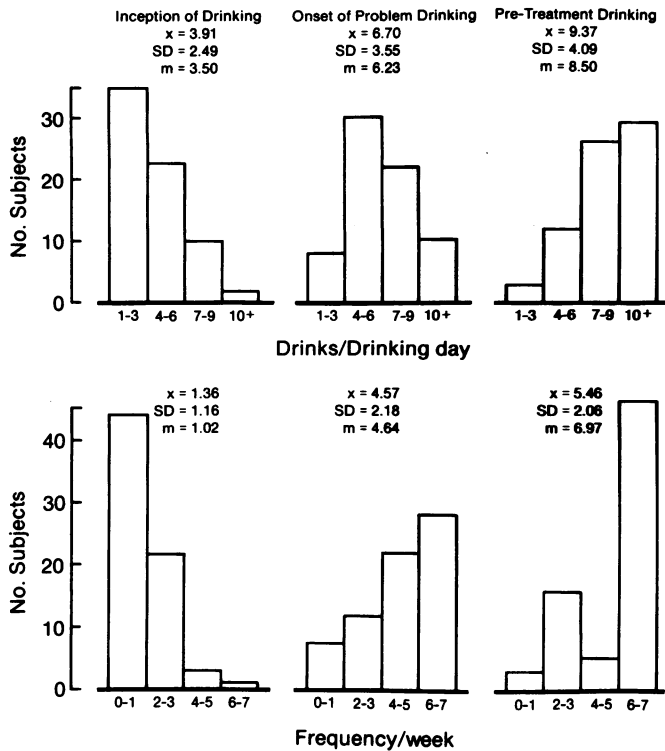


FIGURE 1—Distributions for Quantity and Frequency of Reported Alcohol Consumption at the Inception of Drinking, at the Onset of Problem Drinking, and Before Treatment (N = 70)

subjects, 21 were classified as HiQ/HiF, 14 as HiQ/LoF, 23 as LoQ/LoF, and 12 as LoQ/HiF. These groups were examined at each drinking phase in number of drinks consumed per week, years elapsed from inception of drinking to onset of problem drinking, years elapsed from onset of problem drinking to pre-treatment, age at inception and at pre-treatment, and proportion of males and females. Table 1

shows the values for each of these variables in the four groups.

Data were analyzed using one-way ANOVAs; significant differences among the groups were found only in the following respects: number of drinks per week at inception of drinking, with the HiQ/HiF group reporting higher levels than the other three groups ($F(3, 66) = 17.02, p < .001$). At pre-treatment, the LoQ/LoF group was found to be older than the rest of the groups ($F(3, 66) = 3.94, p < .01$). The proportion of males (66 per cent) in the high quantity groups was higher than the proportion of females (22 per cent) ($\chi^2(3) = 9.13, p < .05$).

Discussion

The identified cutoff pattern of hazardous drinking should not be regarded as a definition of hazardous drinking of broad applicability, or as an estimate of increased risk of having to seek treatment at some point in the future. It was derived from a population of self-identified problem drinkers who sought treatment for their drinking problem; in a general population, some individuals drinking at that level and even at higher levels may never develop a problem or seek treatment. The cutoff pattern should only be used as a rule of thumb to aid discussion about drinking practices, emphasizing the fact that it consists of average trends which mask individual differences. It should also be noted that the cutoff pattern is based on reported patterns of consumption, which may be somewhat different from actual patterns.

Although at inception the HiQ/HiF group was consuming significantly higher amounts of alcohol/week, by the onset of problem drinking and by the time treatment was requested, the levels of consumption of the four groups were not significantly different. Overall, however, there was a tendency for the LoQ/LoF group to develop problems more slowly, and to tolerate those problems for longer before coming into treatment. They also entered treatment with the lowest level of consumption. The high quantity groups at inception were predominantly male.

TABLE 1—Consumption and Demographic Variables as a Function of Drinking Pattern at Inception of Regular Drinking

	HiQ/HiF (N = 21)		HiQ/LoF (N = 14)		LoQ/LoF (N = 23)		LoF/HiF (N = 12)	
	\bar{X}	SD	\bar{X}	SD	\bar{X}	SD	\bar{X}	SD
CONSUMPTION VARIABLES								
Weekly Quantity (oz ethanol)								
Inception of drinking*	14.3	(11.3)	3.9	(2.1)	1.1	(0.8)	4.2	(2.5)
Onset of problem drinking	32.0	(18.7)	30.6	(29.4)	28.5	(18.0)	36.1	(22.1)
Pre-treatment drinking	53.6	(33.0)	50.7	(30.5)	42.4	(18.7)	62.8	(29.7)
Years from Inception to Onset of Problem Drinking								
	9.3	(7.7)	8.2	(6.3)	11.7	(8.5)	9.8	(9.0)
Years from Onset of Problem Drinking to Admission to Treatment								
	4.3	(2.5)	5.1	(3.3)	5.5	(2.9)	4.8	(2.8)
DEMOGRAPHIC VARIABLES								
Age (years)								
Inception of drinking	18.3	(4.9)	16.5	(1.6)	22.7	(8.0)	21.3	(8.4)
Admission to treatment**	32.0	(10.4)	29.6	(5.6)	39.9	(10.5)	35.9	(11.4)
Sex†								
Proportion of males	95.2		78.5		56.5		66.7	
Proportion of females	4.8		21.5		43.5		33.3	

*At inception, the HiQ/HiF group differed significantly from the other groups Weekly Quantity ($p < .001$).

**At admission to treatment, LoQ/LoF group was significantly older than the other groups ($p < .01$).

†The high-quantity groups had a significantly higher proportion of males ($p < .05$).

Further research is needed to provide more refined estimates of what constitutes hazardous drinking for particular groups.

REFERENCES

1. Lelbach WK: Organic pathology related to volume and pattern of alcohol use. *In: Gibbins RJ, et al. (eds): Research Advances in Alcohol and Drug Problems, Vol. 1.* New York: John Wiley and Sons, 1974.
2. Schmidt W, Popham RE: Heavy alcohol consumption and physical health problems: a review of the epidemiological evidence. *Drug Alcohol Depend* 1975/76; 1: 27-50.
3. Ashley MJ, Olin JS, le Rich WH, Kornaczewski A, Schmidt W, Corey PN, Rankin JG: The physical disease characteristics of inpatient alcoholics. *J Stud Alcohol* 1981; 42:1-14.
4. Horn JL, Wanberg K, Adams G: Diagnosis of alcoholism: factors of drinking, background and current conditions in alcoholics. *Q J Stud Alcohol* 1974; 35:147-175.
5. Mäkelä K: Level of consumption and social consequences of drinking. *In: Israel Y, et al. (eds): Research Advances in Alcohol and Drug Problems, Vol. 4.* New York: Plenum Press, 1978.
6. Sanchez-Craig M, Annis HM, Bornet AR, MacDonald KR: Random assignment to abstinence and controlled drinking: evaluation of a cognitive-behavioral program for problem drinkers. *J Clin Consult Psychol* 1984, 52:390-403.
7. Raven JC: Guide to the Standard Progressive Matrices. London: HK Lewis, 1960.
8. Wechsler D: Wechsler Adult Intelligence Scale. New York: The Psychological Corporation, 1955.
9. Benton A: The Revised Visual and Retention Test; clinical and experimental application. Iowa City: State Univ of Iowa, 1963.
10. Skinner HA, Sheu W: Reliability of alcohol use indices: the Lifetime Drinking History and the MAST. *J Stud Alcohol* 1982; 43:1157-1170.

ACKNOWLEDGMENTS

This work was done at the Addiction Research Foundation. The paper was initially presented at the Community Health Research Days sponsored by the Department of Community Health, Faculty of Medicine, University of Toronto, April 12, 1983.

Clinical Laboratory 'Theme' Papers Invited

The National Committee for Clinical Laboratory Standards invites members of the clinical laboratory community to present papers at the NCCLS 1985 annual meeting, March 28-29, 1985 at the Franklin Plaza Hotel, Philadelphia, PA. The meeting's theme is "Economic and Technologic Change—The Orders of the Day." Papers are sought on work done in the following areas:

- Minimizing overutilization of the clinical laboratory;
- Determining realistic staffing qualifications in hospital and alternative laboratories;
- Containing costs by using computers;
- Using "expert" computer systems;
- Automation in microbiology;
- Alternative testing approaches: economic pros and cons;
- Dealing with agencies and associations that impose cost-inefficient regulatory and standard-of-practice requirements;
- Immunologic infectious disease testing;
- Specific methods, approaches, and diagnostic capabilities in:
 - Genetic engineering in the diagnostics field;
 - Non-invasive diagnostic testing;
 - Home diagnostics.

Selected participants will give either a 20 to 30 minute oral presentation during the meeting's workshop sessions or present a poster. Interested participants should submit a 200-word abstract to: Program Committee, NCCLS, 771 E. Lancaster Avenue, Villanova, PA 19085.

The NCCLS Selection Committee will choose speakers based on the abstract's germaneness to the meeting theme. Selected participants will be notified by January 15, 1985.