Long-Term Outcomes of Alcohol Use Disorders: Comparing Untreated Individuals with Those in Alcoholics Anonymous and Formal Treatment*

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ABSTRACT. *Objective:* The aim of this study was to examine how the type and timing of help received over 8 years by previously untreated problem drinking individuals were linked to drinking and functioning outcomes. *Method:* At the time of the 8-year follow-up, individuals (N = 466, 51% male) had self-selected into four groups: no treatment (n = 78), Alcoholics Anonymous (AA) only (n = 66), formal treatment only (n = 74), or formal treatment plus AA (n = 248). *Results:* Individuals who received some type of help—AA, formal treatment or both—were more likely to be abstinent at 8 years than were untreated individuals. Although the AA only group was better off than the formal treatment only group at 1 and 3 years, the informally and formally treated groups were equivalent on drinking outcomes at 8 years. Similarly, despite the formal treatment plus AA group having been better off at 1 and 3 years than the formal treatment only group, the two formal treatment groups were comparable on drinking at 8 years. Both helped and untreated individuals improved between baseline and 1 year on drinking outcomes, but only formally treated individuals showed continued improvement over 8 years on drinking indices. Participation in AA or formal treatment during Year 1 of follow-up was associated with better drinking outcomes at 8 years. *Conclusions:* Individuals who obtain help for a drinking problem, especially relatively quickly, do somewhat better on drinking outcomes over 8 years than those who do not receive help, but there is little difference between types of help on long-term drinking outcomes. (*J. Stud. Alcohol* **61:** 529-540, 2000)

FEW STUDIES have followed alcoholic individuals without prior treatment to examine, over the long term, treatment selection processes and outcomes related to drinking and general functioning. We reported earlier on a sample of initially untreated problem drinkers who had contacted an alcohol information and referral (I&R) or detoxification (detox) center (Timko et al., 1994, 1995). Follow-ups at 1 and 3 years found that, although individuals who received no help improved, individuals who received formal treatment and/or participated in Alcoholics Anonymous (AA) improved more, particularly on drinking-related outcomes.

The purpose of this study is to examine participants' drinking patterns and other aspects of functioning in relation to whether or not they received help, and the type of help they received, over an 8-year period. We focus on changes among individuals who received no formal or informal help over the entire follow-up period and compare this group with the combined group of individuals who received some help, and then with individuals who participated only in AA. We also compare the untreated and AA only groups to two distinct groups of individuals who entered formal treatment: those who received only formal treatment and those who also participated in AA.

Comparing untreated to informally and formally treated alcoholic individuals

Only three prior studies have compared untreated alcoholic individuals with those who participated in AA and/or formal treatment. In the only prospective study, Armor and Meshkoff (1983) followed untreated and formally treated alcoholic men for 2.5 years. Among the men with little impairment at baseline, those who received treatment were more likely to be abstinent than were untreated individuals; those who were untreated were more likely to be nonproblem drinkers; and there was no difference in remission rates (i.e., abstinence and nonproblem drinking combined) between treated and untreated individuals. Among individuals who were highly impaired at baseline, treated individuals had a higher rate of remission than did untreated individuals; in addition, comparable proportions of both treated and untreated individuals engaged in nonproblem drinking, but a higher proportion of treated individuals was abstinent. Armor and Meshkoff concluded that the main benefit of formal treatment may be its influence on highly impaired alcoholics to abstain.

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Dawson (1996) reported that past-year abstinence was about twice as common (39%) among persons who had been informally (e.g., AA) and/or formally treated for alcohol problems than among problem drinkers who had not received assistance (16%). Tucker et al. (1995) studied former problem drinkers who were currently abstinent and had help-seeking histories of no assistance, AA only, or formal alcohol treatment plus AA. All three groups showed decreases in negative events and increases in positive events over 4 years spanning the pre- through the postresolution period. Favorable changes were greater in the two groups that had received assistance, especially in the formal treatment group. Taken together, these studies suggest that treated individuals experience somewhat better short-term outcomes than untreated individuals do, but do not clarify whether this advantage is due to formal treatment or AA, or whether it lasts over a longer time interval.

Comparing informally to formally treated alcoholic individuals

In his meta-analysis of the AA literature, Emrick et al. (1993) cited four studies addressing the question of whether AA alone is as effective at reducing drinking behavior (amount and frequency of consumption) as AA combined with professional treatment. In two studies (Bissell and Haberman, 1985; Sheeren, 1988), no relationship was found between having or not having professional treatment before or during AA participation, and drinking outcome. However, Costello et al. (1976) reported that when a residential facility for alcoholics founded by AA members implemented a comprehensive alcohol treatment program that included AA, the 1-year follow-up "success" rate (i.e., no drinking or drinking without related problems) rose from 18% to 33%. Also, Walsh et al.'s (1991) randomized clinical trial indicated that drinking outcomes for employer-referred problem-drinking individuals were substantially better when patients first had professional inpatient treatment before participating in AA, as opposed to participating in AA alone.

These studies suggest that the combination of AA and formal treatment may sometimes result in better short-term outcomes than AA alone. Longer-term outcomes of these two conditions have not been examined, however. Moreover, no prior prospective studies have compared outcomes of individuals who received only formal treatment with those of individuals who participated only in AA.

Formal treatment with or without AA

In his meta-analysis, Emrick et al. (1993) also concluded that professionally treated patients who attend AA during or after treatment are more likely to improve on drinking behavior than are patients who do not attend AA. Similarly, in a 3-year follow-up of our sample of initially untreated problem drinkers, we found that formal treatment in conjunction with AA was associated with better drinking outcomes than was formal treatment alone (Timko et al., 1995). In a 1-year follow-up of substance abuse inpatients, those who participated in 12-step groups after discharge fared better on substance use and functioning (e.g., depression, arrests) outcomes than patients who did not (Ouimette et al., 1998). Similarly, formally treated alcoholic patients who affiliated with AA during (Isenhart, 1997) or after (Watson et al., 1997) treatment consumed less alcohol and were less likely to be jailed than those patients who did not join AA.

Miller et al. (1997) noted that posttreatment AA attendance independently accounted for 14% of the variance in reduced substance use among outpatients, after controlling for patients' pretreatment, outpatient treatment and posttreatment factors. Posttreatment AA attendance was also linked to reductions in arrests and job absences. Morgenstern et al. (1997), studying patients in intensive 12-step treatment, found that affiliation with AA after treatment predicted better outcomes at 1- and 6-month follow-ups, including increased active coping efforts. All of these studies were short term, typically having a follow-up period of 1 year or less. Here, we examine the relative long-term effectiveness of formal treatment with and without AA.

Type and timing of assistance and outcomes

We also address the question of whether, among individuals who receive help, the timing of that help (i.e., AA, formal treatment) is related to drinking outcomes. In a previous analysis of data from this sample (Timko et al., 1999), we found that, compared with individuals who remained untreated throughout the 8-year follow-up period, individuals who received some help (a combination of formal treatment and/or AA) only in Years 1-3 of follow-up had better drinking outcomes at both 3 and 8 years. Compared to individuals who completed treatment in Years 1-3, however, those who sought any additional help in Years 4-8 had more severe drinking and functioning problems at 3 and 8 years.

In the present study, we separate participation in AA from participation in formal treatment and examine whether AA or formal treatment in Year 1 of follow-up is related to better drinking outcomes at the 8-year follow-up. We also examine whether participation either in AA or in formal treatment in Years 2-3 and 4-8 is associated with better 8-year drinking outcomes.

The long-term course of untreated and treated alcoholism

Furthermore, in this study, we examine changes from baseline to 8 years among the untreated group and the three helped groups (AA only, formal treatment only, formal treatment plus AA). Natural recovery (i.e., the resolution of alcohol problems without formal treatment and, according

to some researchers' definitions, without participation in self-help) appears to be the most common path to recovery. As many as three quarters of individuals who recover from an alcohol-use disorder do so without formal treatment and without AA (Sobell et al., 1991, 1996; Vaillant, 1995). Watson and Sher's review (1998) yielded a number of retrospective studies of recovered individuals that described the natural recovery process but revealed a near absence of prospective, methodologically sound, long-term studies of untreated alcoholic individuals.

Previous studies of the long-term course (6-10 years) of treated alcoholism have found abstinence rates ranging from 19% to 70% among survivors (Cross et al., 1990; Finney and Moos, 1991; Helzer et al., 1985; Längle et al., 1993; Miller et al., 1992; Powell et al., 1998; Vaillant et al., 1983; Walker, 1987). Studies agree that, over time, the proportion of patients who have positive outcomes with respect to drinking gradually and steadily increases.

Research design: Rationale and implications

It is important to clarify the rationale for, and the implications of, the research design. This was an effectiveness study rather than an efficacy study, in that it used a naturalistic, self-selection design and not one that uses a randomized clinical trial (RCT) (Seligman, 1995). Efficacy studies have high internal validity, but may be so constrained that they provide little useful information about what happens in actual practice (Marlatt, 1999; Tucker, 1999). In RCTs, participants are selected to represent homogeneous, "pure" forms of disorders that, in practice, are uncommon. In addition, random assignment of patients to treatment, or to a type of treatment, undermines both the individual's choice in seeking help and in selecting a particular kind of help, and the treatment providers' choice of treatment for a particular patient.

The primary aim and strength of our reliance on the naturalistic design was its realism: It assessed the effectiveness of alcoholism treatment as it was actually delivered (e.g., with progress-contingent treatment duration and changes in treatment approach when the help selected was not working) with the population that actually sought it. In this sense, the naturalistic design is a crucial ingredient in the study's external validity. However, with the naturalistic design, internal validity is lower, and the application of results regarding the relative effectiveness of assistance is limited specifically to, in the case of this study, problem drinking individuals who elect such help. We cannot state that results regarding the benefits of help generalize to problem drinkers who deny their problems or who do not believe in and choose help.

To summarize, the purposes of this study were to: (1) compare changes over 8 years in drinking and related aspects of functioning among previously untreated problem drinkers who, at the time of the 8-year follow-up, had self-selected into no treatment, AA only, formal treatment only, or formal treatment plus AA groups; (2) examine how each of the four groups changed over time on drinking and functioning outcomes; and (3) examine how the timing of involvement in AA and treatment affected outcomes. To enhance the potential application of the findings, we focused on clinically meaningful outcomes (e.g., abstinence and freedom from drinking-related problems).

Method

Sample and procedure

Study participants were problem drinkers ($N = 466$) who were followed for approximately 8 years (mean [SD] was 92.6 [6.6] months) after their initial contact with the alcoholism treatment system via an I&R center or detox program. Participants were defined as problem drinkers by virtue of having gone through a detox episode at one of three cooperating detox centers (under contract to the three counties in which they were located) or having contacted one of four cooperating I&R centers (one was a county agency; the others were under contract to the three counties in which they were located). At baseline, data were collected from 631 individuals who had not received prior formal inpatient or outpatient treatment for problem drinking; participants with previous exposure to AA were accepted into the study. All participants provided informed consent. The initial data collection process is described in detail in Timko et al. (1993, 1994). Of eligible clients approached by research staff, 62% at the detox centers and 64% at the I&R centers participated.

With respect to baseline sociodemographic characteristics, 51% of the participants were men, 82% were white, 24% were married and 45% were employed at least part time. The mean (SD) age of participants at baseline was 35 (9) years; the mean education was 13 (2) years. In general, the four groups were comparable in terms of demographic characteristics.

Follow-ups. An inventory that was almost identical in content to the initial one was mailed to located participants 1, 3 and 8 years after they entered the study. Of the 582 individuals not known to have died prior to the 8-year follow-up, 483 were located and 466 completed the follow-up inventory. Thus, the 8-year follow-up rate for those persons not known to have died was 80%. Compared with individuals who completed only the baseline assessment, individuals who completed the 8-year assessment were more likely to be employed; otherwise, the two groups did not differ at baseline on the drinking and functioning outcomes used in this study.

Measures

Drinking patterns and problems. Respondents noted whether or not they were *abstinent* from alcohol during the past 6 months; whether or not they were drunk or *intoxicated* during the past month (never versus 1 or more days); and

whether they had a *benign drinking pattern* during the past 6 months (i.e., engaged in no or light drinking versus moderate drinking, fairly or very heavy drinking, or occasional drinking binges).

An index of problems arising from drinking was taken from the Health and Daily Living (HDL) Form by Moos et al. (1990). Participants rated how often (on a 5-point scale, with 0 = never and 4 = often) in the last 6 months they had experienced each of nine problems (e.g., with health, job, money, family arguments) as a result of drinking. Participants were categorized as having either *no drinking-related problems* or one or more such problems.

Finally, *in remission* indicated that participants were either abstinent or met the following criteria: engaged in no, light or moderate drinking during each of the past 6 months; drank three or fewer ounces of ethanol on drinking days that occurred during the past month; were never intoxicated during the past month; and had no drinking-related problems in the past 6 months.

Functioning. Participants were asked whether or not they were *employed* or had *legal problems* (i.e., had trouble with the law, other than minor traffic violations, and/or were put in jail) in the past year; legal problems may or may not have been related to drinking.

Based on the HDL's measure of depression, derived from Spitzer et al.'s (1978) Research Diagnostic Criteria, participants rated how often (on a 5-point scale with 0 = never, 4 = often) they experienced each of seven symptoms of depressed mood during the last month (e.g., feeling sad or blue; feeling guilty, worthless or down; thoughts about death or suicide). Responses were summed so that higher scores represented more depressed mood (Cronbach's alpha at baseline = 0.92). Respondents were considered to be experiencing significant depression when they scored two or more standard deviations above the mean of the community sample of women and men that Moos et al. (1990) used to develop the HDL; otherwise, respondents were classified as *not depressed.*

Approach Coping was the sum of 18 items (alpha = 0.84) rated on a 0 (did not do this to deal with an important problem in the past year) to 3 (did this fairly often to deal with the problem) scale; items covered active cognitive (e.g., tried to see the positive side) and behavioral (e.g., tried to find out more) coping. *Avoidance Coping* was the sum of 6 items (e.g., ate to reduce tension; alpha = 0.53) rated on the same scale. The internal consistency of the Avoidance Coping scale was lower than optimal but we retained this variable because of its conceptual importance and because, supporting the validity of the measure, more reliance on avoidance coping was related to greater drinking problem severity at baseline (Finney and Moos, 1995).

Results

We begin by describing the proportions of problem drinkers who remained untreated, entered AA only, or entered formal treatment with or without AA during the 8-year follow-up period. To evaluate the relationship between treatment status (no treatment versus any formal or informal care; followed by no treatment versus AA only, formal treatment only, or formal treatment plus AA) and outcomes, hierarchical logistic regression analyses were conducted for dichotomous outcomes, and analyses of covariance (ANCOVAs) were conducted for continuous outcomes. Analyses controlled for gender, marital status and the baseline value of the outcome under consideration. For the logistic regressions, treatment status group was dummy coded; the model chi-square improvement after entering treatment status group was used to determine overall group differences in predicting outcomes, and partial regression coefficients were used to determine between-group differences. McNemar tests (for dichotomous outcomes) and t tests (for continuous outcomes) were conducted to examine change in each group from baseline to 1 year, 1 year to 3 years, and 3 years to 8 years on each outcome variable.

Treatment status groups

At each follow-up, participants were asked "Have you gone to anyone, anyone at all (a doctor, psychiatrist or psychologist, clergy or religious counselor, AA, detoxification unit, inpatient or outpatient treatment program, etc.) about your drinking habits or drinking-related problems since you completed our last questionnaire?" The month and year when the last questionnaire was completed were provided. If participants answered "yes," they were asked to record the following information about each source of help: person, agency or type of help; month and year; number of weeks of help; and number of sessions or meetings attended. Because residential treatment programs often include an AA component, participants were specifically instructed to record each type of care separately. Participants' reports at the 1-year, 3-year and 8-year follow-ups placed them into one of four groups at 8 years:

No treatment group. Of the 466 participants, 78 (17%) had not entered treatment for their drinking problems 8 years into the study.

AA only group. A total of 66 individuals (14%) entered only AA (i.e., attended at least one AA meeting in the absence of any formal treatment).

Formal treatment only group. A total of 74 (16%) participants received only outpatient (i.e., physician, psychiatrist, psychologist, counselor, treatment program, clergy member) and/or inpatient or residential (including halfway house, group home) treatment.

Formal treatment plus AA group. A total of 248 (53%) participants received outpatient and/or inpatient or residential treatment, and participated in AA.

Table 1 presents the help received by the three helped groups, from AA and/or formal treatment, within each follow-up period and over the entire 8-year period.

TABLE 1. Type and amount of treatment for three helped groups ($N = 388$)

	Inpatient: No. of weeks		Outpatient: No. of sessions		AA: No. of meetings	
Treatment groups	*n*	Mean (SD)	*n*	Mean (SD)	*n*	Mean (SD)
AA only ($n = 66$)						
Year 1					50	71.1 (82.1)
Years 2-3					33	229.8 (236.6)
Years 4-8					26	434.0 (535.2)
Years 1-8					66	310.5 (519.8)
Formal treatment only ($n = 74$)						
Year 1 ($n = 53$)	26	13.8 (15.2)	34	18.1 (18.3)		
Years 2-3 ($n = 32$)	18	15.0 (22.1)	18	71.9 (65.9)		
Years 4-8 ($n = 34$)	20	20.3 (19.1)	15	52.1 (74.8)		
Years 1-8 ($n = 74$)	48	19.9 (22.1)	46	51.0 (80.2)		
Formal treatment + AA ($n = 248$)						
Year 1 ($n = 162$)	93	11.8 (12.2)	108	35.4 (40.7)	161	108.3 (112.2)
Years 2-3 ($n = 83$)	39	14.9 (18.9)	54	54.1 (53.8)	78	260.4 (291.1)
Years 4-8 ($n = 62$)	28	9.9 (13.2)	46	116.3 (162.9)	60	362.3 (407.6)
Years 1-8 ($n = 248$)	161	17.2 (19.9)	189	80.6 (124.6)	246	367.4 (471.9)

Treatment status group differences

In the following sections, we first compare individuals who remained untreated throughout the 8 years of the study ($n = 78$) with the combined group of all those who obtained help through AA, formal treatment or both ($n = 388$) on their drinking and functioning at baseline, 1 year, 3 years and 8 years. We then compare untreated individuals with each group of helped individuals separately. Finally, we compare individuals who obtained help only from AA with those who received formal treatment, either with or without AA, and compare the two formally treated groups with each other.

No treatment versus informal or formal treatment

Overall, individuals who obtained some help tended to have better drinking outcomes than did individuals who received no formal and/or informal care. This difference was most striking on the outcome of abstinence (Figure 1). Although untreated and helped individuals were equivalent on abstinence at baseline, helped individuals were more likely to be abstinent at 1 year ($\chi^2 = 9.04$, 1 df, $p < .01$), 3 years ($\chi^2 = 14.24$, 1 df, $p < .001$) and 8 years ($\chi^2 = 21.67$, 1 df, $p < .001$). At 8 years, helped individuals were also more likely to report no intoxication (71.8% vs 53.8%; $\chi^2 = 10.31$, 1 df, $p < .001$), a benign drinking pattern (62.9% vs 47.4%; $\chi^2 = 6.04$, 1 df, $p < .01$), no drinking-related problems (66.5% vs 53.8%; $\chi^2 = 4.61$, 1 df, $p < .05$) and remission (61.4% vs 43.6%; $\chi^2 = 8.35$, 1 df, $p < .01$). A benign drinking pattern was also more frequent among helped than untreated individuals at 3 years (56.4% vs 42.0%; $\chi^2 = 4.28$, 1 df, $p < .05$).

Regarding the functioning and coping indices, helped individuals were more likely at baseline to have legal problems and to be depressed. Otherwise, the only differences were that helped individuals relied more on approach coping at the 1- and 3-year follow-ups than did untreated persons (all p's $< .05$).

No treatment versus AA only. In comparison to untreated individuals, individuals who participated in AA only were more likely to be abstinent at 1 year, 3 years and 8 years, to have a benign drinking pattern at 3 years, and to report no intoxication and to be in remission at 8 years (Table 2). Untreated and AA only participants did not differ on functioning or coping outcomes at baseline or any follow-up (Table 3).

No treatment versus formal treatment only. In comparison to untreated individuals, those receiving formal treatment only were more likely to be abstinent at 8 years and to use approach coping at 1 year. There were no significant differences on any of the other indices.

No treatment versus formal treatment plus AA. In comparison to untreated individuals, those who participated in both formal treatment and AA were more likely to be abstinent at 1 year, 3 years and 8 years, to report a benign drinking pattern at 3 and 8 years and no intoxication at 8 years, and to be in remission at 8 years. In addition, formal treatment plus AA group members were more likely to rely on approach coping at 1 and 3 years than were untreated persons.

AA only versus formal treatment or formal treatment and AA

AA only versus formal treatment only. AA only group members were more likely than formal treatment only group members to be abstinent at 1 year and 3 years, to report no intoxication at 3 years, to have a benign drinking pattern at 1 year and 3 years, and to be in remission at 1 and

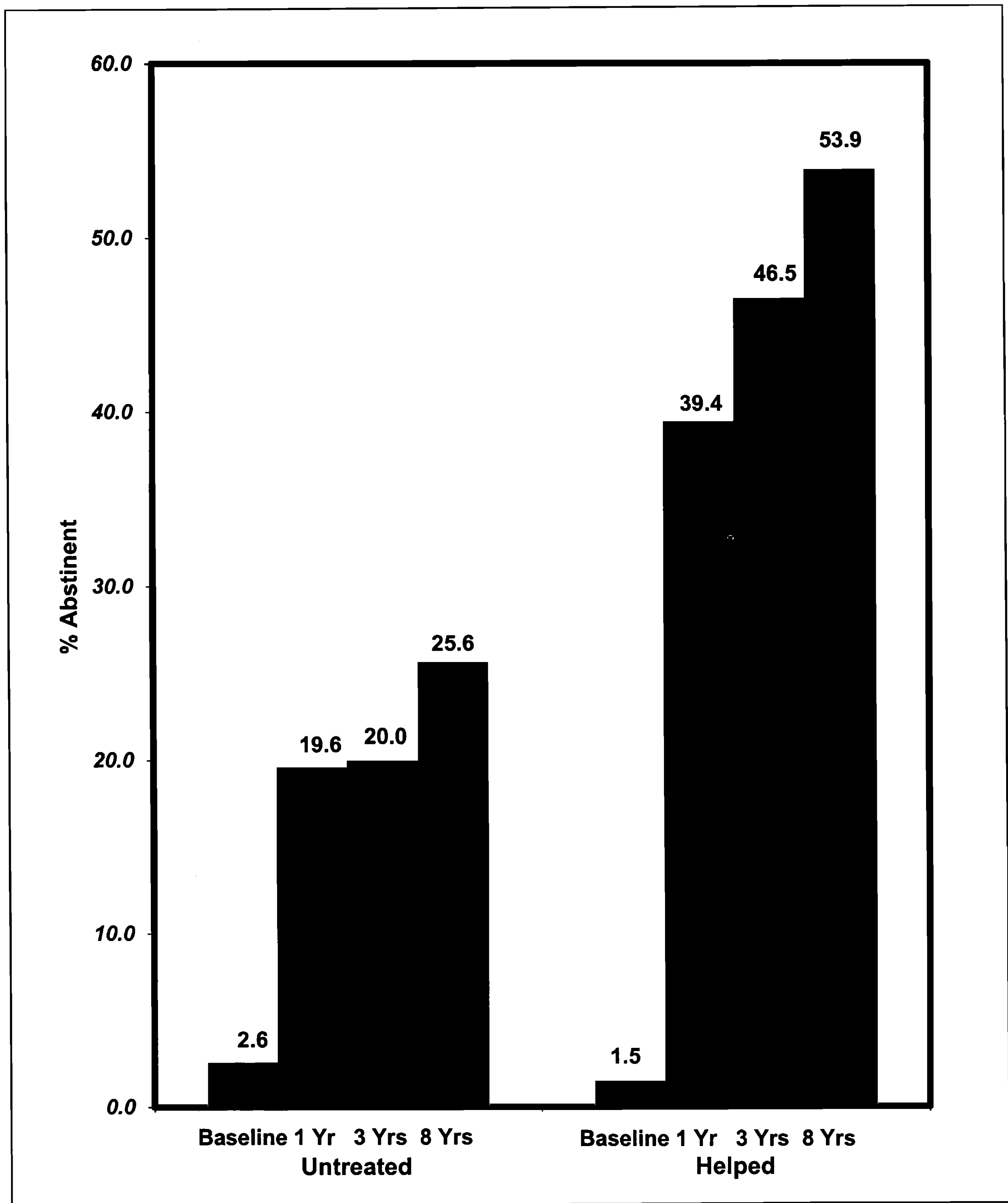

FIGURE 1. The course of abstinence among untreated (n = 78) and helped (n = 388) individuals

TABLE 2. Drinking patterns of four treatment status groups at baseline, 1 year, 3 years and 8 years ($N = 466$)

Drinking variable	Treatment status group: No treatment ($n = 78$)	AA only ($n = 66$)	Formal treatment only ($n = 74$)	Formal treatment + AA ($n = 248$)	χ^2
% Abstinent					
Baseline	2.6	1.5	1.4	1.6	0.34
1 Year	19.6^{a,b}	47.5^{a,c}	20.6^{c,d}	42.4^{b,d}	20.50‡
3 Years	20.0^{a,b}	50.0^{a,c}	25.9^{c,d}	50.9^{b,d}	26.06‡
8 Years	25.6^{a,b,c}	48.5^{a}	45.9^{b}	57.7^{c}	25.30‡
% Not intoxicated					
Baseline	11.8	13.6	9.5	10.6	0.82
1 Year	55.4	71.2	61.3	64.4	2.96
3 Years	61.2	77.2^{a}	55.2^{a,b}	70.7^{b}	7.66*
8 Years	53.8^{a,b}	77.3^{a}	62.2	73.3^{b}	13.56†
% Benign drinking pattern					
Baseline	3.9	1.5	4.1	2.4	0.95
1 Year	38.2	55.9^{a}	33.3^{a,b}	50.4^{b}	7.67*
3 Years	42.0^{a,b}	63.8^{a,c}	43.1^{c}	57.9^{b}	8.90*
8 Years	47.4^{a}	63.6	54.1	65.3^{a}	8.47*
% No drinking-related problems					
Baseline	6.4	1.5^{a}	10.8^{a,b}	3.2^{b}	8.11*
1 Year	53.6	59.3	38.7	51.9	5.69
3 Years	59.2	70.7^{a}	42.1^{a,b}	58.8^{b}	8.58*
8 Years	53.8	68.2	59.5	68.1	6.30
% In remission					
Baseline	2.6	1.6	2.7	2.0	0.24
1 Year	42.6	54.2^{a}	35.5^{a}	48.3	8.63*
3 Years	47.9	66.7^{a,b}	36.8^{a}	57.5^{b}	16.25‡
8 Years	43.6^{a,b}	62.1^{a}	55.4	63.0	9.98*

Note: Baseline analyses control for gender and marital status; 1-, 3- and 8-year analyses control for gender, marital status and baseline functioning. Means that share a superscript differ significantly at $p < .05$.
*$p < .05$; $^{†}p < .01$; $^{‡}p < .001$.

TABLE 3. Functioning of four treatment status groups at baseline, 1 year, 3 years and 8 years ($N = 466$)

Functioning variable	Treatment status group: No treatment ($n = 78$)	AA only ($n = 66$)	Formal treatment only ($n = 74$)	Formal treatment + AA ($n = 248$)	F/χ^2
% Employed					
Baseline	44.9	47.0	39.2	46.0	1.68
1 Year	76.8	66.1	55.6	70.8	6.63
3 Years	66.7	75.9	60.3	75.9	6.88
8 Years	61.5	69.7	59.5	58.1	3.00
% Legal problems					
Baseline	28.2	31.8	40.5	42.5	6.83
1 Year	17.9	15.3	19.0	20.3	0.46
3 Years	9.8	8.8	17.2	13.6	1.18
8 Years	11.5	6.1	9.5	12.1	2.17
% Not depressed					
Baseline	66.7^{a}	56.1	55.4	46.0^{a}	9.37*
1 Year	92.9	88.1	85.7	83.4	2.17
3 Years	92.2	89.7	87.9	87.3	0.27
8 Years	93.6	90.9	89.2	86.2	2.51
Approach coping					
Baseline	28.8	29.5	29.2	28.4	0.30
1 Year	29.8^{a,b}	33.3	34.5^{a}	35.0^{b}	5.19†
3 Years	30.4^{a}	32.1	34.7	34.5^{a}	3.79†
8 Years	32.3	33.8	33.0	34.6	1.50
Avoidance coping					
Baseline	8.2	7.8	8.6	9.3	3.03*
1 Year	5.4	5.3	5.6	6.4	0.83
3 Years	4.5	4.1	6.1	5.4	2.67*
8 Years	4.9	4.4	5.4	5.2	0.56

Note: Baseline analyses control for gender and marital status; 1-, 3- and 8-year analyses control for gender, marital status and baseline functioning. Means that share a superscript differ significantly at $p < .05$.
*$p < .05$; $^{†}p < .01$.

3 years. AA only group members were less likely to be free of drinking-related problems at baseline, but more likely to be so at 3 years. The AA only and formal treatment only groups were equivalent on drinking outcomes at 8 years. In addition, there were no differences in functioning or coping at any time according to whether individuals participated only in AA or only in formal treatment.

AA only versus formal treatment plus AA. Individuals who participated only in AA, and those who participated in both formal treatment and AA, were equivalent on drinking, functioning and coping outcomes at each follow-up occasion, with the exception that AA only group members were more likely to be in remission at 3 years.

Formal treatment only versus formal treatment plus AA

Formal treatment plus AA participants were more likely than formal treatment only participants to be abstinent at 1 year and 3 years, to have a benign drinking pattern at 1 year, and to report no intoxication at 3 years. Individuals participating in both formal treatment and AA were less likely to be free of drinking-related problems at baseline, but more likely to be free of such problems at 3 years. No differences occurred on functioning or coping outcomes between formally treated individuals who did or did not affiliate with AA.

Comparisons using continuous measures of drinking problem severity

As noted in the Method section, for several indicators of drinking problem severity, we created dichotomous variables from continuous measures. We compared the four groups on the continuous measures (i.e., number of days drunk or intoxicated during the past month, drinking pattern during the past 6 months, problems arising from drinking in the past 6 months, depression) by means of ANCOVAs that controlled for gender, marital status and

TABLE 4. Comparisons of 8-year outcomes for untreated or helped individuals with low or high impairment at baseline

	Low impairment			High impairment		
	Untreated (n = 19)	Helped (n = 61)	χ^2/F	Untreated (n = 59)	Helped (n = 327)	χ^2/F
Drinking variable						
% Abstinent	15.8	45.9	6.09†	28.8	55.4	14.43‡
% Not intoxicated	63.2	75.4	1.05	50.8	71.2	8.98†
% Benign drinking pattern	52.6	57.4	0.13	45.8	63.9	6.76†
% No drinking-related problems	78.9	73.8	0.21	45.8	65.1	7.75†
% Moderate drinking	52.6	23.3	5.54*	15.5	8.0	2.87
% In remission	57.9	60.7	0.05	39.0	61.5	10.29‡
Functioning variable						
% Employed	73.7	52.5	2.78	57.6	61.8	0.36
% Legal problems	0.0	4.9	1.66	15.3	11.7	0.57
% Not depressed	94.7	95.1	0.00	93.2	86.2	2.54
Approach coping, mean (SD)	33.2 (7.3)	36.2 (8.7)	1.89	32.0 (9.7)	33.8 (9.0)	1.84
Avoidance coping, mean (SD)	3.7 (2.9)	4.2 (3.0)	0.40	5.3 (3.4)	5.3 (3.5)	0.00

*$p < .05$; †$p < .01$; ‡$p < .001$.

the baseline value of the outcome under consideration. Results for the continuous measures replicated those for the dichotomous measures, except that the four groups did not differ significantly on the continuous measure of benign drinking pattern at 8 years.

Comparisons based on initial impairment

Following Armor and Meshkoff's (1983) examination of low- and high-impairment groups, we also compared untreated and helped participants, who had low or high impairment at baseline, on the drinking and functioning indices at 8 years. The low-impairment group had 0-2 drinking-related problems at baseline; the high-impairment group had 3 or more such problems. Chi-square analyses were conducted for dichotomous outcomes, and ANOVAs for continuous outcomes.

For both the low- and high-impairment groups, helped individuals were more likely to be abstinent at 8 years than were untreated individuals (Table 4). Only the high-impairment group benefited from help relative to no help on remission rate, as well as on days intoxicated, benign drinking pattern and no drinking-related problems. The long-term results for abstinence and remission within the low- and high-impairment groups replicate those of Armor and Meshkoff's (1983) 2.5-year study.

Within-group changes

Untreated individuals. The untreated individuals improved on all five drinking-related outcomes, depression status and employment, and showed a decline in their reliance on avoidance coping (all p's < .05) between baseline and 1 year. However, these individuals showed no further significant improvement on any drinking, functioning or coping outcome between 1 year and 8 years.

All individuals who received help. Among all individuals receiving help, improvement occurred between baseline and 1 year on all drinking, functioning and coping outcomes (p's < .01). In contrast to the untreated individuals, the individuals who obtained help continued to improve between the 1- and 3-year follow-ups on several outcomes: abstinence, drinking-related problems, benign drinking pattern, remission rate, legal problems, employment and avoidance coping (p's < .05). Moreover, the helped individuals continued to improve between 3 years and 8 years on abstinence, drinking-related problems, benign drinking pattern and remission rate (p's < .05).

Separate groups of helped individuals. Each of the three groups of helped individuals (AA only, formal treatment only, formal treatment plus AA) improved on all drinking outcomes (i.e., on abstinence, no intoxication, no drinking-related problems, benign drinking pattern and remission) and each functioning outcome (legal problems, employment, absence of clinical depression), and increased their reliance on approach coping and decreased their reliance on avoidance coping between baseline and the 1-year follow-up (p's < .05).

The AA only group showed no further significant improvement. In contrast, the formal treatment plus AA group showed continued improvement between 1 year and 3 years on abstinence, no drinking-related problems, benign drinking pattern, remission rate, fewer legal problems and less use of avoidance coping (p's < .05). Between the 3- and

TABLE 5. Logistic regressions predicting 8-year drinking outcomes among individuals who obtained help ($N = 388$)

	Abstinent		Not intoxicated		Benign drinking pattern		No drinking-related problems		In remission	
	Reg. coeff.	OR	Reg. coeff.	OR	Reg. coeff.	OR	Reg. coeff.	OR	Reg. Coeff.	OR
Step 1										
Gender[a]	0.47*	1.60	0.69†	2.00	0.51*	1.67	0.49*	1.64	0.48*	1.62
Marital status[b]	0.18	1.19	0.45	1.58	0.21	1.24	0.57*	1.76	0.54*	1.71
Baseline value of outcome	1.59	4.91	0.86*	2.36	0.43	1.54	0.17	1.19	0.57	1.77
χ^2	8.04*		14.51†		6.60		9.34*		9.61*	
Step 2										
Year 1: Any AA[c]	0.48*	1.62	0.66†	1.93	0.63†	1.87	0.68†	1.98	0.46*	1.59
Year 1: Any formal treatment[c]	0.48*	1.62	0.11	1.12	0.39	1.47	0.73‡	2.08	0.63†	1.87
χ^2	10.01†		8.02*		11.24†		19.47‡		12.50†	
Step 3										
Years 2-3: Any AA[c]	0.52*	1.69	0.44	1.55	0.31	1.36	0.36	1.43	0.54*	1.72
Years 2-3: Any formal treatment[c]	0.44*	1.56	0.27	1.31	0.32	1.38	0.20	1.23	0.35	1.42
χ^2	10.97†		4.71		4.34		3.36		8.82†	
Step 4										
Years 4-8: Any AA[c]	0.56*	1.76	0.14	1.16	0.23	1.26	0.00	1.00	0.21	1.23
Years 4-8: Any formal treatment[c]	-0.37	0.69	-0.47	0.62	-0.59†	0.55	-0.82‡	0.44	-0.64†	0.53
χ^2	7.62*		3.59		6.68*		11.74†		7.48*	

[a]0 = male, 1 = female; [b]0 = not married, 1 = married; [c]0 = no, 1 = yes.
*$p < .05$; †$p < .01$; ‡$p < .001$.

8-year follow-ups, the formal treatment plus AA group showed further improvement on the proportion of individuals who were abstinent, free of drinking-related problems and had a benign drinking pattern, but declined on percent employed (p's < .05). The formal treatment only group also improved between 3 years and 8 years on abstinence, having no drinking-related problems and remission rate (p's < .05).

Type and timing of help and treatment outcomes

To focus on how the timing of participation in AA and formal treatment was related to improvement, we conducted hierarchical logistic regression analyses to predict drinking outcomes at the 8-year follow-up among individuals who received some form of help. Step 1 of the regressions entered marital status, gender and the baseline value of the outcome under consideration. Step 2 entered two variables reflecting participants' treatment status during the first year of follow-up: affiliation with AA and participation in formal treatment (0 = no, 1 = yes). Step 3 entered the same two variables as Step 2, but pertaining to Years 2-3 of follow-up. Step 4 entered the same variables, covering the follow-up Years 4 through 8.

Table 5 shows that women were more likely than men to be abstinent, to have not been intoxicated, to have a benign drinking pattern and no drinking-related problems, and to be in remission at 8 years. Persons who were married at baseline were more likely to be free of drinking-related problems and in remission at 8 years than were unmarried persons. Except for no intoxication at 8 years, the baseline values of the drinking-related indices did not independently predict the 8-year outcomes.

Table 5 also shows that participation in AA and participation in formal treatment during Year 1 and during Years 2-3 were independently associated with abstinence at the 8-year follow-up. Participation in AA during Years 4-8 was also associated with abstinence at 8 years.

Participation in AA during Year 1 of follow-up was the sole predictor of no intoxication at 8 years, after baseline status was controlled. Participation in AA during Year 1 also predicted having a benign drinking pattern and being free of drinking-related problems and in remission at 8 years. In addition, participation in formal treatment during Year 1 was associated with having no drinking-related problems and with remission at 8 years. Furthermore, participation in AA in Years 2-3 was linked to long-term remission. However, needing to participate in additional formal treatment during Years 4-8 was a predictor of less benign drinking patterns, the presence of drinking-related problems, and nonremitted status at 8 years.

Discussion

We found that individuals who sought formal and/or informal help for their drinking problems were better off at the 8-year follow-up than were individuals who chose to remain untreated. Specifically, those who sought and received some type of help—AA and/or formal treatment—were more likely at 8 years to be abstinent, free

of intoxication and in remission, and to have a benign drinking pattern and no drinking-related problems, than were untreated individuals. Both helped and untreated individuals improved between baseline and 1 year on these drinking outcomes. In contrast to untreated individuals, who did not show further improvement after 1 year, helped individuals continued to improve over the next 2 years, and then over the next 5 years, on drinking-related outcomes. These findings support the idea that obtaining formal or informal help is associated with improved drinking outcomes, among individuals who choose to do so.

We found that 54% of helped individuals were abstinent at the 8-year follow-up. This rate is in the mid to upper range found by the previous long-term studies of treated alcohol use disorders that were noted in the introduction. Like these studies, ours showed a steady increase in the proportion of abstinent individuals across follow-ups.

Untreated and informally and formally treated individuals

Each of the three separate groups of helped individuals was somewhat better off at 8 years than was the untreated group. To be specific, consistent with our findings at 1 year (Timko et al., 1994), individuals who participated only in AA, received formal treatment only or were involved in both formal treatment and AA were more likely to be abstinent at 8 years than were untreated individuals. At 8 years, in comparison to untreated persons, individuals who participated in AA, either with or without formal treatment, were also more likely to be free of intoxication and to be in remission.

Although the AA only group was better off than the formal treatment only group on one or more of the drinking-related outcomes at 1 and 3 years, these two groups were equivalent on drinking outcomes at 8 years. The pattern of results is consistent with our finding that the formal treatment plus AA group continued to improve on abstinence, having no drinking-related problems and having a benign drinking pattern between 1 year and 3 years, and between 3 and 8 years, whereas this was not true of the AA only group. The equivalent outcomes at 8 years may reflect the fact that AA and formal treatment have common processes (e.g., a stated goal of abstinence [Warner and Mooney, 1993] and a supportive relationship with a sponsor or therapist [Friedmann et al., 1998]). These findings imply that AA may provide as much benefit for individuals who elect help only from AA (see Emrick et al., 1993) as formal treatment does for individuals who select this option.

Individuals who received formal treatment only, and those who participated in both formal treatment plus AA, were also comparable on drinking outcomes at 8 years. Notably, individuals who received formal treatment only were somewhat worse off at 1 and 3 years than were individuals in the formal treatment plus AA group. This latter result is consistent with those of other short-term studies (Emrick, 1993; Isenhart, 1997; Miller et al., 1997; Morgenstern et al., 1997; Ouimette et al., 1998; Watson et al., 1997), in which formal treatment in conjunction with AA was associated with better drinking outcomes than formal treatment alone. We found that the formal treatment only group did relatively poorly at 1 and 3 years but improved between 3 and 8 years, especially on abstinence, drinking-related problems and remission rate. By 8 years, the formal treatment only group had "caught up" to individuals who participated in both formal treatment and AA, as well as to individuals who participated only in AA.

Timing of informal and formal treatment

The regression analyses showed that participation in AA or formal treatment during the first year of follow-up was associated with abstinence, the absence of drinking-related problems and remission at 8 years. Participation in AA or formal treatment during Years 2-3 was also associated with abstinence at 8 years. Our prior findings, which examined the effects of the timing of treatment without distinguishing between informal and formal help, are consistent with these results. At 3 years, individuals who had sought help (informal, formal or both combined) within the first follow-up year were more likely to be abstinent than were untreated individuals; as well, individuals who obtained additional informal and/or formal help in Years 2-3 were more likely to be abstinent than were individuals who delayed obtaining help for at least a year (Timko et al., 1995). Similarly, at 8 years, individuals who had sought informal and/or formal help within the first 3 years of follow-up were more likely to be abstinent than were untreated individuals; individuals who completed treatment by Year 3 were more likely to be abstinent than were individuals who delayed obtaining help for at least 3 years (Timko et al., 1999). More involvement with formal treatment or AA was associated with more improvement over 3 (Timko et al., 1995) and 8 (Timko et al., 1999) years on drinking indices.

Taken together, our results suggest that obtaining help sooner rather than later is beneficial in the short and long term among problem drinkers who seek help. The referral process at I&R and detox centers should ensure that problem drinkers enter self-help or formal treatment quickly. In this regard, Stark et al. (1990) found that first-time callers to a substance abuse treatment clinic were more likely to present for treatment when they were told to come to the clinic the same day than when they were given a future appointment.

The regression analyses also showed that participation in AA during Years 4-8 of follow-up was associated with abstinence at 8 years. In contrast, needing to participate in formal treatment during follow-up Years 4-8 was a predictor of having a worse and nonremitted drinking problem and one or more drinking-related problems. Formal treatment occurring later in the course of alcoholism may be associated with poorer outcomes because such treatment is sought in response to a relapse. In contrast, AA involvement may be more continuous and may function primarily to help participants maintain their sobriety.

Conclusions

Our key finding was that individuals who seek and obtain help for a drinking problem show better drinking-related outcomes over 8 years than do those who do not seek and receive help. This finding is especially striking for abstinence; 54% of helped individuals achieved abstinence, as noted, but only 26% of untreated individuals did so. We also obtained two important findings regarding help for problem drinking among help seekers: Informal treatment alone was at least as effective as formal treatment alone and, in the long term, there were no differential outcomes between types of help.

Our results also suggest that, in contrast to untreated individuals or those treated only informally, those who select and receive formal treatment, especially those who receive formal treatment in conjunction with AA, may continue to improve on drinking outcomes after an initial period of substantial improvement. AA participation, either alone or in combination with formal treatment, is associated with somewhat better short-term (1-3 year) outcomes than no treatment or formal treatment alone, but its advantage over formal treatment does not hold for as long as 8 years. In the short term, AA participation may add to the benefit of formal treatment; formal treatment, however, may not add to the benefit of AA participation.

In considering these conclusions, it is important to keep in mind that the drinking outcomes at each follow-up pertained only to the 6 months prior to the assessment. Vaillant and Milofsky (1982) found that even 6 months of abstinence may not be predictive of more stable abstinence. A more continuous record of drinking and functioning would be helpful in revealing the links between participants' circumstances and their decisions about getting help.

Studies of the process and outcome of naturally occurring treatment choices are important for understanding problem resolution as a dynamic process that may be spread out over time, often over a number of years, and may involve multiple attempts to change before new drinking and functioning patterns emerge and stabilize (Tucker, 1999). The extent to which a single treatment episode, a sequence of episodes, or a combination of help strategies is expected to be feasible and clinically useful may be guided by what help-recipients and help-givers are already accomplishing "naturalistically."

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