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Predictors of Alcohol-Treatment Seeking in a Sample of Older Veterans in the GET SMART Program

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OBJECTIVES: To examine the predictive value of demographic characteristics and substance abuse indicators to explain treatment seeking for substance abuse problems by older male medical patients.

DESIGN: Longitudinal analysis of screening data and treatment-seeking behavior.

SETTING: Inpatient medical and outpatient substance abuse treatment center.

PARTICIPANTS: Participants in the study were 855 medically ill male veterans aged 55 and older, who were screened for alcohol problems during inpatient medical treatment after clinician referral.

MEASUREMENTS: The CAGE alcohol screen (Cut down on your drinking, Annoyed by criticism of your drinking, Guilty about your drinking, Eye-opener), drug use, and demographic measures administered at time of screening. Predictors of treatment seeking in the sample were examined using structural equation modeling.

RESULTS: Expressed interest in treatment and later attendance at a pretreatment evaluation were associated with younger age and a higher CAGE alcohol screening score. Being unmarried and using drugs in addition to alcohol were associated with treatment interest but not with evaluation attendance. In the path model tested, the effect of higher CAGE score partially explained the effect of younger age on treatment seeking.

CONCLUSION: The model examined shows utility in predicting alcohol-treatment seeking in this sample. Age-related factors may deter treatment seeking by older male medical inpatients. **J Am Geriatr Soc 51:380–386, 2003.**

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Key words: alcohol; substance abuse treatment; structural equation modeling

Alcohol abuse by older male medical patients has been identified as a significant problem, with serious physical and mental health consequences. Because of the medical and psychiatric pathology associated with heavy alcohol use, clinical samples of older men have consistently shown higher rates of prevalence than community samples, whether reported from Veterans Affairs (VA) hospitals, emergency rooms, or surgical facilities.[1–4] Prevalence of alcohol problems in men aged 60 and older in medical settings has been estimated at 20%,[5] but treatment entry rates have been estimated at only 10% to 15% of medical patients with an identified alcohol problem.[6] As a result, there is a pressing need to facilitate treatment entry for older medical patients and to understand why relatively few individuals in need of treatment actually receive it. In middle-aged and younger samples, predictors of treatment seeking have been identified, including older age, being unmarried, being better educated, having a history of heavy drinking, and social consequences.[7,8] The current study examines these predictors in older medical inpatients, to improve understanding of the treatment entry process in this population.

The model examined in the current study drew on the behavioral model, which examines three categories of patient characteristics in health service use: predisposing, facilitating, and need characteristics.[9] Predisposing characteristics such as demographic factors (e.g., age, education) exist before illness onset. Facilitating factors include income, social support, and other factors that positively affect access to services. Need characteristics include measures of illness severity.

The three components of the model have shown utility in discriminating individuals in treatment from those not in treatment. Among predisposing factors, older age has been associated with treatment enrollment in younger and middle-aged samples.[7,8] Unmarried and better-educated individuals are more likely to obtain treatment.[7,8,10,11]

Need indicators have been associated with treatment

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seeking, as measured by history of daily drinking, alcohol-related social consequences, and dependence severity.[8,11,12] Past treatment-seeking episodes are also predictive of current treatment seeking.[10,13] Need appears to be most strongly associated with treatment seeking relative to other components in the behavioral model.[8]

These prior studies did not examine the elements of the behavioral model in a longitudinal study beginning at the time of screening. Such methods are desirable to better predict treatment seeking and to eliminate sampling biases.[7] The current study aimed to use this method in a sample of medically ill older veterans, a group in particular need of alcohol treatment.

The current study also aimed to further test and refine the behavioral model. Predisposing, facilitating, and need variables are likely to interact in ways not yet investigated. A mediational model was proposed to explain the relationship between these variables and treatment seeking. It was hypothesized that treatment seeking would be associated with older age, higher education, and being unmarried (predisposing) and CAGE score (Cut down on your drinking, Annoyed by criticism of your drinking, Guilty about your drinking, Eye-opener) and drug use (need). In this medically ill sample, it was expected that older age and being single would be associated with greater lifetime incidence of drug and alcohol problems. Consistent with previous studies, these need variables should be more important than demographic factors. Therefore, it was expected that CAGE and drug use would mediate the relationships between age and treatment seeking and between marital status and treatment seeking. More reported years of education was expected to be positively associated with treatment interest, with lower levels of education potentially suppressing the effect of age on treatment seeking. The model was tested for predicting interest in treatment at screening and predicting attendance at a pretreatment evaluation. It was expected that examining the proposed model at two points in the treatment entry process would help to identify barriers to treatment at the point at which they occur.

METHOD

Participants

The Geriatric Evaluation Team: Substance Misuse/Abuse Recognition and Treatment (GET SMART) program is a targeted screening program designed specifically for older medical inpatients in the VA Greater Los Angeles Health Care System. VA physicians were asked to refer all older inpatients under their care suspected of having current problems with substance abuse or misuse of their medications (including nonpsychotropic medications), for screening by GET SMART. Between 1991 and 1999, 1,366 male medical inpatients aged 55 and older were screened. Patients with a positive alcohol screen were asked to return for a pretreatment evaluation for group psychotherapy placement after hospital release.[14]

Measures

The screening questionnaire contained demographic information (age, education, marital status, ethnic group), the CAGE questionnaire,[15] a yes or no question regarding whether participants had ever used drugs other than alcohol, and a multiple choice question to indicate which drugs they had used. The CAGE questionnaire is a widely used, four-item screening instrument that identifies lifetime alcohol problems that has been validated for use with many different populations, including older adults.[16,17] Possible scores range from 0 to 4. In older male samples, the CAGE has sensitivity of 86% and specificity of 78% for a cutoff score of 1.[16] At screening, patients were asked to indicate whether they were interested in receiving substance abuse treatment (yes/no).

Screening and Evaluation Procedures

Eight hundred fifty-five participants received a score of 1 or higher on the CAGE, indicating a possible alcohol problem.[16] Of these, 753 indicated whether they were interested in treatment. The remaining 102 individuals had no data on this question, because they did not give a definitive answer or because data were missing. The 102 individuals with missing data did not differ from the 753 with data in terms of age, race, marital status, education, CAGE score, or drug use. Two hundred fifty-three individuals indicated that they were interested in receiving treatment at the time of screening (Figure 1).

Two hundred fifty individuals attended appointments with clinical staff for further evaluation before entering treatment. Evaluation included some individuals who had initially said that they were not interested in treatment but then decided to attend and individuals who had incomplete initial screening information. This distinction is described in further detail below.

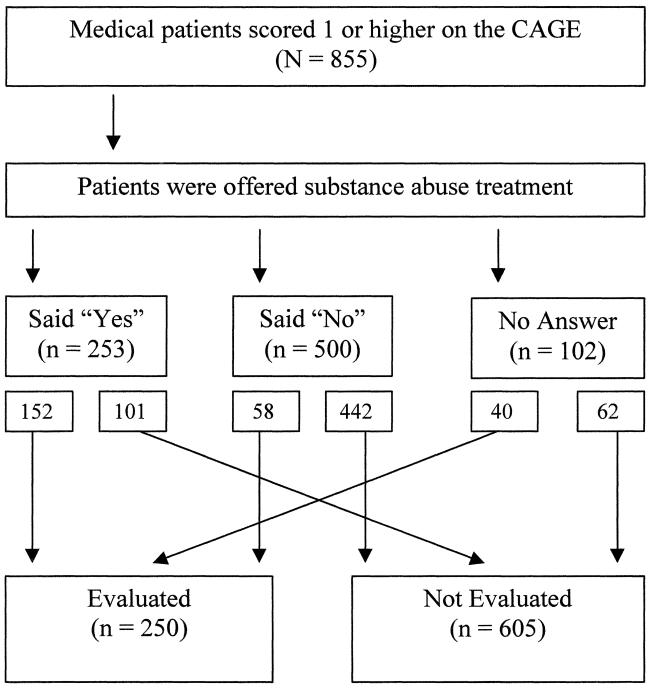

Figure 1. Flow chart showing how patients progressed from being screened to expressing interest in treatment to attending a pretreatment evaluation (N = 855). CAGE = Cut down on your drinking, Annoyed by criticism of your drinking, Guilty about your drinking, Eye-opener.

Patients were all offered treatment at the time of screening and at evaluation and given appropriate follow-up information. Although some variation in staff encouragement is likely, and potentially affects treatment seeking, staff endeavored to treat patients in a consistent, clinically appropriate fashion.

Analyses

The proposed model examined two dependent variables: expressed interest in treatment (Stage 1) and attending the pretreatment evaluation (Stage 2). Association between predicting variables and these outcomes was tested using chi-square (χ^2) and *t* tests. Structural equation modeling tested relationship of variables and examined the fit of the proposed model. Approval for analysis of patient data was obtained from the Human Subjects Committee of the VA Greater Los Angeles Health Care System.

The statistical program AMOS (Version 3.6, SmallWaters Corporation, Chicago, IL) was used to estimate parameters for structural equations implied in the model. Maximum likelihood estimation was used. The model was assessed by inspecting the statistical significance of estimated path coefficients and goodness-of-fit statistics for the model as a whole. These statistics include the minimum sample discrepancy function (CMIN/DF), the normed fit index (NFI), the root mean square error of approximation (RMSEA), and the expected cross-validation index (ECVI). Better fitting models have higher NFI values and lower CMIN/DF, RMSEA, and ECVI values. Although rules of thumb vary for these indices, it is desirable for the NFI values to exceed 0.95[18,19] and the RMSEA to be at or below 0.08.[20] CMIN/DF should be below 2.[21]

Path analysis using AMOS is based on assumptions of normality using continuous dependent variables.[22] However, where *P*-values (means) of dichotomous dependent variables are within 0.2 and 0.8, results are approximately the same (Peter Bentler, personal communication, November 2, 2001). In the present analysis, $P = .28$ (mean for treatment interest).

RESULTS

Expressed Interest in Treatment (Stage 1)

The Stage 1 analysis includes all those participants who scored 1 or higher on the CAGE and indicated whether they were interested in treatment (N = 753). Participants ranged in age from 55 to 91, with a mean age ± standard deviation of 68.62 ± 7.02. Table 1 shows demographic characteristics of the sample. The age distribution appeared to be slightly skewed in a positive direction, but skewness was not significant (skewness = 0.61). Years of formal education ranged from 2 to 22 years, with a mean of 11.74 ± 2.98 years. Education data were missing in 3% of cases.

The sample was 40.2% African American, 8.1% Hispanic, 48.7% white, and 2.3% other, with 0.7% missing data; 32.3% of the sample were currently married, 3.1% separated, 34.1% divorced, 13.8% widowed, and 14.3% never married. Marital status data were missing for 2.4% of the sample. In comparison with the general older adult population, the sample was more heavily African American (8% of the general older population) and less likely to be married (75% of older men in the general population are married[23]).

Table 1. Demographic Composition of the Stage 1 Sample (N = 753)

Characteristic	n	Percent
Ethnic group		
African American	303	40.2
White	367	48.7
Hispanic	61	8.1
Other	17	2.3
Missing	5	0.7
Marital status		
Married	243	32.3
Widowed	104	13.8
Separated	23	3.1
Divorced	257	34.1
Never married	108	14.3
Missing data	18	2.4

Note: Mean age ± standard deviation (SD) = 68.62 ± 7.02. Mean years education ± SD = 11.74 ± 2.98.

Cage Score and Reported Drug Use

Mean CAGE score was 2.29 ± 1.09. At the time of screening, 28.0% (n = 211) of those who scored 1 or higher on the CAGE also had used other drugs. These included cocaine (46.5%), marijuana (40.2%), heroin (36.0%), methadone (18.0%), sedatives, tranquilizers or hypnotics (11.6%), and amphetamines (8.7%). Of those who reported drug use other than alcohol, 47.2% reported using more than one substance. Data were missing on this question for 7.8% of the sample.

Relationship of Demographics to Alcohol and Drug Measures

One of the hypotheses of the current study was that treatment-seeking behaviors might be associated with age because of accumulation of alcohol problems with age. However, in this sample of late middle-aged to old-old men, older age was associated with lower CAGE score ($r = -0.26$, $P < .001$). Likewise, those who reported having used drugs were significantly younger (mean age 65.68 ± 5.58) than those who did not (mean age 69.99 ± 7.13, $t = 7.80$, $P < .001$).

Older age was also associated with some demographic features that might have negatively influenced treatment seeking. Older age showed a small but significant association with lower levels of education ($r = -0.17$, $P < .001$). This result was consistent with demographic studies that have found that earlier-born cohorts have had fewer years of formal education than later-born cohorts have.[24] Those who were married had a mean age of 70.02 ± 6.79, compared with those who were not married, who had a mean age of 67.89 ± 6.99 ($t = 3.92$, $P < .001$) (Table 2).

Interest in Treatment

Of the 753 individuals who indicated whether they would like substance abuse treatment, 34% stated that they were interested (n = 253) and 66% stated that they were not

Table 2. Correlations Between Variables at Stage 1 and Stage 2, Including All Participants in Path Models

Variable	Age	Not Married	Education	Drug Use	CAGE	Treatment
Stage 1: Predictors of treatment interest (n = 659)						
Age	1.0					
Not married	−0.15*	1.0				
Education	−0.16*	0.02	1.0			
Drug use	−0.27*	0.15*	0.03	1.0		
CAGE	−0.27*	0.16*	0.03	0.23*	1.0	
Wants treatment	−0.34*	0.26*	0.07	0.32*	0.48*	1.0
Stage 2: Predictors of attendance at pretreatment evaluation (n = 671)						
Age	1.0					
Not married	−0.15*	1.0				
Education	−0.16*	0.02	1.0			
Drug use	−0.27*	0.16*	0.03	1.0		
CAGE	−0.27*	0.16*	0.03	0.22*	1.0	
Evaluated for treatment	−0.29*	0.15*	0.04	0.16*	0.35*	1.0

* Correlation significant at $P < .01$ level (2-tailed).
CAGE = Cut down on your drinking, Annoyed by criticism of your drinking, Guilty about your drinking, Eye-opener.

(n = 500). Those who expressed interest in treatment were substantially younger (mean age 65.40 ± 5.41) than those who did not want treatment (mean age 70.27 ± 7.18) (t = 9.50, $P < .001$). No differences were found by education or race. Married individuals were less likely to express interest in treatment than those who were not married (χ^2 (1, n = 735) = 40.92, $P < .001$). Individuals who expressed interest in treatment scored significantly higher on the CAGE (mean 3.01 ± .95 points) than those who did not express interest in treatment (mean 1.92 ± .97 points) (t = 14.60, $P < .001$).

Model Predicting Interest in Treatment

Figure 2 illustrates the between the variables and treatment interest in the proposed model. The adequacy of the model predicting interest in treatment was tested by examining a fully recursive model where all unidirectional paths are freely estimated. The covariance between age and marital status was also estimated. This model yields a good fit to the data (χ^2 (3, n = 659) = 5.12, P = .16; CMIN/DF = 1.71; NFI = 1.0; RMSEA = 0.03; ECVI = 0.08). All factors are significantly associated with each other with the exception of the association between education and treatment interest. Standardized regression coefficients are included in the path model (Figure 1). Results indicate that the effects of CAGE score and drug use partially mediate the effects of age and marital status.

Attending Evaluation for Treatment (Stage 2)

Stage 2 of the analysis examined the factors that differentiated individuals who attended further pretreatment evaluation from those who did not. Comparisons were made on the same demographic and substance use measures employed at Stage 1.

The 250 individuals attended further evaluation before treatment entry, but this group was not composed of exactly the same individuals who had said they were interested in treatment at the time of screening (n = 253): some individuals who said they wanted treatment did not appear, whereas others who had said they did not want treatment appeared in spite of having initially declined (Figure 1). The 60.8% of those who presented for further evaluation had indicated at screening that they were interested in treatment (n = 152). There were 23.2% who had said that they were not interested in treatment (n = 58) but who, after outreach on the part of treatment staff, and often re-admissions to the hospital, decided to participate in evaluation. (Records regarding such contacts were not kept, but treatment staff made an effort to stay in contact with all individuals in an unsystematic fashion.) There were also

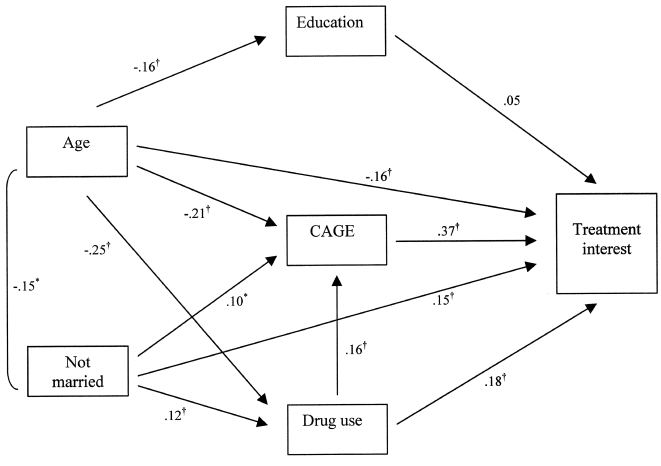

Figure 2. Path model for Stage 1 results (predictors of expressed interest in alcohol treatment) showing standardized regression coefficients (n = 659). * Coefficient is significant at $P < .01$. † Coefficient is significant at $P < .001$. CAGE = Cut down on your drinking, Annoyed by criticism of your drinking, Guilty about your drinking, Eye-opener.

40 individuals who attended for evaluation (16.0%) whose data regarding whether they wanted treatment were missing.

Differences between these components of the Stage 2 sample were explored. Within the group of 250 people, those who had previously declined treatment and those who had previously expressed interest were different on both demographic and substance measures. Those who had initially declined treatment were older ($t = 3.63$, $P = .008$), had less education ($t = 5.65$, $P = .001$), scored lower on the CAGE ($t = 5.12$, $P < .001$), and were less likely to report drug use (χ^2 (1, n = 186) = 7.59, $P = .006$). There were no differences by race. Married individuals were more likely to decline treatment initially, (χ^2 (1, n = 207) = 5.44, $P = .02$). Although it is not known what other factors might have influenced individuals who had initially declined to enter treatment, the results above might be interpreted as a measure of enthusiasm for treatment. Those who said they wanted treatment and did appear might have been more eager for treatment; those who said they did not want treatment initially yet still attended might have felt reluctance. These results showed the same pattern as the Stage 1 analyses, suggesting that older age, less education, being married, and fewer indicators of substance abuse were associated with greater reluctance to seek treatment.

Dropouts

Just as some individuals who said they did not want treatment attended anyway, there were 101 individuals who said they wanted treatment but did attend further evaluation. There were no differences by age, education, race, marital status, CAGE score, or drug use between these individuals and the 152 who continued.

Evaluation Versus No Evaluation

The Stage 2 analysis included all 855 people who scored 1 or higher on the CAGE at the time of screening. It compared those individuals who appeared for evaluation with those who did not appear (regardless of what they had initially said about whether they wanted treatment). In other words, although the Stage 1 analysis examined individual differences based on what people *said* about wanting treatment, Stage 2 examined individual differences based on what they *did* to seek treatment.

Those individuals who attended further evaluation (n = 250) were significantly younger (mean age 65.96 ± 6.03) than those who did not attend (n = 605, mean age 69.68 ± 7.25, $t = 7.34$, $P < .001$). There was no significant difference in education. Chi-square analysis found that African Americans were more likely than whites to attend evaluation (χ^2 (1, n = 767) = 12.91, $P = .001$). Married individuals were less likely to attend evaluation (χ^2 (1, n = 821) = 14.65, $P < .001$) (Table 2).

CAGE and Drug Use

Those who attended an evaluation scored significantly higher on the CAGE (mean score 2.80 ± 1.09) than those who did not (mean score 2.06 ± 1.03) ($t = 9.50$, $P < .001$). Those with a history of drug use in addition to alcohol were more likely to attend than those who reported no history of drug use (χ^2 (1, n = 708) = 19.61, $P < .001$).

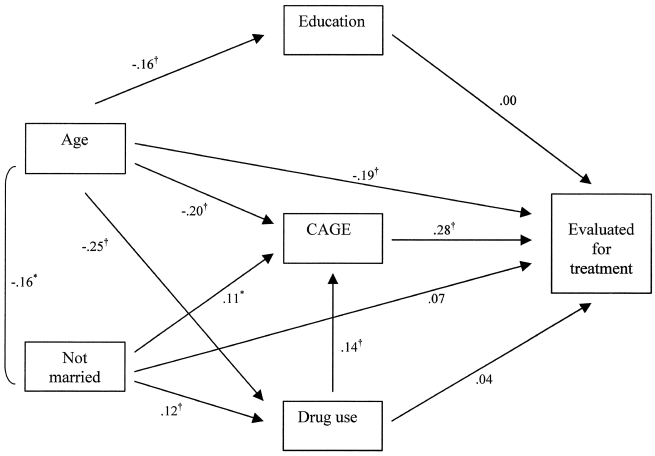

Figure 3. Path model for Stage 2 results (predictors of attending a pretreatment evaluation) showing standardized regression coefficients (n = 671). * Coefficient is significant at $P < .01$. † Coefficient is significant at $P < .001$. CAGE = Cut down on your drinking, Annoyed by criticism of your drinking, Guilty about your drinking, Eye-opener.

Model Predicting Evaluation Attendance

Figure 3 illustrates the relationships between the independent variables and evaluation attendance, including standardized regression coefficients. The adequacy of the model predicting evaluation attendance was tested by examining a fully recursive model where all unidirectional paths are freely estimated. For evaluation attendance, $P = .33$. The covariance between age and marital status was also estimated. This model yields a good fit to the data (χ^2 (3, n = 671) = 6.08, $P = .11$; CMIN/DF = 2.03; NFI = 0.999; RMSEA = 0.04; ECVI = 0.08). The same mediational hypotheses tested at Stage 1 were also tested at Stage 2. It was hypothesized that CAGE and drug use would mediate the effect of age and marital status on evaluation attendance. CAGE score only partially mediated the effect of age, indicating that age remains a significant predictor of the dependent variable, even after CAGE is controlled. CAGE score wholly mediated the effect of being single, indicating that higher CAGE scores in unmarried individuals explained the effect of marital status on evaluation attendance. There was a significant negative association between age and attending evaluation, even after all other variables were controlled ($r = -0.19$, $P < .001$). In contrast to the Stage 1 model, the Stage 2 model found that drug use and marital status did not significantly predict treatment seeking.

DISCUSSION

Age, CAGE Score, and Treatment Seeking

This study identified age as a significant barrier to alcohol treatment in older medical patients. Because having more alcohol-related problems has been associated with greater interest in treatment entry in prior studies, it was proposed that older age and higher CAGE score would be associated with interest in alcohol problem treatment.[8,12] Although prior studies found that middle-aged individuals were more likely than younger people to seek treatment, the

present study suggests that those in late middle age (young-old) are more interested in treatment than older people (old-old).[7,8]

Comorbid Drug Use

Prior studies have not examined the effects of comorbid drug and alcohol abuse on treatment-seeking behavior in older people. Little is known about the use of illicit drugs such as amphetamines, heroin, and cocaine by older adults. The present study demonstrated that such comorbid substance use might have considerable prevalence in clinical samples of older male veterans. The inconsistent association between drug use and treatment seeking examined in the current study leaves the importance of comorbid drug use in treatment models unresolved. Comorbid drug use may predict intention to seek treatment but not actual behavior, suggesting that healthcare providers may need to exert additional follow-up efforts to facilitate treatment access when drug use is present.[25]

Marital Status

Being unmarried has been associated with elevated levels of distress in older adults, including whites, African Americans, and Asians.[26] In the current study, it was expected that being unmarried would be positively associated with more alcohol problem indicators and that this mediational relationship might explain the association between marital status and treatment-seeking behavior. Although being unmarried was associated with higher CAGE score, the effect did not totally account for the effect of being unmarried on treatment interest. Other factors, such as the effect of social support provided in marriage, may be important in explaining how marital status influences treatment interest. The discrepancy between Stage 1 and Stage 2 results suggests that marital status predicts interest in alcohol treatment but not treatment-seeking behavior.

Clinical Implications

The current study found that age was negatively associated with treatment interest and with attendance at a pretreatment evaluation, independent of the effects of CAGE and other demographic factors. The reasons for this are not known. Reluctance to seek substance abuse treatment may be based on misunderstandings that older adults have about mental health treatment in general.[27,28] In the current screening and treatment program, an effort was made to address possible stigma by using staff experienced with older adults and sensitive to patients' possible fears regarding treatment. Other factors associated with age, but not measured in the present study, such as poor physical health and mobility, may also help to explain negative association between age and treatment interest and attendance at a pretreatment evaluation. These are possible barriers to older adults' treatment seeking that may need to be taken into account in screening medical patients for alcohol problems.

The age effects in the current study were apparent in lower rates of treatment interest at the time of screening. This implies that improving treatment entry rates for older people may require addressing patient perceptions of treatment. Such perceptions may include beliefs about treatment efficacy and accessibility in the presence of comorbid physical illness. For example, some patients may believe that they are too old to benefit from modifying their drinking behavior or that substance abuse treatment will not help them. These worries may be important to discuss with patients, to increase patient confidence in the utility and appropriateness of treatment. As other researchers have emphasized, effective treatment for older adults must take a flexible, holistic approach that accommodates older people's psychological, social, and health concerns.[27]

Limitations of the Study

The sample in this study was drawn from a population in particular need of substance abuse treatment: medically ill older male veterans. Although the study addressed important issues regarding this population, results may not generalize to older adults at large.

Measurements used in the study are subject to limitations. Alcohol abuse symptom measures with specified time frames are desirable to distinguish current from lifetime substance abuse problems. The dichotomous drug use item tested in the model was a relatively insensitive indicator of a potential drug abuse problem. Differences in significance of this item at Stage 1 and Stage 2 suggest that more-sensitive drug use measures are desirable in development of treatment-seeking models. Treatment history and drug and alcohol consumption measures, not included in the current study, would also be useful in developing a comprehensive model.

Effect sizes of the current study, although small, were similar to those of other studies investigating the role of patient characteristics identified in the behavioral model.[29] The design of the present study focused exclusively on patient variables, to the exclusion of variables related to the interviewers and hospital staff who interacted with the patients. Clinical staff variables could have affected patient treatment seeking at both stages of the study. In particular, variations in staff persistence in recommending treatment could affect patient response. Results of the study assume that all patients were treated equally, but extent of staff contact with the patients was not measured. For predicting treatment seeking in a clinical context, a model with stronger effect sizes incorporating nonpatient variables should be explored.

Areas for Future Investigation

A substantial percentage of the individuals in this sample who expressed interest in treatment appeared for further evaluation (60%), suggesting that interest in treatment has some utility as a dependent variable in the study of treatment-seeking behavior. However, differences in findings regarding prediction of treatment interest versus attendance at an evaluation indicate that future investigation of treatment-seeking models must pay greater attention to factors that distinguish intent from action in the realm of treatment seeking. For example, the current study found that reported drug use was associated with intention to seek treatment only, whereas CAGE score was associated with both outcomes. Likewise, being married had a significant, independent effect on treatment interest at Stage 1, but no such effect was observed on patient behavior at Stage 2. Such discrepancies suggest that treatment-seeking models may benefit from greater precision with regard to

the specific outcome being tested. Future investigations should develop greater theoretical and empirical linkages between independent and dependent variables.

Explaining the influence of age on treatment seeking is an important area of future study. As noted above, the factors examined in the proposed model did not entirely explain the negative association between age and treatment-seeking behavior; older age was positively associated with being married, lower CAGE score, and drug use, all factors that were negatively associated with treatment interest. Yet, when these factors were controlled, the effect of age was still significant. These findings indicate that other factors associated with age may contribute to the lower likelihood of older adults seeking treatment. Cohort-linked attitudes regarding substance abuse treatment and the role of physical disability need further study. Future models designed to explain alcohol treatment-seeking behavior by older adults should examine these potentially important variables.

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