PATIENT ATTITUDES TOWARDS SELF-REPORT AND BIOMARKER ALCOHOL SCREENING BY PRIMARY CARE PHYSICIANS

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Abstract — Aims: One of the many barriers to more frequent alcohol screening by primary care physicians is a reported concern that patients may be offended by questions about drinking. However, evidence suggests that patients do not object to alcohol screening and actually expect physicians to ask about lifestyle factors that influence their health. The aim of this study was to provide more detailed information on patient attitudes toward self-report and biomarker alcohol screening and to explore whether demographic variables were related to these attitudes. Methods: We administered (i) a survey about attitudes towards alcohol screening, and (ii) the Alcohol Use Disorders Identification Test-C (AUDIT-C) to primary care outpatients at the time of their medical appointments. The survey contained 10 items on patient opinions about being screened for at-risk drinking by physicians. Participants rated their levels of agreement with each statement using a 5-point Likert scale. Participants also provided demographic information. Results: The majority of patients reported that they were supportive of physician screening about alcohol use. Responses on 3 of the 10 statements were related to patient race, age, and/o AUDIT-C results. Conclusions: In general, results support the fact that patients are in favour of being screened for at-risk drinking by their physicians whether the screening instrument was a self-report measure or an alcohol biomarker laboratory test. In addition, the majority of patients are open to advice from physicians about their alcohol use.

INTRODUCTION

Since 70% of adults consult a general practitioner at least once a year, primary health care is considered an ideal setting for alcohol screening and intervention for alcohol use disorders (Anderson, 1993). In addition, substantial evidence supports the efficacy of brief intervention by physicians in reducing at-risk drinking, alcohol-related morbidity, and overall medical costs (Fleming et al., 2002; Ballesteros et al., 2004). Based on this evidence, the World Health Organization (WHO) and the National Institute on Alcohol Abuse and Alcoholism (NIAAA) recommend that all adult medical patients be screened for heavy drinking once a year.

While over 80% of internists and family physicians report that they usually or always ask new outpatients whether they drink alcohol, adherence to recommended screening guidelines by physicians is limited (Friedman et al. 2000). Less than 20% of primary care physicians routinely use validated self-report alcohol screening instruments [e.g. CAGE questions or the Alcohol Use Disorders Identification Test (AUDIT)]. Fewer than half of physicians ask about maximum alcohol consumption on one occasion (i.e. ‘How many times in the past year have you had five or more (for men)/four or more (women) drinks a day?’), as recommended by NIAAA guidelines. Alcohol biomarker laboratory tests are used rarely, if at all (Miller et al. 2004).

Reasons given by physicians for not following NIAAA-recommended alcohol screening guidelines range from lack of time (Kaner et al., 1999), to insufficient knowledge and skills (Miller et al., 2004), to pessimistic attitudes about the ultimate benefits of screening (Anderson, 1993). A less frequently reported but nonetheless important barrier to routine screening is related to physicians’ concerns about what they perceive to be the sensitive nature of asking about alcohol consumption. Some physicians worry that patients may be offended by questions about their drinking and that asking about drinking is a delicate issue that could damage the patient—doctor relationship (Sillanaukee et al., 1998).

In a survey of primary and specialized health care physicians and nurses in Finland, 32% of the sample considered the discussion of alcohol consumption with patients as interfering with their patients’ lives and not an acceptable practice in medical settings (Kaariainen et al., 2001). Friedman et al. (2000) surveyed a national sample of primary care physicians and psychiatrists in the United States and found that the physician’s concerns about alienating patients by asking about alcohol were associated with low rates of screening and intervention.

The evidence that is available on patient attitudes suggests that patients expect physicians to ask about and monitor lifestyle factors that influence their health (Richmond et al., 1996) and that most patients feel that general practitioners should question them about their weight, smoking, drinking, and fitness (Wallace and Haines, 1984).

In evaluating patient responses to the SCREENER, a brief questionnaire designed to screen for several psychiatric disorders including alcohol and drug abuse, Zimmermann et al. (1994) found that 80–90% of patients were not embarrassed, upset, annoyed, or uncomfortable as a result of these questions. However, patients with a history of mental health treatment experienced negative affect in answering the questions more frequently than those without a mental health treatment history.

A recent exit poll survey found that, of patients who reported being asked or advised about alcohol use (11.6%) by their general practitioner, 81% found the discussion useful (Aalto and Seppa, 2004). Heavy drinkers did not differ in attitude from non-heavy drinkers. Finally, in a survey of inpatient trauma patients subsequent to alcohol screening, the majority reported they were not offended by...
alcohol questions (Schermer et al., 2003). AUDIT scores did not predict whether patients would be offended in this study.

It might be noted that all these studies examined attitudes towards self-report screening and that no published studies currently exist on patient attitudes towards alcohol biomarker laboratory tests (e.g. % carbohydrate deficient transferrin (%CDT), gamma glutamyltransferase (GGT)). Such data are clinically relevant since there is growing interest in the use of newer alcohol biomarkers (e.g. %CDT) in primary care (Miller, 2004; Miller et al., 2004). In addition, in at least one sample of primary care physicians, ~24% expressed reluctance to order biomarker lab tests based on a concern that their patients might object (Miller, et al., 2004).

The purpose of the present study was to further investigate patient attitudes about self-report and biomarker alcohol screening and to explore whether patient characteristics—gender, age, race, education level, and drinking behaviour (as quantified by the AUDIT-C)—predict these attitudes.

**MATERIALS AND METHODS**

**Patient population**

Study participants were recruited from the Family Medicine Center, an outpatient primary care clinic located in downtown Charleston, SC, adjacent to a medical university. The clinic serves as the practice site for the faculty of the Department of Family Medicine. The clinic provides primary care medical services to a mostly black, lower socioeconomic, female population who are covered by Medicaid (government subsidized health insurance).

All adult patients (≥ 18 years) visiting the clinic for appointments during April and May, 2005 were asked by a clinic nurse to volunteer to complete a patient opinion survey for a research study. Patients completed the written survey anonymously (no identifiers were used) while waiting for their scheduled appointments. Time to complete the questionnaire was ~10 min.

A total of 187 consecutive patients had appointments at the clinic during the designated time frame (April and May, 2005) of the study. Every scheduled patient was asked to complete the survey. Of that number, 2% refused, leaving a total of 184 who agreed and who took the survey to the waiting area. Of those, 10% failed to complete the survey, leaving 166 patients. Four patients failed to include information on race so they were excluded from the analysis. Only three of the remaining patients identified themselves racially as ‘other’, with all others being black or white. Since race was a covariate and this ‘other’ racial category was so small, these two subjects were not included in the analysis. Thus, results are based on a total sample of 159 patients.

The study was approved by the Institutional Review Board (IRB) of the Medical University of South Carolina.

**Instruments**

A patient opinion survey containing a list of attitude questions about alcohol screening by physicians was used. These questions, with apparent face validity, were developed by the authors for use in this study. Opinion statements were rated on a 5-point Likert scale, from ‘strongly disagree’ to ‘strongly agree’. Items focused on attitudes about the appropriateness of self-report screening questions (e.g. ‘how much alcohol I drink is personal and confidential and my doctor should not ask me about it’), openness to alcohol biomarker screening (e.g. ‘if my doctor offered me a blood test that could tell if I’m drinking too much for my health, I would want to be tested’), emotional reactions to screening (e.g. ‘I would be annoyed if my doctor asked me how much alcohol I drink’), the appropriateness of advice to reduce drinking (e.g. ‘if my drinking is affecting my health, my doctor should advise me to cut down on alcohol’), and honesty in answering screening questions (e.g. ‘if my doctor asked me how much alcohol I drink, I would give an honest answer’).

In addition, the survey included the Alcohol Use Disorders Identification Test-C (AUDIT-C) (see Table 1), a three-question alcohol screening test adapted from the original AUDIT developed by the World Health Organization for use in primary health care (Bush et al., 1998). The AUDIT-C is a simple, reliable screening tool that focuses on the frequency of drinking, quantity consumed on a typical occasion, and the frequency of heavy episodic drinking (i.e. six standard drinks or more on one occasion). Scores range from 0 to 12. Scores of four or greater indicate a positive screen, requiring more in-depth assessment for abuse and/or dependence.

Participants also provided information on age, gender, ethnic background, and education.

**Data analysis**

Data were stored and all analyses were conducted using SPSS v. 11 (SPSS Inc. Chicago, IL). Frequency analyses revealed a non-normal distribution of responses to each of the 10 survey questions, where the majority of participants responded ‘agree’ or ‘strongly agree’ or, in the case of negative questions, ‘disagree’ or ‘strongly disagree.’ Data were transformed to dichotomous variables which reflected whether the respondent endorsed agreement (agree or strongly agree) or did not endorse agreement (neutral, disagree, or strongly disagree) to each statement. For those items in which

<table>
<thead>
<tr>
<th>Table 1. The alcohol use disorders identification test-C</th>
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<tbody>
<tr>
<td>Score</td>
</tr>
<tr>
<td>---------------------------------------------</td>
</tr>
<tr>
<td>1. How often do you have a drink containing alcohol? Never</td>
</tr>
<tr>
<td>2. How many drinks containing alcohol do you have on a typical day when you are drinking? 1 or 2</td>
</tr>
<tr>
<td>3. How many drinks containing alcohol do you have on a typical day when you are drinking?</td>
</tr>
</tbody>
</table>

A score of four or more indicates a positive screen requiring further assessment for at-risk drinking, alcohol abuse and/or alcohol dependence.
disagreement reflected positive opinions about screening (e.g. ‘how much alcohol I drink is personal and confidential, and my doctor should not ask me about it’), the opposite scoring approach was used (where ‘disagree’ and ‘strongly disagree’ were combined). The percentage of patients responding favourably to each statement based on this transformation served as the dependent dichotomous variable in logistic regression analysis.

To explore whether demographic variables (i.e. age, gender, race, and education level) and/or AUDIT-C scores were predictive of responses to survey items, logistic regression analyses were conducted, with each of the five variables of interest included in the model to determine whether any variable predicted unique variance.

RESULTS

Participants
A total of 159 questionnaires were analysed. Participants ranged in age from 19 to 65 years old.

Table 2 shows respondent demographics and AUDIT-C results. The sample comprised predominantly black women. Most participants (60%) had attended college. Twenty-eight percent of the sample had AUDIT-C scores of four or more, indicating a positive screen for heavy alcohol use.

Independence between demographic variables and AUDIT-C results was also tested using $\chi^2$-tests and Pearson correlation coefficients to examine relationships between these variables. Results revealed significant relationships between race and all other variables, except age. Specifically, women were more likely to be black than white (where men were equally distributed by race), $\chi^2 = 13.05, P = 0.001$. Blacks were equally represented across both education levels, whereas the majority (75%) of whites had some college experience, $\chi^2 = 9.87, P = 0.002$. A smaller percentage of blacks (25%) had a positive AUDIT-C screen result, whereas half of the whites had a positive AUDIT-C screen result ($\chi^2 = 8.41, P = 0.004$). Gender and age were also related to the AUDIT-C screening result, where women were less likely than men to have a positive AUDIT-C score ($\chi^2 = 11.99, P = 0.001$), and positive AUDIT-C scores were more prevalent in younger patients ($r = -0.23, P = 0.004$).

Patient opinions
The majority of patients expressed positive opinions about being screened for alcohol problems. Table 3 shows the percentage of participants who reported favourable opinions (agree/strongly agree, or disagree/strongly disagree, depending on the question) on each statement on the survey. It is noteworthy that the lowest rate of agreement was 71% (where 71% of the sample agreed that a doctor should feel free to order a blood test if s/he thinks a patient’s drinking is adversely affecting their health), reflecting that in general, the majority of patients are amenable and accepting of physicians’ inquiries about their alcohol use.

Predicting patient opinions
To examine whether opinions were related to demographics and/or AUDIT-C scores, logistic regression analyses were conducted on each of the 10 opinion statements. Five predictors were included in the model: age, gender, race (black; white), education (high school education or less; some college or more), and AUDIT-C results (positive or negative). Because of the aforementioned relationships between these predictor variables, the logistic regression models included predictors simultaneously, affording the ability to examine the unique influence of each variable on the criterion (where the influence of all other variables is statistically removed). Any significant predictor in the multivariate model was also examined individually in a post hoc test to confirm that the significant result from the regression analysis was not due to a suppressor effect attributable to the inclusion of other predictors in the model. Only effects that were significant with both analyses are reported below.

Results revealed that responses on seven of the 10 statements were not associated with any of these patient-related variables. The remaining three statements revealed relationships between responses and patient demographics, though not in a unified manner. Results showed that depending on the statement, race, age, and AUDIT-screening results were relevant variables in influencing patient responses. These results are summarized in Table 2.

Specifically, race was independently associated with response to the statement ‘if my doctor offered me a blood test that could tell if I’m drinking too much for my health, I would want to be tested.’ Blacks were four times more likely than whites to agree or strongly agree with this statement (OR = 4.83, CI = 1.29–18.12, $P = 0.02$). Regarding the statement ‘I would be embarrassed if my doctor asked me how much alcohol I drink,’ individuals with a positive AUDIT-C screening were half as likely to reject being embarrassed than individuals with a negative screening result (OR = 0.42, CI = 0.19–0.91, $P = 0.03$). Age was a relevant variable regarding response to the statement ‘if my doctor thinks my drinking is affecting my health, (s)he should feel free to order a blood test to see if I’m drinking too much.’ Patients who agreed with the statement were significantly older than those who disagreed with this statement.

<table>
<thead>
<tr>
<th>Demographic variables</th>
<th>N = 159</th>
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<tbody>
<tr>
<td>Age (years) M (SD)</td>
<td>39.4 (11.9)</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
</tr>
<tr>
<td>% Men (n)</td>
<td>28 (45)</td>
</tr>
<tr>
<td>% Women (n)</td>
<td>72 (114)</td>
</tr>
<tr>
<td>Race</td>
<td></td>
</tr>
<tr>
<td>% Blacks (n)</td>
<td>66 (105)</td>
</tr>
<tr>
<td>% Whites (n)</td>
<td>34 (54)</td>
</tr>
<tr>
<td>Gender and race</td>
<td></td>
</tr>
<tr>
<td>% Black women</td>
<td>53</td>
</tr>
<tr>
<td>% Black men</td>
<td>13</td>
</tr>
<tr>
<td>% White women</td>
<td>18</td>
</tr>
<tr>
<td>% White men</td>
<td>16</td>
</tr>
<tr>
<td>Education</td>
<td></td>
</tr>
<tr>
<td>% High school or less</td>
<td>40</td>
</tr>
<tr>
<td>% Some college or more</td>
<td>60</td>
</tr>
<tr>
<td>AUDIT-Screening</td>
<td></td>
</tr>
<tr>
<td>% Positive AUDIT-C screen</td>
<td>28</td>
</tr>
</tbody>
</table>
Despite these significant effects, it is important to note that for all statements above, the majority of both groups responded favourably to alcohol screening. For example, regarding biomarker blood tests, 92% of blacks and 82% of whites agreed or strongly agreed that they would want to be tested. The largest disparity between groups was found regarding being embarrassed by alcohol inquiries: 18% of individuals with negative screening results vs. 34% of those with positive screening results reported they may be embarrassed by their doctor’s inquiries into how much they drink.

**DISCUSSION**

Results failed to support the common belief among primary care physicians that their patients would reject or be offended by alcohol screening or counselling about alcohol use. Our results showed that ~90% of patients were in favour of screening and guidance about alcohol use. Perhaps the most novel finding of this research (and one that has not been reported previously) is that patients are very positive about the use of biological alcohol markers. Demographic variables and AUDIT-C scores were not related to overall favourable attitudes towards screening. However, they were predictive of attitudes regarding emotional reactions to screening and the use of biomarker lab tests for screening.

Positive AUDIT-C scores (≥ 4) increased the chances that a patient would feel embarrassed by alcohol questions. Perhaps these patients realize they are drinking heavily and are more sensitive about the issue. It may be that patients with any significant problem of a sensitive nature would be more emotional in response to questions about their condition. Indeed, Zimmerman et al. (1994) found that patients with a history of mental health treatment experienced more negative affect in answering mental health screening questions than patients without such a history.

Regarding alcohol biomarker screening, these results provide the first research evidence that the majority of primary care patients would readily accept a blood test to screen for heavy drinking, if suggested by their physician. While black patients were more likely to endorse agreement with being tested by an alcohol biomarker than whites, the vast majority of both groups (i.e. 92% of blacks and 82% of whites) would agree to be tested. In addition, older patients were more likely to agree to biomarker testing than younger ones. In fact, black patients and older patients are more likely to be compliant with physician advice in general, compared with whites and younger patients (Muma et al., 1995; Viller et al., 1999). It is also important to note that age and ethnicity were the only factors related to attitudes about alcohol biomarker testing and that heavy drinkers (i.e. positive AUDIT-C screen) were not less likely to agree to laboratory tests.

Limitations of this study include limited generalizability since the sample consisted mostly of black women. However, in some respects this is a positive feature, since few studies of black women in medical settings have been reported. In addition, due to the pattern of responses, relatively few people expressed rejection of physicians’ inquiries about patient’s alcohol use, so non-parametric analyses were necessary, and the power to examine predictors of group membership was limited. Thus, the differences found between blacks and whites on acceptance of biomarker testing must be considered preliminary. Future studies of this issue with larger samples should clarify this issue.

The results of this study may help to convince physicians that patients are open to alcohol screening and would not be offended by it. Heavy drinkers may have more of a tendency to be embarrassed by such questions but there is no evidence
to suggest that they would object to screening. The majority of patients would also be willing to receive alcohol biomarker blood tests, if their physicians deemed such tests necessary.

Given the ease with which alcohol screenings can be conducted, where neither special skills nor extensive time are needed, primary care physicians have the ability to identify potential alcohol problems in their patients and/or counsel individuals who may be at risk of alcoholism. Mounting data that support the fact that, in general, patients approve of this practice, should encourage physicians to follow WHO and NIAAA guidelines to provide annual alcohol screenings to their patients.

REFERENCES


