Alcohol-Related Problems in Older Persons

Determinants, Consequences, and Screening

Arlene Fink, PhD; Ron D. Hays, PhD; Alison A. Moore, MD, MPH; John C. Beck, MD

Demographic trends reveal the elderly to be the fastest growing segment of the population. Physicians can therefore anticipate encountering increasing numbers of older patients with alcohol-related problems. These problems include liver disease, dementia, confusion (masquerading as dementia), peripheral neuropathy, insomnia, late-onset seizure disorder, poor nutrition, incontinence, diarrhea, myopathy, inadequate self-care, macrocytosis, depression, fractures, and adverse reactions to medications. Despite the prevalence of alcohol use in older people, their risks and problems are often unrecognized. We reviewed published literature on the determinants and consequences of alcohol-related problems in persons aged 65 years and older and the usefulness of available screening measures. Thirteen of 25 eligible studies on determinants and consequences met quality criteria and were reviewed. Nine additional studies on screening tests were also evaluated. Determinants include history of alcohol use and abuse, social isolation, and reduced mobility; consequences consist of risks of hip fracture from falls, neoplasms, and psychiatric illness. Currently accessible screening tests focus on high levels of alcoholic beverage use and abuse and dependence. They are not useful in screening for hazardous consumption that may result from relatively low levels of alcohol use alone or in combination with medications, medical illness, or preexisting diminished physical, emotional, or social function. Research is needed on the consequences of lower levels of alcohol consumption on the physical and psychosocial health of older individuals and on methods for distinguishing alcohol-related from age-related problems. Existing screening tests should be expanded or new screening methods developed in anticipation of a growing public health problem.

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The elderly represent the fastest growing segment of the US population. The 1990 census counted 31.1 million people aged 65 years and older (12.5% of the total population). By 2030, there will be about 70 million older persons, more than twice their number in 1990. People aged 65 years or older are projected to represent 13% of the population in the year 2000, but will be 20% by 2030. At the same time, evidence is accumulating that alcohol-related problems are by no means a rare occurrence among persons living to their seventh decade and beyond. Some investigators have found that the prevalence of alcoholism declines after age 65 years. Others have concluded that aging is not as important a factor in determining drinking behaviors as generational attitudes and that future cohorts will have sharply increased rates of drinking problems.

Alcohol-related problems are those problems that may arise in individuals because of their consumption of alcoholic beverages and that require an appropriate treatment response for their optimum management. The manifestation of
alcohol-related problems may take physical and psychosocial forms, and in older persons include alcoholic liver disease, alcoholic dementia, peripheral neuropathy, depression, insomnia, loss of libido, late-onset seizure disorder, confusion (masquerading as dementia), poor nutrition, incontinence, diarrhea, myopathy, congestive heart failure, inadequate self-care, hypertension, fractures, macrocytosis, and adverse reactions to medications because of an alcohol-drug reaction. About 10% to 15% of elderly patients seeking medical help for any reason have an alcohol-related problem.

Estimates of the prevalence of alcohol-related problems among the elderly depend on how the problems are defined and measured and on the demographic characteristics and geographic and clinical location of the population studied. Prevalence estimates range from 1% to 6% in community-dwelling populations, from 7% to 22% in elderly persons hospitalized for medical reasons, and from 28% to 44% in older persons admitted to psychiatric units. The 1988 National Health Interview Survey estimated the 1-year prevalence of alcohol disorder (abuse or dependence, as defined by the Diagnostic and Statistical Manual of Mental Disorders, Third Edition (DSM-III) (3)) to be approximately 1.4% (392,000 persons) among those aged 65 years and older. A study of 1989 hospital claims data from the Health Care Financing Administration found 87,147 alcohol-related hospitalizations among elderly Medicare beneficiaries. In 33,039 (38%) of the cases, an alcohol-related diagnosis was the primary diagnosis listed. Alcohol-related hospitalization rates in that year were similar to those for patients with myocardial infarction; the associated Medicare charges for all admissions where the primary diagnosis was alcohol-related totaled more than $233 million.

Despite the prevalence of alcohol-related problems, they often go unrecognized or untreated in older persons, suggesting the need for increased routine use of screening tests and improved physician education. Detecting alcohol-related problems in the elderly is often difficult because the symptoms may be confused with common medical conditions. An older alcohol abuser may be identified as demented, for example, and the patient's treatment directed incorrectly toward dementia rather than alcoholism. Alcohol abuse appears to be less common among elderly trauma patients than among their younger counterparts, but more common among older patients with gastrointestinal problems. Older persons who drink alcohol, take nonsteroidal anti-inflammatory drugs for arthritis, and also have abdominal pain may be treated for nonsteroidal anti-inflammatory drug-induced gastropathy; the contribution of alcohol may be overlooked. Finally, traditionally used indicators of alcohol-related problems tend to focus on social, work-related, or legal concerns, and these may be not as relevant to older adults as to men and women who are still in the workforce.

Given current demographic trends, physicians and other health professionals can anticipate caring for increasing numbers of older people with alcohol-related problems whose medical conditions will be caused or exacerbated by drinking or whose medical management will be made more difficult. A better understanding of alcohol use in older people is necessary to effectively address the medical and psychosocial consequences of alcohol-related problems in this growing segment of society. In this article, we report on a review of the literature on the determinants and consequences of alcohol-related problems in the community-dwelling elderly and on the characteristics and usefulness of available screening instruments in detecting alcohol-related problems in older persons.

**METHODS**

We searched MEDLINE and PsychINFO using the following search terms: alcohol and elderly, alcoholism and elderly, alcohol abuse and elderly, alcohol abuse and aging, problem drinking and elderly, alcohol problems and elderly, substance abuse and elderly, and determinants of alcohol use, elderly and consequences of alcohol use, psychometrics and alcohol abuse, psychometrics and problem drinking, psychometrics and substance abuse, alcohol screening, and alcohol detection and elderly. We identified 401 unique citations with these terms. After reviewing their abstracts, we omitted 67 that did not address alcohol use or studied the effects of alcohol in animals. The remaining 334 articles were potentially eligible for review.

**INCLUSION AND QUALITY CRITERIA**

**Determinants or Consequences**

Of the 334 articles, we identified 18 articles that met 3 criteria: (1) provided data on the determinants and consequences of alcohol use in persons aged 65 years or older, (2) relied on new data or a systematic reanalysis of existing databases, and (3) collected data anytime between 1966 (the start of MEDLINE) and May 1995. A review of the references cited in these 18 articles increased the total number to 25.

We defined the term determinants as those social, emotional, and physical characteristics of older persons predictive of alcohol use; we defined consequences as the effects of alcohol use on functioning and well-being (health status). For studies on the determinants and consequences, we set the following 8 criteria for methodologically convincing and pertinent research: (1) Key terms are defined; these include alcoholism, heavy drinking, problem drinking, alcohol abuse, alcohol dependence, and alcohol-related problems. (2) Psychometric evidence is offered to demonstrate that the instrument used to study alcoholism, heavy drinking, problem drinking, alcohol abuse, alcohol dependence, and alcohol-related problems is pertinent to persons aged 65 years or older. (3) The study data are collected prospectively. (4) The sample is obtained randomly from a specifically defined population or the entire eligible population is chosen. (5) The choice of sample size is explained. (6) The adequacy of the response rate is discussed. (7) Information is offered that is specifically pertinent to alcohol-related problems in older persons. The information may include guidance for distinguishing between problems.
### Table 1. Achievement of Criteria for Quality

<table>
<thead>
<tr>
<th>Criteria</th>
<th>References</th>
</tr>
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<tbody>
<tr>
<td>Key terms are defined; these include alcoholism, heavy drinking, problem drinking, alcohol abuse, alcohol dependence, and alcohol-related problems</td>
<td>16, 18, 21, 35, 37, 39, 43</td>
</tr>
<tr>
<td>Self-reported quantity and frequency</td>
<td>18, 34, 35, 39, 41-43</td>
</tr>
<tr>
<td>Other alcohol-detection measures such as laboratory tests</td>
<td></td>
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<tr>
<td>Psychometric evidence is offered to demonstrate that the instrument used to study alcoholism, heavy drinking, problem drinking, alcohol abuse, alcohol dependence, and alcohol-related problems is pertinent to persons 65 years or older</td>
<td>34, 36, 43</td>
</tr>
<tr>
<td>The study data are collected prospectively</td>
<td>16, 18, 21, 34-38, 40-43</td>
</tr>
<tr>
<td>The sample is obtained randomly from a specifically defined population or the entire eligible population is chosen</td>
<td>16, 18, 21, 34-43</td>
</tr>
<tr>
<td>The choice of sample size is explained</td>
<td>None</td>
</tr>
<tr>
<td>The adequacy of the response rate is discussed</td>
<td>16, 21, 34, 35, 37, 38, 40, 43</td>
</tr>
<tr>
<td>Information is offered that is specifically pertinent to the alcohol-related problems of older persons</td>
<td>18, 21, 34, 36, 40-42</td>
</tr>
<tr>
<td>The researchers provide psychometric evidence for the validity of the data sources used for the main variables (e.g., an index of quantity and frequency of alcohol consumption) or outcomes (social isolation, health status)</td>
<td>34, 43</td>
</tr>
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*Studies meeting the criteria.

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**RESULTS**

**DETERMINANTS AND CONSEQUENCES**

Thirteen studies achieved a quality score of 4 or more, with an average of 5.1 (Table 1). No single study met all criteria for high quality, although 12 collected data prospectively. Nine studies were published between 1990 and 1994. Studies were conducted in diverse settings. Four studies were conducted outside the United States; 4 in rural areas, and 10 among the community-dwelling elderly.

The literature relies on differing measures of alcohol use and its impact. Two studies focused on alcohol abuse. Abuse was determined by using laboratory markers such as platelet count, hemoglobin, and mean corpuscular hemoglobin levels, mean cell volume, and aspartate aminotransferase, uric acid, and serum albumin blood levels; quantity and frequency of consumption, or scores on a 4-item screening questionnaire. One investigation examined elderly men for whom a diagnosis of alcoholism was made to find if any of the following difficulties occurred in relation to alcohol: a job layoff or inability to carry out usual activities, a marital separation or divorce; or more nontraffic arrests; or a physician's diagnosis of harm to health caused by alcohol. Two studies examined drinking problem in...
1 study, drinking problem was defined by scores on a 17-item index covering general problems caused by drinking such as being intoxicated or drunk and feeling confused after drinking; alcohol dependence or withdrawal symptoms; and adverse consequences or life problems that result from excessive drinking. A second study, concerned with drinking problem, defined it as a self-acknowledged history of heavy drinking. Other articles investigated patterns of use (including how much, how often, and where)—persons whose drinking put them at risk of adverse drug interactions; reasons for drinking; concurrent use of medications and alcohol; and the relationship between drinking and hip fracture, coronary artery disease and stroke, and psychiatric morbidity.

Ten articles used measures of the quantity and frequency of consumption; 7 also used other methods including laboratory tests and screening instruments such as the CAGE questionnaire and the Michigan Alcoholism Screening Test (MAST). The CAGE questionnaire is a mnemonic for 4 questions: (1) Have you ever felt you should Cut down on your drinking? (2) Have people Annoyed you by criticizing your drinking? (3) Have you ever felt bad or Guilty about your drinking? (4) Have you ever had a drink first thing in the morning to steady your nerves or get rid of a hangover (Eye-opener)? The MAST consists of 24 yes or no questions such as, “Have you ever neglected your obligations, your family, or your work for 2 or more days in a row because you were drinking?” Two shortened versions of the MAST are also available: a 10-item brief MAST (BMAST) and a 13-item short MAST (SMART). Two articles offered psychometric evidence of the appropriateness of the alcohol measures they used in the elderly.

One study found men and women reporting that differing types of stresses lead them to drinking, with men emphasizing financial problems and women specifying negative life events such as divorce and death. Forster et al studied older persons in the community and found that the individuals most likely to place themselves at risk for alcohol-related drug reactions are taking over-the-counter analgesics. They also warn about the unpredictable effects of antihypertensive drugs, particularly β-blockers (e.g., propranolol, atenolol) with the ingestion of alcohol.

Alcohol consumption, especially if heavy and also long-term, appears to increase the risk of hip fracture from falls, fatal and nonfatal malignant neoplasms, and psychiatric morbidity. The Honolulu Heart Program found that light (1-14 mL) to moderate (15-39 mL) alcohol consumption each day in Japanese-American elderly men is associated with a trend for lower rates of occurrence of combined fatal and nonfatal coronary heart disease. The same study also found, however, that light to moderate drinkers are at increased risk for fatal and nonfatal strokes.

**SCREENING INSTRUMENTS**

Table 2 describes 9 articles that examine instruments that screen for alcohol problems in older persons. These studies were conducted in a range of settings including the Veterans Administration and academic medical centers. Five of the 9 studies focused on the MAST or CAGE. Other instruments studied included the Habitual Alcohol Use Questionnaire, diary measures, and the Concordia Lifetime Questionnaire, a measure of current and lifetime alcohol use. In choosing a “gold standard” to measure alcohol abuse and dependence, 2 studies relied on DSM-III criteria and 1 on DSM-III-Revised criteria.

Willebringt et al studied the validity of the original MAST, the BMAST, the SMART, and a unit-scoring version of the MAST (UMAST). The MAST and UMAST were found to be more sensitive in detecting elderly alcoholics in a Veterans Administration alcoholism unit than the BMAST and were more specific than the SMART. Moran et al compared the MAST with a 2-item screen that asked: Have you ever had a drinking problem? When did you have your last drink? Neither distinguished the MAST nor did the 2-item screen distinguish active from recovering alcoholics. The CAGE (like the MAST) does not distinguish between past and present drinking and so did not distinguish active from inactive elderly drinkers in an outpatient urban setting; to do so requires supplementing the CAGE with a question about when the person had the most recent drink. Buchsbaum et al found that the CAGE can effectively discriminate between elderly...
patients with a history of drinking problems from those without such a history. According to Buchsbaum et al, the chosen cutoff score should consider the prevalence of drinking problems in the population being tested. In a population with a high prevalence, Buchsbaum et al recommend using a score of 1 or more rather than the traditionally used score of 2. Jones et al confirmed CAGE’s usefulness by finding that it was significantly more effective than the MAST in discriminating between elderly medical outpatients at an academic medical center with and without alcohol abuse and dependence. Fulop et al, however, studied outpatients and found that neither the MAST nor the CAGE added new information to the geriatrician’s clinical assessment regarding their patients’ alcohol problems.

The Habitual Use Questionnaire, the 7-day diary, and the Concordia Lifetime Questionnaire collect data on lifetime patterns of drinking (Table 3). No screening measure focuses on identifying older persons with active health problems caused or exacerbated by alcohol consumption or those at risk for adverse drug reactions regardless of the level of consumption.

**COMMENT**

**DETERMINANTS AND CONSEQUENCES**

The published literature on the determinants and consequences of alcohol-related problems in older persons relies on small samples and measures that have not been validated in the elderly. Many issues especially pertinent to older persons are addressed by only a few studies. Seven of the reviewed articles studied health and psychosocial determinants or consequences, but just 1 article focused on the relationship between alcohol and medication use. The paucity of information on this topic is unfortunate because relatively low levels of alcohol consumption may interact with any of the 100 medications, and the elderly are relatively large consumers of medication. In a community-based sample of elderly persons, 25% used alcohol and 1 drug and 1% used alcohol and more than 1 drug.

According to our review, the determinants of alcohol-related problems in the elderly include a history of alcohol use or abuse, social isolation, being male, single, and relatively well educated. The consequences of heavy and long-term alcohol consumption consist of an increased risk of hip fracture from falls, fatal and nonfatal malignant neoplasms, strokes, and psychiatric illness. Light to moderate drinking is associated with lower rates of coronary heart disease. The extent to which psychosocial factors, such as financial difficulties and retirement, precipitate problems related to alcohol has not been established because of insufficient empirical evidence.
The elderly alcohol abuser is clearly different from other older age psychiatric or medical patients, with increased risks at all levels of consumption for medical and psychiatric problems. Analysis of the 1988 National Health Interview Survey data showed that, controlling for education and gender, older individuals have a higher risk of meeting criteria for alcohol dependence at a given level of alcohol consumption than do younger individuals. Although the review found that men drink more than women, attitudes are changing and increases in the prevalence of female drinkers (especially among those who begin drinking after age 40 years) are forecasted.

More research is needed on the consequences of lower levels of alcohol consumption on the physical and psychosocial health of older men and women. Numerous studies have found that light to moderate drinkers of alcoholic beverages have lower mortality rates than either nondrinkers or heavier drinkers. In one study, light to moderate alcohol consumption has been positively correlated with bone mineral density in males and females, particularly in postmenopausal women, suggesting that lower consumption levels may help reduce the incidence of osteoporosis. The contribution of other lifestyle variables such as exercise and diet in improving health and their relationship to alcohol consumption among older persons needs to be examined.

SCREENING INSTRUMENTS

Screening instruments for the elderly generally aim to detect alcohol abuse and dependence or alcoholism and do not cover other problems that are important in older persons. The 2 most commonly used screening tests, the CAGE and the MAST, do not distinguish active from inactive drinking and may not augment the physician's clinical assessment of the patient's drinking behavior and problems. The CAGE has been shown to be significantly more effective than the MAST in discriminating between medical outpatients with and without alcohol abuse and dependence, but in a study of frail, homebound elderly the CAGE was only 60% sensitive in detecting alcohol problems; the MAST was even less sensitive and considered tedious.

None of the available screening measures aims to specifically distinguish between early- and late-onset drinkers. About one third of alcoholics aged 65 years and older are late-onset drinkers. Perhaps most important, none of the available instruments aims to identify lower levels of consumption that might be dangerous despite the potential for problems that may arise when an older person's consumption of low levels of alcohol interact with drug use and disease.

We recommend that future screening measures focus on identifying elderly persons whose use of alcohol has put them at risk for decreased physical and psychosocial functioning and drug-alcohol interactions regardless of their level of consumption. The World Health Organization, Geneva, Switzerland, has addressed the consequences of drinking smaller amounts of alcohol, although the elderly have not been the focus of their efforts. The World Health Organization distinguishes between hazardous alcohol consumption, which confers the risk of physical or psychological harm, and harmful alcohol use (an ICD-10 [International Classification of Diseases, 10th Edition] Classification of Mental and Behavioural Disorders: Clinical Descriptions and Diagnostic Guidelines, 10th Revision diagnosis), which is defined by the presence of physical or psychological complications. The ICD-10 and the DSM-IV criteria are available as gold standards for assessing alcohol abuse and dependence (harmful use). Gold standards for assessing hazardous use, as defined by the World Health Organization and meaning risk of harm, still need to be developed. One possible means of setting standards is to adapt the techniques that have been applied by the National Institutes of Health Consensus Development Conferences and the clinical practice guidelines and appropriateness-of-care movements.

LIMITATIONS

The findings of our literature review are necessarily circumscribed by our definitions, methodological standards, and scoring systems. We have, however, tried to adhere to current standards for high-quality literature analyses. It is generally conceded that to be of value, a literature review must be systematic, quantitative, reproducible, and accompanied by a full record of the methods. The methods include an examination of how articles were identified and selected, descriptions of the data obtained from the articles, and explanations of the techniques that were used to evaluate the data. We have attempted to meet these standards.

CONCLUSIONS

Although the literature provides insights into the determinants and consequences of alcohol use in the elderly, research is needed that identifies the effects of light to moderate consumption of alcoholic beverages and provides guidance in distinguishing alcohol-related problems from age-related problems. Currently accessible measures have not been developed to screen for the spectrum of hazardous to harmful alcohol use and many physical and psychosocial disorders that characterize older drinkers. The available screening measures should be expanded or new psychometrically sound and clinically useful instruments must be developed to meet the needs of this growing segment of the population.

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