



Transaction Number: 343881

Brandie Pugh - bpugh

Journal Title: Journal of Behavioral Medicine

Volume: 18

Issue: 2

Month/Year: 1995

Pages: 127-140

Article Author: Sheahan et al.

Article Title: Psychoactive Medication, Alcohol Use, and Falls among Older Adults

Printed: 8/4/2014 1:58 PM

Article DELivery Service

Call #: R726.5 .J68

Location: MAIN_GEN

This document has been provided by:

Article
DELivery Interlibrary Loan
Service University of Delaware Library

Please contact the ILL Office promptly to report any problems with this scan. The ILL Office is open Monday through Friday, 8:00 A.M. - 5:00 P.M.

Phone: 302-831-2236
Email: ill@winsor.lib.udel.edu

**This material may be protected by copyright law
(Title 17 U.S. Code).**

Psychoactive Medication, Alcohol Use, and Falls Among Older Adults

Sharon L. Sheahan,¹ Stephen Joel Coons,² Cynthia A. Robbins,³
Steven S. Martin,⁴ Jon Hendricks,⁵ and Melissa Latimer⁶

Accepted for publication: September 14, 1994

The purposes of this study were to determine: (1) the prevalence of psychoactive medication and alcohol use and (2) the relationship among psychoactive medications, alcohol use, and falls in a sample of 1028 independently living women and men, aged 55 and older. Twenty-six percent of the sample reported falling, 28% were taking one or more psychoactive drugs, and 38% drank alcohol during the past year. Analyses with logistic regression indicate that predictors of falls were psychoactive drug use, age, and number of illnesses. Living alone, frequency of alcohol use, and gender were not significant predictors.

KEY WORDS: falls; medication; psychoactive; alcohol; elderly.

INTRODUCTION

Falls and accidents associated with medication and alcohol use are a potential health and safety problem for persons aged 55 and over. This problem will likely escalate with demographic trends, leading to an aging work force and an increase in older adults living alone (Tinetti *et al.*, 1988;

This study was supported, in part, by Grant AA0859 from the National Institute of Alcohol Abuse and Alcoholism and by Grant DA05312 from the National Institute on Drug Abuse.

¹University of Kentucky, College of Nursing, Lexington, Kentucky 40536-0232.

²University of Arizona, College of Pharmacy, Tucson, Arizona 85721.

³University of Delaware, Department of Sociology, Newark, Delaware 19716.

⁴University of Delaware, Center for Drug and Alcohol Studies, Newark, Delaware 19716.

⁵Oregon State University, Department of Sociology, Corvallis, Oregon 97331-3703.

⁶West Virginia University, Department of Sociology & Anthropology, Morgantown, West Virginia 26505.

Gibson *et al.*, 1987). The purposes of this study were (1) to determine the prevalence of psychoactive medication and alcohol use and (2) to examine the relationship between psychoactive medications and alcohol use and self-reported falls among a group of community and congregate dwelling older persons.

A review of the literature on community samples suggests that one-third of noninstitutionalized persons over age 65 experience one or more falls per year (Campbell *et al.*, 1989; Blake *et al.*, 1988; Tinetti *et al.*, 1988; Kennedy and Coppard, 1987; Perry, 1982; Campbell *et al.*, 1981; Prudham and Evans, 1981; Gryfe *et al.*, 1977). The probability of falling increases as individuals get older (Tinetti, 1990; Tinetti *et al.*, 1988; Kennedy and Coppard, 1987; Campbell *et al.*, 1981). Injury is the sixth leading cause of death for persons aged 65 and over, and most of these fatalities result from a fall (Campbell *et al.*, 1990). Physical changes associated with aging such as decreased vision and agility can be compounded by the neurological adverse effects of psychoactive medications, alcohol use/abuse, other medications, or the combination of drugs and alcohol and lead to increased risk of falls for the older person.

The exact incidence of alcohol misuse among the elderly is difficult to determine, as the symptoms of alcohol use and misuse among older persons are often unrecognized or attributed to the aging process (Gordis, 1992). Alcoholism among the elderly is estimated to range from 5–10 to over 60% in high risk institutionalized persons (Widner and Zerhner, 1991). Gender differences are apparent, with males reporting more alcohol-related problems than females. Alcohol use among older women remains a covert problem, but there appears to be a pattern of sex role convergence of alcohol consumption (Robbins, 1991). Regardless of the amount of alcohol consumption, when alcohol is added to the equation of multiple medications and aging-related disabilities, the likelihood of a fall-sustained injury is increased. The use of prescription medications with psychoactive properties (e.g., sedatives/hypnotics, anxiolytics, tranquilizers, antidepressants, or narcotic analgesics) combined with alcohol is a dangerous combination that can potentiate falls.

In terms of psychoactive medications, older persons consume a disproportionate share compared with other age groups. Per capita psychoactive prescription rates for older persons are two to three times greater than for younger counterparts (Robbins and Clayton, 1989; Miller and Gold, 1989). In all categories of psychoactive drug prescriptions, persons over age 50 are overrepresented. Moreover, a significant percentage of those 65 and older is likely to receive an inappropriate drug, most often a psychoactive one (Wilcox *et al.*, 1994). Overall, women age 45 to 64 report higher levels of psychoactive medication use (Robbins and Clayton, 1989), as well as women 65 and over (Wilcox *et al.*, 1994).

Along with increased prescribed use of these drugs, rates of nonmedical use (*inappropriate use, including informal self-medication with drugs often obtained by swapping or hoarding*) among this population have increased. Data from the 1985 National Household Survey on Drug Abuse, dealing with the use of sedatives, hypnotics, analgesics, and tranquilizers, indicate that there has been a significant rise in the lifetime non-medical use of these drugs among older persons (NIDA, 1988). Data from subsequent Household Surveys show the rate has remained high (NIDA, 1993), suggesting, perhaps, that the group of cohorts, who used illegal drugs and alcohol in their youth, may resort to use of psychoactive drugs and/or alcohol in an effort to cope with life events as they age (Sheahan *et al.*, 1989).

The association of psychoactive medication use with falls among the non-institutionalized elderly has been well documented (Campbell, 1991; Cwikel, 1992; Trewin *et al.*, 1992; Ray *et al.*, 1989, 1991). For a variety of reasons, older adults are particularly sensitive to the adverse side effects, such as diminished sensorium, dizziness, syncope, and orthostatic hypotension, produced by these substances. These reasons, include, but are not limited to, the multiple medications consumed and age- and disease-related changes in the body's ability to metabolize and excrete medications and alcohol.

Another aspect of the problem is that all too frequently older persons take more than one psychoactive medication at a time (Chrischilles *et al.*, 1990; Gurwitz, 1994). Some older persons may be taking a narcotic analgesic along with a tranquilizer or antidepressant. The potential for adverse drug interactions is compounded by the addition of an anti-hypertensive agent or other medications and whatever amount of alcohol is consumed. Researchers have found that single elderly men were more likely to use psychoactive drugs in combination with alcohol (Robbins, 1991).

Several researchers have demonstrated a relationship between the types of medications consumed and the likelihood of experiencing falls. A survey of 2793 persons aged 65 and over in England found that those who had fallen in the past 12 months were more likely to be taking diuretics or tranquilizers (Prudham and Evans, 1981). Sorock and Shimkin (1988) found that continuous (nightly) use of benzodiazepines was associated with an increased risk of falling among individuals in their sample of community-dwelling elderly. Ray and associates (1991) found an association between the use of cyclic antidepressants and the risk of falls and hip fractures among older adults. In a review of 4501 medical records of persons who had fallen and sustained hip fractures with 24,042 controls, these researchers found that persons taking antidepressants had a 1.6 relative risk for falls and hip fracture. This finding held true for 167 cases that were reviewed including controls for body mass, impaired ambulation, and functional status.

Rates of overt alcoholism among the elderly vary from 2 to 10% (Widner and Zerhner, 1991; Robbins, 1991). The exact incidence of alcohol misuse among older persons is difficult to determine for a variety of reasons. Families and medical providers often overlook misuse patterns and attribute symptoms of alcohol misuse to the effects of age itself. Of greater importance than actual misuse is the fact that even a small amount of alcohol interacting with other medications may create a significant risk for falls and accidents.

This study goes beyond previous work in looking at the effects on falls of both psychoactive medication and alcohol in a multivariate context. It looks at the possibility of both cumulative and synergistic effects of medication and alcohol use. It also examines the effects in non clinical samples, looking for gender differences and comparing outcomes for a sample of community dwellers and a sample living in congregate residential facilities.

METHODS

Sample

The data for this study were collected for a National Institute of Alcohol Abuse and Alcoholism funded project investigating social factors, medication, and alcohol use among the elderly. The study sample consists of 1028 randomly selected independently living persons age 55 and over who live in a southeastern city of 230,000 persons. Five hundred four participants were randomly selected from a list of all individuals residing in the 13 congregate care facilities in the city. For the congregate care facilities, approximately every third resident was recruited to participate via an introductory letter followed by an interviewer visit to the apartment. The remaining 524 community dwelling participants were selected by randomized multistage cluster sampling of households. Community participants were selected by dividing the city into 20 census tracts, with house numbers randomly drawn in each sector. After a random start, every third house was approached until the quota of eligible persons for that sector was recruited. Initial plans to oversample males included a computer generated Kish table designed to indicate a male 70% of the time. Due to the lower male to female ratio of elderly individuals and a higher male refusal rate, in practice all available males were solicited. The overall participant refusal rate was 15%.

Procedure

Experienced middle-age female interviewers conducted one hour interviews in the participant's home. The interviewers attended a training session on the nuances of eliciting information about medication and alcohol use/abuse. The interview schedule included the Multidimensional Functional Assessment of Older Adults; the Duke Older Americans Resources and Services Procedures (OARS) instrument (Fillenbaum, 1988), which deals with a range of social and health related questions; a series of questions that elicited detailed medication use patterns (name of drugs and frequency taken during the past year); alcohol-related questions from the National Household Survey questionnaire (National Institute on Drug Abuse, 1988); and a variety of demographic and health questions.

Measures to insure medication data collection reliability and validity were implemented by having the interviewers copy the exact prescription from the medication container label. In the few instances when the container was not available (<2%), the respondent provided the information from memory. All medication and health condition responses were reviewed for congruence by a graduate nurse-practitioner student. This person classified the medications into therapeutic categories, such as tranquilizers/anxiolytics, sedatives/hypnotics, prescription pain analgesics, and antidepressants. Classifications were reviewed by a pharmacy professor. Additional validity checks were made by randomly comparing medication classifications with interview schedule entries and by comparing medications with stated health conditions.

Measures

The dependent *falls* variable was measured by asking the respondent, "Have you fallen in the past year?" (yes/no) and "How many times?" There were no significant differences in number of falls reported between community and congregate samples. Because the falls variable had minimal variance with a few outliers, and because a serious fall would preclude the likelihood of additional falls, just the dichotomous variable (0 = not fallen, 1 = fallen) was used in subsequent analyses.

The first independent variable is prescription psychoactive medications. These medications included sedatives/hypnotics (e.g., clorazepate, temazepam, flurazepam, triazolam), anxiolytics/tranquilizers (e.g., diazepam, lorazepam, hydroxyzine HCl, chlordiazepoxide), antidepressants (e.g., trazodone HCl, amitriptyline, nortriptyline HCl, lithium), and prescription

pain medications (e.g., codeine, propoxyphene,). These medications were summed to become the *number of psychoactive drugs* variable. Another psychoactive medication variable was derived from the frequency (days) the respondent reported taking the psychoactive drug during the past year. The original ordinal measure (1 = less than 7 days, 2 = 7 to 30 days, 3 = 30 to 100 days, 4 = 100 to 300 days, 5 = 300 days or more) was recoded to the midpoint of the category to approximate the number of *days of psychoactive drug use*.

Alcohol consumption was measured by asking the respondent the approximate number of days they consumed one or more alcoholic drinks (beer, wine, coolers, spirits) during the past year. In the interview, this question came after a series of questions on drinking in the past month. Respondents were asked to characterize their drinking in terms of what was most appropriate to their actual pattern of consumption by giving the average number of times per week, per month, or per year. To be consistent with the psychoactive drug frequency variable, these answers were recoded to approximate number of drinking days in the past year. Although this frequency measure is not precise in terms of actual *number of drinking days* in a year, or ideal in that it misses the potential for occasional "binge" drinking, the ordinal nature and the approximation of magnitude in days provides for a more appropriate test of the hypothesized effects and comparability with the medications measures.

Another measure of alcohol effects was derived from responses to questions dealing with 19 behaviors commonly associated with alcohol problems (e.g., a relative, friend or spouse told you to cut down on drinking, you felt cross or aggressive while drinking, you got into an argument while drinking). Finally, respondents were queried in a nonjudgmental manner about their simultaneous use of medication with alcohol by asking, "Sometimes people drink . . . and also use some medication on the same occasion. . . . In the past 12 months did you ever use (sedatives/ sleeping pills, tranquilizers-antianxiety, stimulants, pain-medications, antihistamines/cold pills) at the same time or within a couple hours of using alcohol?"

Information about physical health was elicited in a systems review of 23 common health conditions associated with this age group, including heart disease, hypertension, arthritis, and diabetes. Respondents also were asked about any other health problems. The number of reported health conditions was summed to create the *number of illnesses* variable.

Living arrangements were measured as a dichotomous variable, with all persons who were living *alone* coded as 1 and all persons sharing a household with another individual coded as 0. The other two demographic variables included in the analyses are *gender* and *age* in years.

RESULTS

Descriptive Characteristics and Bivariate Results

Table I reports some sample characteristics for the total and for the congregate and community samples separately. Respondents were predominately female (73%), white (83%), single (73%), and living alone (65%). The sample demographics are comparable to the national population for this age group (U.S. Census, 1990). The mean age was 74 with the congregate living persons being slightly older (77) compared to the community sample (70). Respondents had a mean income of \$11,000, and the mean and median educational level was a high school education. Ten of the 13 congregate care facilities were federal subsidized housing units, with the stipulation that residents could not have an annual 1989 income over \$18,550. Residents of the other three facilities had to have an income of at least \$20,000.

Twenty-six percent ($n = 266$) of the sample reported falling during the past year (mean = .55; range, 0–50 times). Twenty-eight percent of the sample reported taking one or more psychoactive drugs (range, 0–5) during the past year. The category distributions of the psychoactive drugs for the sample were as follows: tranquilizers, 13% ($n = 138$); prescription analgesics, 10% ($n = 106$); sleeping medications, 5% ($n = 49$); and antidepressants, 6% ($n = 62$). Gender differences were found, with females taking more psychoactive drugs than male counterparts (t -test = 2.72, 568 df, $p = .007$). Of psychoactive drug users, 26% were taking more than one psychoactive drug. Congregate care residents used more psychoactive drugs (mean = .48) than community-dwelling persons (mean = .29) (t -test = 4.21, 939 df, $p = .000$). The congregate care persons were also significantly more likely to be heavy users, with 10% using more than one drug, compared to 5% in the community group ($\chi^2 = 10.07$, 1 df, $p = .002$). Twelve percent of the sample reported using a psychoactive drug 300 days or more during the past year.

Thirty-eight percent ($n = 391$) of the sample reported using alcohol on one or more occasions (mean = 41) during the past year, with a range from no drinks to 47 persons (4.6% of the sample) who drank daily. Six percent ($n = 58$) reported they had one or more problems associated with alcohol, with 5% stating they had been "high or drunk" on one or more occasions during the past year. Males were more likely than females to drink alcohol and report an alcohol associated problem such as medical complications or impaired social relationships. Community-dwelling participants reported more drinking days (mean = 57) than congregate residents (mean = 24) (t -test = 5.15, 860 df, $p = .000$). Reports of simultaneous use of alcohol and medications were very rare (2% of the sample), and there were no significant differences by gender or dwelling status.

Table I. Frequencies, Means,^a and Standard Deviations of Model Variables by Sample and Place of Residence

	Full sample (<i>n</i> = 1028)	Congregate sample (<i>n</i> = 504)	Community sample (<i>n</i> = 524)
% using psychoactive drugs	28.0%	33.0%	22.3%
No. of psychoactive drugs	0.38 (0.38)	0.48 (0.81)	0.29 (0.62)
Days of psychoactive drug use	63.23 (172.58)	85.39 (204.42)	42.03 (131.81)
Drinking	38.0%	29.0%	46.6%
No. of drinking days	40.28 (102.85)	24.29 (73.37)	56.63 (122.80)
Ill	92.0%	95.0%	89.1%
No. of illnesses	3.36 (2.30)	3.81 (2.37)	2.83 (2.14)
Age	73.52 (9.47)	76.91 (9.02)	70.23 (8.70)
Fallen	26.0%	29.6%	22.5%
No. of falls	0.55 (2.13)	0.66 (2.76)	0.45 (1.25)
Female	73.1%	83.1%	63.4%
Alone	64.9%	91.3%	39.3%

^a Means are listed second, with standard deviations in parentheses.

Respondents reported a range of 0 to 14 illnesses, with an average of slightly over three illnesses (3.4) per person. Eighty-two persons (8%) reported no illnesses, and 40% reported four or more health problems. Results indicate that congregate care residents (mean = 3.8) had significantly more illnesses than community counterparts (mean = 2.9) (t -test = 6.24, 1000 df, p = .000).

Sixty-five percent of the sample lived alone, and more females lived alone than males. As expected, more congregate care persons were living alone. Persons living alone took significantly more psychoactive drugs (mean = .43) than those who were living with others (mean = .30) (t -test = -2.91, 873 df, p = .004). Those living alone had more drinking days (mean = 54) than those living with others (mean = 30) (t -test = 3.57, 598 df, p = .000).

Multivariate Logistic Regression Results

The next stage of analysis was to determine whether there is an association between falls, alcohol use and taking psychoactive medications among older persons. Using SPSS, multivariate logistic regression analysis was performed, with falls as the dichotomous dependent variable and psychoactive drug use and frequency of alcohol use as independent variables. Four other independent variables are also included in the reported model as controls: age as a continuous variable, gender, living alone, and number of illnesses. Finally, a multiplicative interaction term of psychoactive drug use and frequency of alcohol measures was included in the model.

Table II indicates that psychoactive drug use, number of illnesses, and age were significantly associated with falls. Living alone, alcohol use, gender, and the interaction variable (alcohol by psychoactive drug use) were not significant.

Odds ratios were calculated for various levels of the significant variables and are shown in Table II. Persons who use psychoactive medications were more likely than nonusers to experience a fall, with an odds ratio of 1.2 (95% CI = 1.01, 1.52). As the number of psychoactive drugs used increased (calculated from 1 to 5), the more likely respondents were to experience a fall. Odds ratios (1.49) for the number of illnesses (95% CI = 1.31, 1.69) were calculated by comparing persons with two illnesses with those who had 4, 6, 8, and 10 illnesses. Odds ratios for age were calculated by comparing persons aged 55 with those aged 65, 75, 85, and 95 (OR = 1.33; 95 CI = 1.13, 1.57). Older individuals and individuals with numerous illnesses were more likely to experience a fall than were younger respondents with fewer illnesses.

The data were also examined with the same basic model but substituting the *days of psychoactive drug use* variable for the *number of psychoactive drugs* measure. Only illness and age remained as significant variables in this model. Also, the different categories of psychoactive drugs were examined in separate models to ascertain individual associations with falls. None of the psychoactive drug categories alone was a significant predictor. Finally, the model was reestimated substituting for the frequency of alcohol measure: (1) a dichotomy of drink/not drink in the past year and (2) a dichotomy of drink more than once a month/drink less often in past year. Neither of these alcohol measures was a significant predictor in the multivariate model.

Table II. Logistic Regression and Odds Ratios of Fall Status on Psychoactive Drug Use, Alcohol Use, Gender, Alone Status, Number of Illnesses, Age, and a Psychoactive Alcohol Use Interaction Term ($N = 1018$)

	<i>B</i>	Odds ratio of falling	95% confidence level
Psychoactive drug use*			
0	0.2179		
1		1.24	1.01, 1.52
2		1.55	1.03, 2.32
3		1.92	1.04, 3.54
4		2.39	1.06, 5.41
5		2.97	1.07, 8.24
Number of illnesses**			
0	0.1996		
2		1.49	1.31, 1.69
4		2.22	1.72, 2.87
6		3.31	2.26, 4.86
8		4.94	2.96, 8.23
10		7.36	3.88, 13.94
Age**			
55	0.0284		
65		1.33	1.13, 1.57
75		1.76	1.27, 2.45
85		2.34	1.43, 3.84
95		3.11	1.61, 6.02
Days of drinks	0.0014		
Gender	0.0076		
Alone	0.2159		
Psychoactive/alcohol interaction	-0.0013		

*Significant at .05.

**Significant at .001.

DISCUSSION

Older persons are at risk for falls for a number of reasons, including but not limited to age-related physiological changes. Psychoactive medication and alcohol use patterns, alone or in combination, may increase the risk for falls. This study examined the prevalence of prescription psychoactive drugs (sedatives/hypnotics, anxiolytics/tranquilizers, antidepressants, and prescription analgesics) and alcohol use and their association with self-reported falls. Consistent with the findings of other studies (Campbell *et al.*, 1990; Campbell, 1991; Cwikel, 1992; Trewin *et al.*, 1992), 26% of this sample stated they had fallen at least once during the past year (range, 0-50). Analyses with logistic regression indicate that the risk for falls increases as one ages, has more illnesses, and takes psychoactive drugs.

The number of falls may have been underreported, as respondents had to recall falls, with or without injury, that occurred during the past year. If the individual did not sustain an injury, the accident may have been forgotten. Additionally, there was no verification that the fall occurred when the respondent was taking the psychoactive medication. Persons tend to develop side effects at the onset of a medication regime.

Twenty-eight percent of the 1028 persons were taking one or more psychoactive drugs, with 10% taking more than one psychoactive drug. Twelve percent were taking psychoactive medications 300 days or more during the past year. Similar to the findings of other studies (Robbins and Clayton, 1989), females were more likely to be taking a psychoactive medication. Persons residing in the congregate facilities, most of whom were older women, were taking more psychoactive drugs. Psychoactive drug use was significantly associated with falls and as the number of psychoactive drugs increased, the likelihood of falling increased. However, when the variables were examined with frequency of psychoactive drug use as the independent variable, psychoactive drug use was not a significant factor. It may be that persons who use psychoactive drugs frequently, become acclimated and do not experience the adverse side effects of dizziness and diminished sensorium. Furthermore, when different psychoactive drugs were examined separately, none of the separate categories was significant. This finding suggests a cumulative or synergistic effect when more than one of these drugs is taken. Additional analyses examining individuals who use multiple drugs are needed.

In terms of alcohol use, 38% of the sample reported using alcohol on one or more occasions during the past year. Five percent reported that they were "drunk" on one or more occasions, and 6% admitted that they had one or more alcohol related problems. Males were more likely to consume alcohol and report an alcohol-related problem. Contrary to expected findings and congruent with other researchers (Iliffe *et al.*, 1991; Nelson *et al.*, 1992), alcohol consumption was not a significant predictor of falls for this sample, once psychoactive drug use, health status, and demographic variables were controlled. Despite the interviewer's efforts to elicit alcohol consumption in a nonthreatening manner, the social stigmas attached to alcohol use, among this age group, may have resulted in underreporting, particularly among the females. Another plausible explanation is that, due to the social stigmas related to alcohol for this age group, older persons consuming alcohol may be more careful when ambulating compared to those taking a "legitimate" prescribed drug.

The prevalence of prescribed psychoactive drugs among this sample of noninstitutionalized older adults lends support to assertions by others (Wilcox *et al.*, 1994) that use and potential misuse of psychoactives must be examined beyond the nursing home. With age-related physiological changes, even a medication consumed alone without other medications or alcohol can pose a significant risk for falls and accidents. As the older population increases (especially the number of women, living alone and attempting to maintain their homes), they will likely engage in activities that place them at risk for falls. This study did not examine the use of other medications taken in conjunction with psychoactive drugs. It is likely that an older person taking an antihypertensive medication, a nonsteroidal pill for arthritis, and a psychoactive medication would be at greater risk for falls (Gurwitz, 1994). These analyses also did not examine the use of over-the-counter medications that produce central nervous system symptoms contributing to falls. Antihistamines are frequently used by the elderly for a variety of problems ranging from colds to insomnia.

Health care providers can strive to prevent falls associated with psychoactive medication use. Providers need to monitor medication regimes closely, reduce multiple medication prescribing, prescribe reduced doses of psychoactive drugs, and inquire about alcohol use on a frequent basis. Additionally, older persons must be counseled about the side-effects of these medications and their interaction with alcohol and other medications. Managers of congregate care facilities must be cognizant of the older person's (especially women's) frequent use of these medications and provide a safe environment. Likewise, all older persons should be screened periodically for alcohol use/abuse. Most importantly, health care providers must address the covert social factors that may be the precipitating factor for the client's symptomatology and behavior. Personnel and health providers need to identify the covert signs and symptoms of anxiety and depression and spend extra time talking and listening to the older person. A referral for counseling or "visiting" may be a more appropriate alternative to prescribing psychoactive medication.

REFERENCES

- Blake, A. J., Morgan, K., Bendall, M. J., Dallosso, H., Ebrahim, S. B. J., *et al.* (1988). Falls by elderly people at home: Prevalence and associated factors. *Age Aging* 17: 365-372.
- Campbell, A. J. (1991). Drug treatment as a cause of falls in old age. *Drugs Aging* 1(4): 289-302.
- Campbell, A. J., Reinllen, J., Allan, B. C., and Martinez, G. S. (1981). Falls in old age: A study of frequency and related clinical features. *Age Aging* 10: 264-270.
- Campbell, A. J., Borrie, M. J., and Spears, G. F. (1989). Risk factors for falls in a community-based prospective study of people 70 years and older. *J. Gerontol.* 44: M112-M117.

- Campbell, A. J., Borrie, M. J., Spears, G. F., Jackson, S. L., Brown, J. S., and Fitzgerald, J. L. (1990). Circumstances and consequences of falls experienced by a community population 70 years and over during a prospective study. *Age Aging* 19: 136-141.
- Chrischilles, E., Lemke, J., Wallace, R., and Drube, G. (1990). Prevalence and characteristics of multiple analgesic use in an elderly study group. *J. Am. Geriatr. Soc.* 38: 979-984.
- Cwikel, J. (1992). Falls among elderly people living at home: Medical and social factors in a national sample. *Isr. J. Med. Sci.* 28(7): 446-453.
- Fillenbaum, G. G. (1988). *Multidimensional Functional Assessment of Older Adults: The Duke Older Americans Resources and Services Procedures*, Lawrence Erlbaum Associates, Hillsdale, NJ.
- Gibson, M. J., Andres, R. O., Isaacs, V., Radebaugh, T., and Worm-Petersen, J. (1987). The prevention of falls in later life: a report of the Kellogg International Work Group on the prevention of falls by the elderly. *Dan. Med. Bull.* 34 (Suppl. 4): 1-24.
- Gordis, E. (1992). Proceedings House Subcommittee on Health and Long-term Care. *Alcohol. Drug Abuse Week.* 4: 1042.
- Gryfe, C. I., Amies, A., and Ashley, M. J. (1977). A longitudinal study of falls in an elderly population. I. Incidence and morbidity. *Age Aging* 6: 201.
- Gurwitz, J. H. (1994). Suboptimal medication use in the elderly: The tip of the iceberg. *JAMA* 272: 316-317.
- Iliffe, S., Haines, A., Goldenberg, E., Morgan, P., and Galliran, S. (1991). Alcohol consumption by elderly female: A general practice survey. *Age Aging* 20: 120-123.
- Kennedy, T. E., and Coppard, L. C. (eds.) (1987). The prevention of falls in later life. *Dan. Med. Bull.* 34 (Suppl. 4): 1.
- Miller, N., and Gold, M. (1989). Sedative-hypnotics: Pharmacology and use. *J. Fam. Pract.* 29: 665-670.
- National Institute on Drug Abuse (1988). *National Household Survey on Drug Abuse. Main Findings, 1985*, National Institute on Drug Abuse, Rockville, MD.
- National Institute on Drug Abuse (1993). *National Household Survey on Drug Abuse: Main Findings, 1991*, National Institute on Drug Abuse, Rockville, MD.
- Nelson, D., Sattin, R., Langlois, J., Devito, C., and Stevens, J. (1992). Alcohol as a risk factor for fall injury events among elderly persons. *J. Am. Geriatr. Soc.* 40: 658-661.
- Perry, B. C. (1982). Falls among the elderly living in high-rise apartments. *J. Fam. Pract.* 16: 1069-1072.
- Prudham, D., and Evans, J. G. (1981). Factors associated with falls in the elderly: A community study. *Age Aging* 10: 141-146.
- Ray, W. A., Griffin, M. R., and Downey, W. (1989). Benzodiazepines of long and short elimination half-life and the risk of hip fracture. *JAMA* 262: 3303-3307.
- Ray, W. A., Griffin, M., and Malcolm, (1991). Cyclic antidepressants and the risk of hip fracture. *Arch. Intern. Med.* 151: 754-756.
- Robbins, C. A. (1991). Social roles and alcohol abuse among older men and women. *Family Commun. Health* 13: 37-48.
- Robbins, C. A., and Clayton, R. R. (1989). Gender-related differences in psychoactive drug use among older adults. *J. Drug Issues* 19: 207-19.
- Sheahan, S. L., Hendricks, J., and Coons, S. J. (1989). Drug misuse among the elderly: A covert problem. *Health Values* 13(3): 22-29.
- Sorock, G. S., and Shimkin, E. E. (1988). Benzodiazepine sedatives and the risk of falling in a community dwelling cohort. *Arch. Intern. Med.* 148: 2441-2444.
- Tinetti, M. E. (1990). Falls. In Hazzard, W. R., et al. (eds.), *Principles of Geriatric Medicine and Gerontology*, 2nd ed., McGraw-Hill, New York, Chap. 123.
- Tinetti, M. E., Speechley, M., and Ginter, S. F. (1988). Risk factors for falls among elderly persons living in the community. *N. Engl. J. Med.* 319: 1701.
- Trewin, V. F., Lawrence, C. J., and Veitch, G. B. A. (1992). An investigation of the association of benzodiazepines and other hypnotics with the incidence of falls in the elderly. *J. Clin. Pharm. Ther.* 17: 129-133.
- U.S. Census (1990). U.S. population estimates by age, sex, race, and hispanic origin P-25, No. 1057, March.

- Widner, S., and Zerhner, A. (1991). Alcohol abuse in the elderly: Review of epidemiological research and treatment. *Clin. Gerontol.* 11: 3-18.
- Wilcox, S. M., Himmelstein, D. U., and Woolhandler, S. (1994). Inappropriate drug prescribing for the community dwelling elderly. *JAMA* 272: 292-296.