Use of Tranquilizers and Sleeping Pills Among Older Texans†

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The purpose of this research is to examine the effects of access to health care service, of social stress and of social network on the use of tranquilizers and sleeping pills among older adults. To date, most of the existing research on use of tranquilizers and sleeping pills has been either pharmacokinetic or pharmacodynamic (Vestal 1978), and relatively few studies of social and behavioral factors associated with drug utilization are available. Among the latter, studies of prevalence based on broad, demographic categories tend to predominate. Such studies have indicated that approximately one-fourth of older adults have taken psychoactive prescription drugs, including stimulants, tranquilizers, sedatives and hypnotics within the previous year (Brecher 1972; Manheimer, Mellinger & Balter 1968). Use of tranquilizers peaks in middle age but remains relatively high in old age, while use of sedatives and hypnotics increases linearly with age and is highest among older adults (Brecher 1972; Mellinger, Balter & Manheimer 1971). Older women are more likely than older men to use both tranquilizers and sleeping pills (Bonham & Leaverton 1979; Brecher 1972; Mellinger, Balter & Manheimer

1971), and widowed older adults are more likely to use sedatives than are others (Bonham & Leaverton 1979; Manheimer, Mellinger & Balter 1968).

Other literature on drug utilization by the elderly has focused on possible misuse and its attendant consequences (Green 1978; Butler 1976) and on the concomitant need for prevention and social policy. In such a context it is obvious that there is also a need for additional research into both pharmacological and social/behavioral factors which influence drug utilization and its effects. The study reported here is an exploratory step in this direction based on a secondary analysis of data collected in a needs assessment survey of 8,061 persons 60 years of age or older in Texas in 1974.

The needs assessment survey was conducted for 13 area agencies and regional offices on aging, representing approximately 70 percent of the older population of the state. A proportionate quota sample based on age, sex and ethnicity was drawn within each of the 13 areas. The final sample was 43 percent male and 57 percent female; 79 percent Anglo and 21 percent of other ethnic background; 56 percent urban residents and 44 percent rural residents; and 49 percent aged 70 years and over (Elder, Holley & Friedsam 1976).

The survey instrument contained questions about the use of medicines, including the use of tranquilizers and sleeping pills, within the past month, but did not distinguish between prescription and nonprescription drugs. Because the respondents were asked only whether they had or had not used tranquilizers or sleeping pills within the past month, the two dependent variables are

dichotomous ordinal measures.

LITERATURE REVIEW

Two frameworks were used to order potential predictor variables included in the survey. These two frameworks were the health care services utilization framework developed by Andersen and Newman (1973) and the social epidemiological framework of the etiology of mental disorders developed by Kaplan, Cassel and Gore (1977).

Health Care Services Utilization Framework

In 1973, Andersen and Newman presented a framework for the study of individual characteristics which determine the health care services utilization of any given population. The framework contains three basic components: predisposing variables, enabling variables and need level. Predisposing variables exist prior to the onset of illness and affect the probability of the use of health care services. These variables include demographic characteristics, such as age, sex, marital status and past illness; social structural characteristics, such as education, race, occupation, family size, ethnicity, religion and residential mobility; and beliefs of individuals about health and health services. The enabling variables provide the means for individuals to use health care services and include family level variables such as income, health insurance, type of regular source of medical care and access to regular care; community level variables such as health personnel and facilities in the community, price of the service, region of the country and urban-rural residence. The most immediate stimulus to use of health care services is need or actual illness, both as it is perceived by the individual and as it is evaluated by health care practitioners (Andersen & Newman 1973).

Because prescription medicines are usually obtained through a physician, those factors which are related to use of physicians are hypothesized to be related to the use of these medicines. Use of nonprescription medicines are also hypothesized to be affected by some of the same factors, especially perceived illness.

Social Epidemiological Framework of the Etiology of Mental Disorders

Psychoactive drugs are mood-altering drugs. Taking psychoactive drugs indicates that someone, either physician or patient or both, believes that the taker's mood needs to be altered. Therefore, factors which have been found to affect moods, especially psychopathologically anxious or depressed moods, may affect the use of mood-altering drugs as well. Thus, it is hypothesized in this research that social epidemiological

factors which have been found to affect the etiology of mental disorders will be related to the use of tranquilizers and sleeping pills.

The two major categories of linkage variables studied by social epidemiologists interested in the etiology of mental disorders have been social integration variables and social stressors (Kaplan, Cassel & Gore 1977). Field studies of the sociology of mental health using nonelderly, noninstitutionalized populations have demonstrated that membership in well-integrated social groups is conducive to mental health (Lin et al. 1979; Martin 1976; Leighton et al. 1963; Faris & Dunham 1960; Leighton 1959; Eaton & Weil 1955) and that life stressors such as social and economic problems adversely affect mental health (Kessler 1979; Lin et al. 1979; Carr & Krause 1978; Catalano & Dooley 1977; Mueller, Edwards & Jarvis 1977; Langer & Michael 1963; Srole et al. 1962; Myers & Roberts 1959; Hollingshead & Redlich 1958). Furthermore, studies of noninstitutionalized elderly that use marital status as an indicator of social integration have generally found that respondents who were never married, separated, divorced or widowed were better adjusted emotionally in terms of mental disorders, life satisfaction and attitudes toward life (Hutchison 1975; Gubrium 1974; Harvey & Bahr 1974; Lowenthal 1964; Bellin & Hardt 1958). One study concluded that the interaction of marital status (i.e. social integration) and economic problems was more predictive of emotional problems than was either category of variables considered individually (Hutchison 1975). Thus, it is hypothesized in this research that the presence of social stressors will be positively related to use of psychoactive drugs and that social integration will be negatively related to use of psychoactive drugs.

Based on the two theoretical frameworks employed, 33 potential predictor variables were located in the survey. The predictor variables were classified conceptually as either health services utilization variables or etiology of mental disorders variables. Within the health care services framework, variables were further classified as demographic, enabling or need variables in accordance with the Andersen and Newman framework. The etiology of mental disorders variables were classified as either social stressor or social integration variables and further subclassified as representing either objective or subjective measures of these concepts. Some variables, such as average monthly income, received a dual classification (i.e., income was classified both as an enabling variable and a subjective stressor).

HYPOTHESES

Based on the review of the literature and the

variables available, 11 hypotheses were derived which related sets of predictor variables to the use of tranquilizers and sleeping pills among older adults. These 11 hypotheses are as follows:

Hypothesis I.

Among the predisposing variables, age, being female, being unmarried, widowed or divorced, education, non-Anglo ethnic status, urban residence and retirement will be positively related to the use of tranquilizers and sleeping pills.

Hypothesis II.

Among the enabling variables, monthly income and driving one's own car will be negatively related to use of tranquilizers and sleeping pills; Medicare coverage, Medicaid coverage, insurance coverage and difficulty of transportation will be positively related to use of these medicines.

Hypothesis III.

Evaluations of health and appetite (i.e., the need variables) will be negatively related to the use of tranquilizers and sleeping pills.

Hypothesis IV.

Among the objective stressor variables, monthly income, owning a car, appetite and being able to afford needed food, will be negatively related to the use of tranquilizers and sleeping pills; number of doctor visits within the past six months, a hospitalization within one year and need for housing repairs will be positively related to the use of these medicines.

Hypothesis V.

Among the subjective stressor variables, self-evaluation of health, satisfaction with housing and with income will be negatively related to the use of tranquilizers and sleeping pills; difficulty of transportation and fear of burglary will be positively related to the use of tranquilizers and sleeping pills.

Hypothesis VI.

Among the objective integration variables, the number of people living in the household, frequency of seeing family, frequency of talking to family on the telephone, frequency of receiving mail from family, receiving visits from clergy and membership in senior citizens groups will be negatively related to the use of tranquilizers and sleeping pills; eating alone will be positively related to use of these medicines.

Hypothesis VII.

Among the subjective integration variables, satisfaction with frequency of contact with family, with friends and with senior citizens groups will be negatively related to the use of tranquilizers and sleeping pills; frequency of feelings of loneliness will be positively related to the use of these medicines.

Hypothesis VIII.

The etiology of mental disorder variables (objective and subjective stressors, objective and subjective integration) will be more predictive of use of tranquilizers and sleeping pills than will the health care utilization variables (predisposing, enabling and need).

Hypothesis IX.

The subjective stressor variables will be more predictive of use of tranquilizers and sleeping pills than will the objective stressor variables.

Hypothesis X.

The subjective integration variables will be more predictive of the use of tranquilizers and sleeping pills than will the subjective integration variables.

Hypothesis XI.

The subjective stressors and subjective integration variables considered jointly will be more predictive of use of tranquilizers and sleeping pills than either will be individually.

METHOD

The zero-order relationships between each of the predictor variables and the two dependent variables were initially examined using contingency tables with gamma as the measure of association. The zero-order relationships between each of the predictor variables and the two dependent variables were inspected to determine which predictor variables had a measurable effect on use of one or both types of drugs. If the gamma for the relationship between a predictor variable and the dependent variable fell between -.10 and +.10, exclusively, the variable was eliminated from the analysis (Davis 1971).

Significance tests are not reported for the gammas because the sample was collected using quota sampling techniques. Thus, the sampling procedure does not meet the assumption of random probability sampling required for tests of statistical inference. The sample size is so large that even very slight relationships would achieve statistical significance using the chi square test of significance, if assumption were met. Therefore, the

TABLE I
SUMMARY OF GAMMA VALUES OF PREDICTOR VARIABLES ON
USE OF TRANQUILIZERS AND SLEEPING PILLS*

Variable**	Direction of Association	Gamma Values Tranquilizers	Sleeping Pills
Sex (P)	Female	.26	.09
Marital Status (P)	Unmarried	-.06	-.09
Minority Status (P)	White	.09	.21
Employment (P)	Not Working	-.22	-.18
Monthly Income (E,OS)	Low	-.12	-.04
Medicare (E)	Covered	.00	.18
Medicaid (E)	Covered	.14	.08
Transportation (E,SS)	Difficult	.23	.20
Drive Own Car (E,OS)	Yes	-.13	-.08
General Health (N,SS)	Poor	-.48	-.20
Appetite (N,OS)	Poor	-.34	-.43
Doctor Visits within 6 Months (OS)	More	.39	.36
Hospitalization within 1 Year (OS)	Yes	.36	.40
Satisfaction with Housing (SS)	Not satisfied	.14	.17
Income Satisfies Needs (SS)	Poorly	.20	.18
Afford Food (OS)	No	.23	.19
Satisfaction with Family (SI)	Higher	-.18	-.19
Satisfaction with Friends (SI)	Higher	-.25	-.26
Satisfaction with Informal Groups (SI)	Higher	-.28	-.31
Loneliness (SI)	Never	-.31	-.33

*Complete tables showing percentage distribution of responses and missing cases for each variable may be obtained from the authors on request.

**Key to type of predictor variables.

P=Predisposing	OS=Objective Stressor	OI=Objective Integration
E=Enabling	SS=Subjective Stressor	SI=Subjective Integration
N=Need		

emphasis in reporting results is on substantive, not statistical, significance (Schuessler 1979: xv).

RESULTS

Overall, 22 percent of the sample reported that they had taken tranquilizers within the past month and 12 percent reported that they had used sleeping pills. These percentages are consistent with the percentages of older adults found to be using these medicines in other surveys of noninstitutionalized older persons reviewed above.

Gamma values for relationships between the predictor variables and the dependent variables are presented in Table 1. Among the predisposing variables predicted to affect use of tranquilizers and sleeping pills in Hypothesis I, only sex, marital status, minority status and employment are related to the use of these psychoactive medicines. Specifically, females are much more likely than males to have taken tranquilizers, but

only slightly more likely to have taken sleeping pills. Divorced and widowed older adults are the most likely to have taken both tranquilizers and sleeping pills. Anglos are slightly more likely than non-Anglo to have taken both kinds of drugs. Housewives and older adults who are not working are much more likely to have taken both kinds of drugs than are older adults working part-time or full-time. Age, education and residence have no affect on use of either tranquilizers or sleeping pills.

Table I also shows that among the enabling variables predicted to affect use of tranquilizers and sleeping pills in Hypothesis II, average monthly income is negatively related to the use of tranquilizers, but is not at all related to the use of sleeping pills. Those older adults who are covered by Medicare are slightly more likely than those who were not covered to have used sleeping pills, and those covered by Medicare are slightly more likely than those who are not to have used both kinds of

drugs. Furthermore, the more difficulty the respondents report with transportation, the more likely they are to use both kinds of drugs. Reciprocally, those who drive their own cars were slightly less likely to have taken either tranquilizers or sleeping pills. Both factors are related to intervening variables such as health status. Having insurance other than Medicare and Medicaid does not affect use of either tranquilizers or sleeping pills.

The need level variables are the most strongly related to the use of both tranquilizers and sleeping pills, as predicted in Hypothesis III. The poorer his/her appetite, the more likely it is that both tranquilizers and sleeping pills are used.

Among the stressor variables, with the exception of the measures of need for housing repairs and of fear of burglary, all the measures of health, income and housing as stressors are related to the use of both kinds of psychoactive drugs, as postulated. Thus, there is tentative support for Hypotheses IV and V. Two health related variables, the number of doctor visits within the past six months and a hospitalization within the past year are positively related to the use of both types of psychoactive drugs. Although the older adults' objective assessments of the need for housing repairs is not at all related to use of psychoactive drugs, lack of satisfaction with housing is positively related to the use of both tranquilizers and sleeping pills. As discussed above, average monthly income is slightly negatively related to use of tranquilizers, but not at all related to use of sleeping pills. However, respondents who report that they cannot afford all of the food they need are more likely to report use of both tranquilizers and sleeping pills than are those who reported that they can. Furthermore, adequacy of income measured subjectively is inversely related to use of tranquilizers and sleeping pills.

From these results it appears that subjective evaluations of stressors are more predictive of use of tranquilizers and sleeping pills than are the objective measures. For instance, satisfaction with income is more strongly related to use of both kinds of drugs than is actual monthly income. Similarly subjective evaluations of health, housing and transportation are more strongly related to use of both kinds of drugs than are the objective measures of the same problems. Thus, there is tentative support for Hypothesis IX.

Finally, while none of the objective measures of social integration are related to the use of either kind of drug, contrary to the predictions in Hypothesis VI, the four subjective measures are relatively strongly related to use of both tranquilizers and sleeping pills, thus confirming Hypothesis VII. Only the health care variables

are more strongly related to the use of psychoactive drugs. The more satisfied the respondents are with interaction with family, friends and informal groups, the less likely they are to use either tranquilizers or sleeping pills. Furthermore, frequency of reported loneliness is positively related to use of both kinds of drugs. Thus, Hypothesis X is also confirmed, as the subjective measures of social integration are more predictive of use of tranquilizers and sleeping pills than are the objective measures of social integration.

Generally, the social epidemiological variables are more predictive of the use of both kinds of psychoactive drugs than are the health care utilization variables as predicted by Hypothesis VIII. The social epidemiological framework also suggests that the effects of social stressors will be greatest among those individuals who are also the least integrated into a social network. Thus, those individuals who are experiencing the greatest stressors and who are also the least integrated should be more likely to take psychoactive drugs than those individuals exposed to stressors but integrated into social networks.

The most global and predictive of the integration variables, loneliness, is cross-tabulated with the objective and subjective measures of social stressors which were found to affect use of either drug. The results of these analyses are presented in Tables II and III, for tranquilizers and sleeping pills, respectively. In every case Hypothesis XI is supported by inspection of the percentages in the tables. The effects of social stressors are compounded by lack of social integration. The joint effects of loneliness and of assessment of health, using either the subjective assessment of health in general or the objective assessment of appetite, is particularly dramatic. For example, among older adults who are in good health and are almost never lonely, only nine percent have taken tranquilizers within the past month and only four percent have taken sleeping pills. However, among those older adults who report that their general health is poor and that they are quite often lonely, 51 percent have taken tranquilizers and 27 percent have taken sleeping pills. The joint effects of stressors and loneliness are the same, though slightly less pronounced, for assessment of income, transportation and housing.

DISCUSSION

Two limitations of this study should be reemphasized. First, given the sample, results cannot be generalized immediately to other populations. Second, the study is based on secondary analysis of data collected for another purpose and is therefore subject to the

TABLE II
SUMMARY OF THE EFFECTS OF PREDICTOR VARIABLES ON THE USE OF TRANQUILIZERS WITHIN PAST MONTH AMONG OLDER TEXANS CONTROLLING FOR LONELINESS

Predictor Variable	% of Almost Never Lonely Using Tranquilizers	Base N	% of Sometimes Lonely Using Tranquilizers	Base N	% of Quite Often Lonely Using Tranquilizers	Base N
Marital Status						
Not Married	15.9	(1283)	23.1	(1791)	33.5	(931)
Married	15.7	(2103)	26.7	(1187)	36.1	(321)
Monthly Income						
Less than $300	17.1	(1474)	24.3	(1927)	35.2	(988)
$300-$699	16.8	(1078)	27.6	(684)	31.3	(176)
General Transportation						
Not difficult	14.3	(2678)	23.5	(1686)	27.8	(435)
Somewhat difficult	22.0	(455)	25.1	(869)	33.6	(402)
Very difficult	22.0	(241)	28.7	(411)	42.6	(404)
Drive Own Car						
No	18.2	(834)	23.5	(1377)	35.9	(772)
Yes	14.9	(2468)	25.2	(1567)	39.9	(459)
General Health						
Good	8.9	(1589)	14.0	(69)	14.5	(173)
Fair	18.7	(1650	23.6	(1650)	25.0	(561)
Poor	32.3	(406)	38.3	(637)	51.4	(516)
Appetite						
Poor	40.5	(74)	41.8	(153)	54.9	(206)
Fair	19.9	(602)	26.7	(1043)	35.9	(465)
Good	14.3	(2706)	21.9	(1787)	25.9	(580)
Doctor Visits within 6 Months						
None	7.4	(1212)	13.5	(836)	18.4	(299)
1-3 Visits	17.4	(1585)	24.9	(1472)	33.4	(574)
4 or more Visits	29.2	(576)	38.3	(652)	49.3	(367)
Hospitalization within 1 Year						
No	13.4	(2606)	21.0	(2126)	29.3	(772)
Yes	24.0	(753)	33.9	(827)	42.7	(468)
Satisfaction with Housing						
Very satisfied	15.5	(2194)	23.4	(1327)	31.0	(435)
Fairly satisfied	15.7	(1002)	25.5	(1347)	35.1	(510)
Not satisfied	20.2	(188)	24.3	(304)	35.8	(304)
Income Satisfies Needs						
Very well	14.7	(1086)	19.7	(552)	28.2	(149)
Fairly well	15.1	(1738)	24.3	(1637)	28.2	(531)
Poorly	20.0	(544)	28.8	(767)	42.4	(559)
Afford Food						
Yes	15.3	(2874)	23.7	(2113)	27.4	(685)
No	19.8	(434)	25.6	(776)	44.1	(519)

TABLE III
SUMMARY OF THE EFFECTS OF PREDICTOR VARIABLES ON THE USE OF SLEEPING PILLS WITHIN PAST MONTH AMONG OLDER TEXANS CONTROLLING FOR LONELINESS

	Loneliness					
Predictor Variable	% of Almost Never Lonely Using Sleeping Pills	Base N	% of Sometimes Lonely Using Sleeping Pills	Base N	% of Quite Often Lonely Using Sleeping Pills	Base N
Marital Status						
Not married	8.7	(1287)	13.8	(1790)	18.3	(936)
Married	7.0	(2103)	15.7	(1193)	22.0	(323)
Monthly Income						
Less than $300	7.4	(1475)	14.2	(1933)	17.5	(993)
$300-$699	7.9	(1082)	16.5	(679)	27.8	(176)
$700 or more	9.1	(474)	12.4	(121)	35.3	(17)
General Transportation						
Not difficult	7.0	(2682)	13.9	(1687)	17.4	(436)
Somewhat difficult	10.5	(456)	15.6	(868)	18.6	(404)
Very difficult	10.0	(240)	15.5	(413)	21.6	(407)
General Health						
Good	4.6	(1395)	7.0	(696)	12.1	(174)
Fair	8.9	(1388)	14.0	(1642)	14.2	(565)
Poor	15.1	(404)	23.6	(643)	27.4	(518)
Appetite						
Poor	21.9	(73)	25.5	(153)	32.0	(206)
Fair	12.7	(604)	20.1	(1048)	19.9	(473)
Good	6.2	(2709)	10.2	(1784)	14.3	(579)
Doctor Visits within 6 Months						
None	3.4	(1214)	8.0	(839)	13.4	(298)
1-3 visits	7.8	(1587)	15.1	(1469)	19.3	(576)
4 or more visits	16.0	(576)	22.0	(654)	24.1	(373)
Hospitilization within 1 Year						
No	5.9	(2609)	11.6	(2125)	16.6	(778)
Yes	14.1	(754)	22.3	(830)	23.7	(469)
Satisfaction with Housing						
Very satisfied	7.3	(2195)	13.3	(1325)	18.8	(437)
Fairly satisfied	8.0	(1006)	14.8	(1347)	18.4	(511)
Not satisfied	10.7	(187)	18.4	(309)	21.1	(308)
Income Satisfies Needs						
Very well	7.6	(1092)	10.8	(554)	12.7	(150)
Fairly well	7.5	(1737)	14.3	(1638)	18.9	(528)
Poorly	8.5	(543)	17.4	(768)	21.3	(568)
Afford Food						
Yes	7.4	(2874)	13.7	(2111)	18.6	(684)
No	8.7	(437)	16.1	(782)	20.3	(527)

criticisms that attach to such a procedure. Despite these limitations, however, the findings are a beginning toward filling a major research gap in knowledge concerning social and behavioral factors associated with drug utilization by older persons. As with many exploratory studies, their chief value may lie in delineating directions that further research might take.

The findings do demonstrate the utility of both the health utilization and social epidemiological models for future research. Comparison of the two models indicates that the variables in the social epidemiological framework are more predictive of the use of tranquilizers and sleeping pills than are variables in the health care services utilization framework. Among those predictors included in the utilization model, the need variables (i.e., the assessments of general health and of appetite) are the most predictive of the use of both types of drugs while the other predisposing and enabling variables have either a negligible or a weak effect on use of both types of drugs. This conclusion is reinforced by the fact that in the social epidemiological model, the health variables (i.e., assessment of general health, assessment of appetite, physician visits within the past six months and a hospitalization within the past year) are the most predictive of the use of both drug types, although stressors related to income, housing and transportation also have weak effects. Furthermore, the subjective assessments of both social stressors and social integration are more predictive of use of both tranquilizers and sleeping pills than are the objective assessments. Finally, the effects of the presence of all social stressors, including health, transportation, income and housing, are exacerbated by a lack of social integration.

Thus, this study suggests that future social research on the determinants of use of psychoactive drugs by the elderly should be based on a research model which incorporates predictive variables both from the health care services utilization framework and especially from the social epidemiological framework. This research also suggests that measures of the subjective assessment of severity of social stressors and adequacy of integration into social network must be included in the model. Such a model also has implications for the provision of services to older adults. Practitioners, clinicians and other service providers who might develop or implement assessment and/or intervention strategies for use with older adults who use psychoactive drugs would also be well-advised to choose strategies which incorporate subjective, as well as objective, meanings of social stressors and of social integration. Intervention strategies should also reflect the joint effect of social stressors and social integration so that both factors are addressed simultaneously in order to produce a maximum reduction in unnecessary drug use.

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