

# Absence of social networks, social support and health services utilization

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## ABSTRACT

**Background.** This study examines the effects of distress and three types of social relationships (family, friends, and confidantes) on the use of out-patient health services in an adult sample from a community survey of 3481 persons in Baltimore, Maryland.

**Methods.** Independent effects of predisposing (age, education, marital status, race and sex), enabling (employment, income and insurance) and need (physical health) factors are adjusted for in estimating the odds of using health care services.

**Results.** Illness, being female, and having insurance were positively related to use of services, while being aged was inversely related. After adjustment for the above factors, social support interacted with psychological distress to effect the use of medical care: the combination of high distress and low social support by a confidante results in a fourfold increase of medical utilization.

**Conclusions.** Our findings support the inclusion of psychological distress and social network variables in addition to physical health status in models attempting to explain the use of health services. Despite an inability to analyse change over time, our data suggest an understanding of the interrelationship between psychosocial factors, distress and health care use would benefit health providers and their patients.

## INTRODUCTION

This paper expands a model of health services use to include stress-buffering effects of social networks and social support. The behavioural model formulated by Andersen *et al.* (Andersen & Newman, 1973; Aday & Andersen, 1978; Andersen, 1995) suggests three main types of variables predicting use of health care services. These include predisposing, enabling and need variables. ‘Predisposing’ variables describe the propensity of individuals to use services and exist prior to the onset of illness. They include sociodemographic variables such as age and sex. ‘Enabling’ variables provide the means to use health care services for members of the society. Structural factors such as income, health in-

urance, payback schemes or third party payments (public or private), and health care facilities are enabling variables. ‘Need’ factors are typically considered the most pressing predictors of health care use and include such variables as symptoms experienced, disability, or chronic diseases.

Most research that adopts some version of this model has shown the importance of ‘illness’ in studies of health services utilization (Bice *et al.* 1972; Hershey *et al.* 1975; Berki & Kobashigawa, 1976; Wolinsky, 1976; Andersen & Aday, 1978; Kronenfeld, 1978; Vázquez-Barquero *et al.* 1992; Adler *et al.* 1993; Feinstein, 1993; Goldberg, 1995; Himmelstein & Woolhandler 1995). A positive association between medical visits and income has also been shown (Wolinsky, 1976; Andersen & Aday, 1978; Hennessey & Boxerman, 1979), while increased patient cost sharing has produced a reduction in use of services (Lefcowitz, 1973). Being insured

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either through private or public means (Rabin *et al.* 1974; Hershey *et al.* 1975; Ferguson *et al.* 1976; Aday & Andersen, 1978; Andersen & Aday, 1978; Weissman & Epstein, 1993) and income and insurance coverage (Brown, 1990; Freeman *et al.* 1990; Saver & Peterfreund, 1993; Weissman & Epstein, 1993; Bashur *et al.* 1994; Hahn, 1994; Monheit, 1994) are known to influence service use.

Social factors also explain service use (Link & Phelan, 1995, 1996; Andersen, 1963). Women (Hershey *et al.* 1975; Andersen & Aday, 1978) and those with more education (Wolinsky, 1976; Andersen, 1963) make greater use of medical care. In other studies, age is also important (Roos & Shapiro, 1981; Jeffries, 1996). Andersen's analyses of three national surveys showed higher use of services at extreme ends of the life cycle (Andersen, 1963) even after controlling for need.

Another factor in the help-seeking model is the role of 'distress'. Distress may be seen as a need variable in the same manner as a physical condition. Distress increases the probability of using medical care (Cleary *et al.* 1982) and 'scales of psychosocial distress and reporting of common physical symptoms are substantially correlated (and) have many similar predictors' (Mechanic, 1979). After controlling for health status (need) and attitudinal variables, Tessler *et al.* (1976) found prior psychological distress to be significantly related to physician utilization. Gortmaker *et al.* (1982) used cross-sectional survey and diary data to show that stress affects the use of women's and children's health services even when the influence of a variety of other variables such as need is controlled.

The connection between health, health service use and 'social relationships', has been important, historically, for health services researchers. Numerous studies have assessed the effects of social support on distress, physical and psychiatric morbidity and mortality (Durkheim, 1951; Berkman & Syme, 1979; House *et al.* 1982; Cohen & Thomas 1985; Wheaton, 1985; Mirowsky & Ross, 1989; Cohen *et al.* 1995). Berkanovic *et al.* (1981) found that 'social networks' (number of contacts) and 'instrumental support' contributed about 1% of the explained variance in their model of services use. Investigations incorporating stress and social support to explain health services use have

focused on samples of aged people in the community (Coe *et al.* 1985; Krause, 1988; Wolinsky & Johnson, 1991), patients (Broadhead *et al.* 1989; Counte & Glandon, 1991), on functionally disabled ageing (Wan, 1987) or paediatric patients (Horwitz *et al.* 1985). Little has been done to determine which aspects of social networks and their supportive functions (i.e. social support) are related to utilization. Within the stress literature 'social network' measures have not been the focus as much as perceived 'social support' measures (Thoits, 1992). The role of social networks, social support and psychological distress on health services use for the 'general population' is the focus of our investigation.

Social support has a role in the causal link between stress and illness (Gore, 1978; Cohen & McKay, 1984; Cohen, 1992) either by intervening to prevent a stress appraisal response or by reducing or eliminating the resulting distress. Studies of social support and health have focused for the most part on two types of models for these effects: main effects in which the positive association between social support and well-being is attributed to an overall beneficial effect of social support; and secondly, a buffering effect in which support protects persons from the potentially adverse effects of stressors (Brown *et al.* 1975; Pearlin & Schooler, 1978; Cohen & Thomas, 1985; Cohen *et al.* 1995). Both the main (Lin *et al.* 1979; Henderson *et al.* 1980; Williams *et al.* 1981; Tijhuis *et al.* 1995) as well as buffering effects (Cassell, 1974; Cobb, 1976; Dean & Lin, 1977; Kaplan *et al.* 1977; Andrew *et al.* 1978; Eaton, 1978; LaRocco *et al.* 1980; Turner, 1981; Cleary & Kessler, 1982; Thoits, 1982; Finney *et al.* 1984; House & Kahn, 1985; Lin *et al.* 1985; Cohen, 1992) of social support on illness have been examined. More recent analyses (Laireiter & Baumann, 1992; Thoits, 1992) have shown that perceived social support usually produces main and buffering effects while network tie measures show mostly main effects.

This analysis assesses the possibility that social networks and social support interact with psychological distress in affecting the use of health care services. In analysing the interaction, the main effects of social networks, social support and distress are considered. The prediction for distress is that more distress is related

to higher volume of services use. For support, the prediction is more complicated: when individuals are assessing the impact of bodily deviations that could be attributed to illnesses, the presence of social supports may serve to normalize the attributions (e.g. 'I have that pain too') and reduce helpseeking; but it is also true that social supports may guide the individual into care in some cases. Therefore, the prediction is that social support will not, in and of itself, lead to higher use of services. The hypothesized direction of the interaction is that high distress, when combined with the absence of social support/network resources, will lead to an especially high use of medical services. In this situation, the individual will have a higher than usual tendency to pay attention to bodily aberrations, but has no source of normalization. The analysis adjusts for potential differences arising from predisposing factors (age, sex, education, marital status, race), enabling factors (employment, insurance), and need (physical illness).

## METHOD

These analyses are conducted with data from the NIMH Epidemiologic Catchment Area (ECA) Program (Eaton *et al.* 1985). The ECA Program is a series of epidemiological surveys conducted by university-based researchers in five community mental health centre catchment area populations. At each site interviews were conducted with probability samples of about 3000 individuals living in household populations (Robins & Regier, 1991; Eaton *et al.* 1984). This paper reports analyses of data from the Johns Hopkins University site of the ECA Program. The sample of 3481 individuals at this site was drawn from the population of East Baltimore, comprising some 175000 adults in 1981. The response rate in the East Baltimore sample was 78% (Von Korff *et al.* 1985).

One of the original purposes of the ECA Program was to describe patterns of health care utilization in the population, with a special emphasis on the inter-relationship between mental health and general health facilities (Eaton *et al.* 1981). A special section of the questionnaire was designed specifically for this purpose (Shapiro *et al.* 1985). The questions resemble those used in the Health Interview Surveys

(HIS) and the Medical Care Utilization and Expenditure Surveys (MCUES) of the National Center for Health Statistics, in which the respondent is asked to recall and report use of services. The ECA questions differ from the HIS and MCUES in extending the recall period for use of services to 6 months and in having much more detail in use of mental health services. Earlier reports have presented descriptive data on the use of health and mental health facilities in East Baltimore (Shapiro *et al.* 1984). Variables for health services use in this presentation are identical to those used in the earlier reports.

Several sets of variables included in the Eastern Baltimore site of the ECA Program were not included in other ECA sites. The Baltimore site included the 20-item version of the General Health Questionnaire (GHQ) (Goldberg, 1972) in order to measure distress that might not be connected to a specific mental disorder (Ford *et al.* 1989). The GHQ was designed for study of the relationship of psychiatric problems to general health care utilization and has good psychometric properties. The GHQ questions are framed with respect to the respondent's 'normal' performance over the last several weeks, e.g. item\_\_\_: 'Over the past several weeks have you been more upset than usual?' The standard threshold of four or more was used to define those in the sample considered to be under 'high distress', while those scoring less than four were considered to be at 'low distress'. Questions on chronic medical conditions were drawn from the Health Interview Survey.

Social networks and social support are represented by three questions that ask about contact with family, friends and the existence of a confidante. Berkman & Syme (1979) found family and friendship ties were positively associated with health behaviours and preventive health services, morbidity and mortality (cf. Seeman & Berkman, 1988). It is argued (Brown *et al.* 1975; Tjihuis *et al.* 1995) that friends are singularly important to one's sense of well-being. Langner *et al.* (1963) suggest that the crucial distinction is between having no friends and having one or more. Recent analyses by Laireiter & Baumann (1992) show 'the core of a personal network consists of very close friends and emotionally significant persons, who, at the same time, are the main supporters'. Others (Eaton, 1978; Kessler *et al.* 1985) suggest that a

perceived intimacy or closeness with a confidante is particularly crucial (cf. House & Kahn, 1985). The confidante question for social support asks: 'If you had a very personal and serious problem, are there any people with whom you could discuss it?'. Regarding contacts with kin, respondents were asked: 'How many family members and relatives who do not live with you, do you usually keep in touch with by telephone or by visiting? Include those who have kept in touch with during the past six months'. The measure for contacts with friends states: 'This question has to do with your friends. These can include neighbors, people you work with, and someone else you consider a friend. How many friends like these do you keep in touch with by telephone or visits?'. The responses to the social network variables were dichotomized by recoding responses as zero or one *versus* greater than one.

The predisposing factors included the socio-demographic variables age, sex, race, education and marital status. Enabling factors included employment status, income level in dollars and insurance status. Full-time employment status was ascertained by asking respondents what they were doing most of last week (as in the Labor Force surveys). All responses other than full-time employment were coded 'not employed'. Income included salaries, wages, social security, welfare and any other income. Insurance refers to private or publicly-assisted forms of payment for health-care services. Private forms of insurance include health insurance plans paying part or all doctor bills, health maintenance organizations (HMOs) or prepaid group practice plans. Publicly-assisted medical assistance or other public programmes such as welfare or public assistance forms of health care as well as Medicare from Social Security were also considered. The presence of any chronic health conditions represented need in our behavioural model. Respondents were asked whether they were currently experiencing specific physical health conditions (asthma, high sugar or diabetes, heart trouble, high blood pressure, arthritis or rheumatism, trouble breathing, a stroke and/or cancer). Responses ranged from 0 to 7.

Use of health care services, our dependent variable, was operationalized to include any visit to a medical doctor or professional in a

medical-care setting in the previous 6 months. It included primary and/or speciality medical and mental health care, but did not include visits to social workers and counsellors in other settings. Almost 60% reported such a visit (Shapiro *et al.* 1984). The data on distress, social networks and health services use were gathered at wave 1.

The sample design for the ECA surveys included several stages, with clustering of units for selection at one or more stages (Eaton *et al.* 1984). The purpose of this report is analytical, not descriptive – in effect, considering variation within this sample of individuals. Therefore, the analyses are not weighted by sample selection probabilities. In estimation of variances, the sample is treated as a simple random sample, instead of a multistage clustered sample. The result is that estimates of variance are likely to have a low bias with the design effect, across a variety of variables between 1 and 1.3. The reader should be aware of this in considering the statistical significance of the results (Kessler & McLeod, 1985). The analyses below use multiple logistic regression procedures to model the odds that an individual will report one or more visits to a health care facility during the 6 months prior to the interview.

## RESULTS

Table 1 displays frequency distributions for predisposing enabling and need factors. Sixty-two per cent ( $N = 2159$ ) of our subjects are female. The age distribution appears equal for the four defined age categories with each equally about one-fourth of the total sample. One-third (34%,  $N = 1182$ ) are African-American. Those with health insurance/HMO and/or eligible for Medicaid or Medicare comprise almost three-quarters or 74% ( $N = 2564$ ). Less than one-half or 44% ( $N = 1463$ ) are currently employed full time. Fifty-four per cent ( $N = 1895$ ) reported no chronic physical condition.

The effect of predisposing, enabling, and need factors on visits to health care facilities is also presented (Table 2). There is little variation by sociodemographic variables in visiting health care facilities; most equal about 60%. There are two notable exceptions. First, only about 45% of those without insurance made a health visit; and secondly, over 84% of persons reporting

Table 1. Description of Baltimore ECA sample

	N	%
Predisposing factors		
Sex		
Male	1322	38
Female	2159	62
Age		
18–29	925	27
30–44	791	23
45–64	842	24
≥ 65	923	27
Education		
Eighth grade or less	990	28
Ninth to eleventh grade	896	26
High School	948	27
Beyond High School	646	19
Race		
African-American	1182	34
White and other	2299	66
Marital		
Married	1411	40
Not married	2069	60
Enabling factors		
Insurance		
Insurance	2564	74
No insurance	917	26
Income		
Under \$4999	621	21
\$5000–12499	918	31
\$12 500–19999	592	20
≥ 20000	862	29
Employment		
Full-time	1463	44
Not full-time	1904	56
Need		
Medical illnesses		
≥ 3	274	8
2	454	13
1	858	25
0	1895	54
Doctors visits		
≥ 1	2077	60
0	1404	40

The total sample consists of 3481 individuals. Data were required to be complete for age, sex, and race. For other variables the total does not always equal 3481 owing to missing data.

three or more chronic illnesses used the health system over the prior 6 months.

Logistic regression estimates odds of occurrence of a dichotomous dependent variable, while adjusting statistically for the influence of other predictor variables in the equation. The adjusted odds (column 3) of visiting health care facilities were 62% greater for women than men. Those with insurance had 58% greater odds for health care use than those without such

benefits. Also significant was the inverse relationship between age and use of health services. However, the strongest association is among those with no chronic physical illness with an odds ratio of 0.16 for use of health care compared with those reporting three or more chronic illnesses. Confidence intervals show that these effects are statistically significant at the 0.01 level or better.

The relative odds of service use by combinations of levels of distress, with social support provided by confidantes, by contact with family members, and by contact with friends are also examined (Table 3). For each social relationship variable, three indicator variables were created that together represent the information in a two by two cross classification of social ties (low versus high) and stress (low versus high). The reference category is the group with low distress and no social contacts, which should have a low rate of services use. The other three categories are social contact and low distress, social contacts and high distress, and no social contacts and high distress. Model 1 examines the main effects of distress and social contact on health utilization. Models for interactions of distress and family, friends and confidante appear respectively in columns 2, 3 and 4. In models 2–4, distress and social contact and social support are removed as main effects because they are redundant with the interaction terms. The coefficients are adjusted for age, sex, insurance and chronic health problems, selected on the basis of their statistical significance in Table 2.

In the main effects model (1) distress is associated with medical care visits: those who reported high distress on the GHQ had a 70% higher odds of seeing a physician or other health practitioner, even after controlling for the predisposing, enabling, and need variables. Of the three social variables, only contact with friends appears to have a statistically significant effect. Model 2 represents the first test of the buffering hypothesis of the effects of social networks: the interaction of family contact as social network with distress. In this model the highest odds of use are for those in the high distress, no family contact group (OR = 1.84, CI = 1.42, 2.38). Model 3 presents interaction of distress with social network of friends. Persons who report social contact with friends and low



Table 2. Predictors of medical visits

	% Visiting health facility	Crude odds ratios* of visiting	Adjusted odds ratios† of visiting and 95% CI
Predisposing factors			
Sex			
Male	52	1.00	1.00
Female	64	1.64	1.62 (1.38, 1.92)
Age			
18–29	59	1.00	1.00
30–44	58	0.94	0.88 (0.71, 1.09)
45–64	60	1.02	0.65 (0.51, 0.83)
≥ 65	61	1.06	0.62 (0.46, 0.84)
Education			
Eighth grade or less	59	0.98	0.77 (0.57, 1.02)
Ninth to eleventh grade	59	0.96	0.84 (0.66, 1.07)
High School	61	1.08	1.04 (0.83, 1.31)
Beyond High School	59	1.00	1.00
Race			
African-American	61	1.12	0.94 (0.79, 1.13)
White and Other	59	1.00	1.00
Marital status			
Married	59	0.95	1.06 (0.89, 1.26)
Not married	60	1.00	1.00
Enabling factors			
Insurance			
Insurance	65	2.23	1.58 (1.32, 1.91)
No insurance	45	1.00	1.00
Income			
< \$4999	67	1.36	1.07 (0.80, 1.43)
\$5000–12499	61	0.98	0.95 (0.76, 1.19)
\$12000–19999	59	0.88	0.94 (0.75, 1.19)
≥ \$20000	59	1.00	1.00
Employment			
Full-time	57	0.71	0.96 (0.79, 1.16)
Not full-time	65	1.00	1.00
Need			
Medical illness			
≥ 3	84	1.00	1.00
2	78	2.76	0.70 (0.45, 1.08)
1	64	1.30	0.32 (0.21, 0.47)
0	50	0.39	0.16 (0.11, 0.24)

\* *N* varies by variable, as in Table 1.

† Adjusted for all variables in the Table.

The number of observations is *N* = 3366 owing to missing data 115 persons.

distress have a 54% greater odds (OR = 1.54, CI = 1.18, 2.03) of obtaining medical care. Those with contact from friends and high distress have 2.5 greater odds (OR = 2.59, CI = 1.84, 3.65) of seeing a physician or other health provider. The interaction of distress and having a confidante is also examined (Model 4). The odds of seeing physicians for those with high social support and high distress are twice as great (OR = 1.98, CI = 1.43, 2.74) as the comparison group with low distress and low support. However, the odds of using health services by persons with no confidante and high distress is over four times

greater (OR = 4.26, CI = 2.26, 8.03) than for the reference group.

The main effects of high distress are strong and consistent in Table 3, as predicted. The main effects of social networks or social support are equivocal, as predicted. The interaction is more complex than originally proposed: not only is use of services much higher for those in the high distress–low support condition but the effect for social support changes directions, depending on the level of distress. Thus, for those with high distress, the presence of social support lowers the degree of services use; for

Table 3. Social and psychological predictors of medical visits

	Distress and social relations interactions*			
	1 Main effects*	2 Family	3 Friends	4 Confidante
Distress				
High	1.70 (1.35, 2.14)	—	—	—
Low	1.00	—	—	—
Confidante				
Confidante	0.92 (0.72, 1.18)	0.92 (0.72, 1.17)	0.92 (0.72, 1.17)	—
No confidante	1.00	1.00	1.00	—
Contact with family				
Family contact	0.95 (0.79, 1.15)	—	0.96 (0.80, 1.16)	0.97 (0.80, 1.17)
No family contact	1.00	—	1.00	1.00
Contact with friends				
Friends	0.67 (0.50, 0.90)	0.65 (0.49, 0.86)	—	0.66 (0.49, 0.88)
No friends	1.00	1.00	—	1.00
Distress support by family contact				
Contact, low distress	—	1.11 (0.91, 1.36)	—	—
No contact, low distress	—	1.00	—	—
Contact, high distress	—	1.47 (0.93, 2.33)	—	—
No contact, high distress	—	1.84 (1.42, 2.38)	—	—
Distress support by friends' contact				
Contact, low distress	—	—	1.54 (1.18, 2.03)	—
No contact, low distress	—	—	1.00	—
Contact, high distress	—	—	2.59 (1.84, 3.65)	—
No contact, high distress	—	—	1.99 (0.96, 4.12)	—
Distress by confidante				
Support, low distress	—	—	—	1.34 (1.05, 1.72)
No support, low distress	—	—	—	1.00
Support, high distress	—	—	—	1.98 (1.43, 2.74)
No support, high distress	—	—	—	4.26 (2.26, 8.03)
<i>N</i>	3229	3311	3315	3316

\* Adjusted for age, sex, insurance and chronic illness.

those with low distress, the presence of social support raises slightly the degree of services use. This result does not contradict the original hypothesis, but suggests more complexity to the relationship than originally anticipated. This may be an example of social support encouraging appropriate use of health services among persons with an illness. These results appear over and above the explanatory power of the predisposing, enabling, and need characteristics in the regression equation.

## DISCUSSION

Persons absent of social relationships or social support have been shown to be more likely to visit the health-care system. Yet, until now the interactive effects of stress and support on subsequent medical care utilization have not been thoroughly examined. Our findings support

Cohen & Thomas' (1985) model of buffering effects using measures of perceived availability of support in times of distress, but with visits to medical care facilities, not psychopathology, as the dependent variable. The perceived intimacy or closeness of a confiding relationship is most significant in explaining the relationship between distress and out-patient health service use.

Tessler *et al.* (1976) state that 'persons who are distressed... (or) difficulty in coping, deal with such situations in part by seeking medical care'. Medical providers often fulfil social and psychological needs of their patients (Kadushin, 1969; Shuval *et al.* 1970). Social support can be obtained in informal networks or by visits to physicians. Persons undergoing stress have lower thresholds for perceiving bodily aberrations as abnormal symptoms needing medical attention, than those not under stress, as described in the research literature on illness behaviour (Mech-

anic, 1979). In situations where emotional social support is available, the urgency of the symptom can be assessed by comparison with another person who may not be under such a high level of stress. Such reflected appraisal has the potential to lower the threat of the bodily aberration – in effect, recalibrating the help-seeking threshold. Where emotional social support is not available, no recalibration is possible, except through a visit to a medical doctor or health treatment facility.

It is noteworthy that the strength and statistical significance of psychological distress does not disappear even after the introduction of other dimensions of health status, sociodemographics, and insurance. This differs from previous findings on out-patient medical utilization (Wolinsky *et al.* 1983; Berkanovic & Hurwicz, 1989; Manning & Wells, 1992).

In a recent revision of his behavioural model, Andersen (1995) has stated that social networks, social interaction, and quality of social relationships ‘rightly fit’ into the model and should be incorporated. Our findings support the inclusion of distress and social relationships in the explanation of health services utilization. While prior researchers have attempted to explain the interaction of distress and social support on specific subgroups, this paper reports analyses from data representing the general population rather than a single age or patient sample.

The operational difference between nature of support from a confidante and existence of extensive social networks of family and friends represents a shortcoming in this study. The difference in measurement – emotional support from a confidante *versus* numbers of contacts for family and friends – may explain the pattern of results which differed by type of relationship. A limitation of cross-sectional analysis is our inability to state with precision whether distress precedes low social support or vice versa. Similarly, we are only able to speculate the temporal order of low support and health utilization. Panel studies with more detailed measures of social networks and social support would allow an examination of the expanded behavioural model in greater detail.

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