Access to Medical Care Among the Elderly in Rural Northeastern Ohio

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Background. Conventional wisdom holds that the elderly living in rural areas suffer poor health and have limited access to health care compared with their urban peers. The relation between poor health and limited access, however, has yet to be adequately defined.

Methods. We conducted a telephone survey of 1000 elderly persons living in four rural northeastern Ohio counties using a proportional random-digit dialing method.

Results. Many rural elderly respondents appeared to suffer poor health and have limited access to medical care. However, a detailed analysis revealed that poor health and limited access were more perceptual than actual.

Conclusions. Elderly persons living independently in rural northeast Ohio have much better health and access to care than suggested by the literature.

Key words. Rural health; health care access; geriatric health status. (*J Fam Pract 1993; 37:349-355*)

Conventional wisdom holds that the elderly living in rural areas suffer from poor health, have limited access to medical care, and receive care that is sometimes of substandard quality.[1] The rural elderly are subject to sickness and disability, restricted mobility, acute and chronic medical conditions, and injuries that may lead to disability.[2,3] This population is often geographically isolated, living in poor communities and without transportation.[3-6] Rural health systems often lack physicians, nurses, pharmacists, long-term custodial care, rehabilitation programs, skilled geriatric facilities, and home-care programs.[3,7-9] Rural hospitals generally lack advanced technology to diagnose and treat cardiovascular disease, heart disease, cancer, and emergency trauma.[2,10]

These observations imply that the rural elderly are in poor health, in part, because their medical care needs are going unmet, thus the "unmet needs/poor health" hypothesis.[11] This hypothesis is the basis of many federal, state, and local rural health care programs. However, research has not established a clear association between limited access to medical care and poor health.[12] A competing hypothesis might account for the association: although many diseases will cause death, disability, or dysfunction without medical treatment, most patients find a way to get medical care if they become ill enough, even in remote areas.[13] Chronically ill elderly persons may move to have better access to suitable health care.[14,15] Therefore, those elderly persons who *remain* in rural communities either have access to care or are healthy and do not need many health care services. If this hypothesis is true, few elderly persons are likely to be both ill and without access to care.

In a survey of 1000 elderly residents living independently in rural northeast Ohio, we tested our hypothesis: If rural elderly persons with access to care are ill, and those who have no access to care are well, then the "unmet needs/poor health" hypothesis is refuted. Our results provide insight for those concerned with understanding and improving the health and access to care for rural residents.

Methods

The Survey

Four nonmetropolitan counties (as defined by the US Bureau of the Census) in northeastern Ohio were selected for the study: Holmes, Tuscarawas, Carroll, and Columbiana. They were selected to represent rural populations from the eight-county service area of the Northeastern Ohio Universities College of Medicine.

During the fall of 1991, telephone surveys of 1000 noninstitutionalized elderly persons (aged 62 years and older) were completed, with 250 respondents in each county. Those questioned were elderly persons living independently (ie, in private homes, retirement villages, high rise apartment buildings, and low-income housing). We did not interview elderly persons living in nursing homes, skilled nursing sites, hospitals, or other long-term care facilities. The sample was obtained by using a proportional random-digit dialing method, allowing those with unlisted or new telephone numbers to be contacted. Respondent selection within households was randomized. Because less than 3% of the county residents did not have telephones, the sample was representative. Eighteen professional interviewers, all with extensive survey research experience, administered the questionnaire. The survey averaged 35 minutes to complete. Telephone interviews were completed with 64% of those identified as 62 years of age or older, which is an acceptable response rate.[16]

Sample Reliability

No statistically significant differences in demographic characteristics (race, income, sex, and marital status) were found among the four counties. The four county samples were aggregated, with a proportionate share taken from each county: Holmes, n = 97; Tuscarawas, n = 342; Carroll, n = 100; and Columbiana, n = 439. Weighting did not change the distribution of demographic characteristics within the sample. A sensitivity analysis to assess the effects of weighting on access and health status variables was conducted. Results of the study remained unchanged in the weighted and unweighted data sets.

When the demographic characteristics of respondents were compared with 1990 census data, the only major deviation was that elderly women were overrepresented in our sample. The sample was proportionally weighted by sex and age to conform to the distribution found in the 1990 census.

Table 1. Responses to Survey Questions Concerning Health Status Problems of 1000 Rural Elderly

Respondents' Problem	Percent
Subjective health status	35.2
Difficulty in performing ADL/IADL	42.3
Symptoms	88.6
Any medical condition present	92.0
Uncontrolled medical condition	23.0
Stayed in bed for ≥1 day in the last 12 mo	20.9
Unable to perform ADL/IADLs	22.7
Use medical aids	67.8
Depression	11.7*
Worry about health index	45.8

*Based on a scale score of >5.
ADL denotes activities of daily living; IADL, instrumental activities of daily living.

Measuring Health Status

Health status includes many factors.[17] To define health status we examined a variety of indicators, the responses to which we coded as either 1 or 0, with 1 indicating *health problems* and 0 indicating *no health problems*. The frequencies for each variable are presented in Table 1.

Subjective health. Respondents were asked a standard subjective health status question: "How would you rate your overall health at present: excellent, good, fair or poor?" (A score of 1 was assigned for fair or poor, 0 for excellent or good.)

Worry about health. We combined four measures of "worry" in an index. They were: "How good a job do you feel you are doing in taking care of your health?" (1 = fair or poor, 0 = excellent, very good, or good).[18] "During the past year, has your overall health caused you a great deal of worry, some worry, hardly any worry, or no worry at all?" (1 = great deal or some, 0 = hardly any or none). "Compared with one year ago, would you say that your health is now better, worse, or about the same?" (1 = worse, 0 = better or same). "How much control do you think you have over your future health?" (1 = very little or none, 0 = great or some). The worry index was scored as follows: 1 = any worry, 0 = no worries.

Functional status. The Illinois Determination of Need (DON) scale was used to measure function. The DON combines 16 measures and unmet needs associated with activities of daily living (ADL) and instrumental activities of daily living (IADL).[17,20] We employed the ADL and IADL questions to measure functional status, and the unmet needs questions to measure access to health services. Respondents were asked whether they had "no, slight, moderate, or total impairment" on each of 16 ADL and IADL items. The items were then summed as follows: a score of 1 was assigned if the patient reported impairment on any item and 0 if no impairments.

Symptoms. Respondents were read a list of 31 symptoms (eg, fits or seizures, severe pain, and weight loss).[21] We asked whether they were experiencing any of the 31 symptoms. The items were summed and coded 1 for presence of any symptom and 0 for no symptoms.

Medical condition. The 12 most common medical conditions or disease processes afflicting the elderly were presented (eg, cancer, hypertension, heart disease).[22] Respondents were asked whether they had ever had the disease or problem, and, if they had, was it "cured, under control, not under control." The items were summed and coded (1 = presence of any medical condition, 0 = no medical conditions). We created a second measure by summing responses from those who had medical conditions that were not under control (1 = any medical condition not under control, 0 = no conditions out of control).

Bed days. Two standard disability questions were asked[22]: "Other than when you were a patient in a hospital or nursing home . . . about how many days all together during the last 12 months were you in bed all or most of the day because of illness or a health condition? Would you say no days, a week or less, a week to a month, one to three months, or four months or more?" (1 = any bed days, 0 = no bed days). "During the past six months, how many days were you so sick that you were unable to carry on your usual activities, such as going to work or working around the house? No days, a week or less, a week to a month, one to three months, four or more months." (1 = days lost, 0 = no days lost).

Medical aids. Elderly respondents were asked: "Do you use any of the following special aids or equipment: dentures, cane, walker, wheelchair, leg brace, back brace, pacemaker, hearing aid, or glasses?" (1 = medical aid used, 0 = no medical aids used).

Depression. We used the Burnam Depression Scale in the analysis. The Burnam scale is a modification of the Center for Epidemiologic Studies–Depression Scale used in the Medical Outcome Studies.[2,3] Using the Burnam algorithm, depression was coded as 1, and absence of depression was coded as 0.

Measuring Access

Access, like health status, includes many dimensions. Values for each access variable were coded either as 1 or 0, where 1 indicated *limited access*, and 0 indicated *no access problems*. Frequencies are shown in Table 2.

Utilization. Several standard health care utilization questions were asked[11]: "Do you have a physician you see regularly?" (1 = no, 0 = yes). "How many months has it been since you last saw your physician?" (1 = no visits in past year, 0 = at least one visit in past year).

Table 2. Indicators of Lack of Access to Health Care Among 1000 Rural Elderly

	Percent
Utilization	
Does not see physician regularly	13.0
More than 12 mo since last seen by physician	14.3
Hospitalized at least overnight in last 12 mo	21.7
Unmet need on any ADL	39.5
Greater than 15 min from health care facility	31.5
Monetary barriers	
Unable to pay physician	4.0
Unable to pay deductible	3.4
Unable to buy medication	8.0
Transportation	
Difficulty obtaining transportation for health care	2.9
Score of ≥1 on transportation index	31.4
Did not visit physician because of transportation problem	12.9
No social service utilization	49.3
Perception of access to health care	
Inadequate medical care in community	11.7
Concerned about adequacy of medical care	12.8
Poor medical care	17.9
Physician shortage in community	25.6
Medical care poor compared with other communities	7.8

"How long has it been since you were last hospitalized overnight?" (1 = no hospitalization in past year, 0 = any hospitalization in past year).

Unmet needs. For each item on which respondents listed an impairment in the ADL and IADL measure, they were asked whether their needs were met "most of the time, not most of the time, or [were] acute." The items were summed and coded: 1 = any unmet need, 0 = no unmet need.

Time from health care facility. Respondents were asked to estimate the amount of time in minutes it takes to travel from their home to their physician's office or health care facility.[24] (1 = >15 minutes, 0 = ≤15 minutes).

Financial barriers. Three questions were asked to decide whether respondents faced financial barriers in getting care[19]: (1) "Over the past year has your inability to pay ever prevented you from seeking care from a physician?" If yes, "What health problems were you seeking help for?" (2) "Has your inability to pay out-of-pocket expenses such as a Medicare deductible or pharmacy charges kept you from seeking medical care?" If yes, "What kind of health problem?" (3) "In the past two years, has a physician prescribed a medication which you could not afford?" If yes, "What was the medication for? and "What happened?" We coded all responses as follows: 1 = problem, 0 = no problem.

Transportation barriers. Transportation problems were identified by asking the following questions: "In the past year, have you had any difficulty getting transportation to receive health care?" (1 = yes, 0 = no). If yes, "What was the problem?" and "How did you resolve it?" Also, "Have you ever not gone to the doctor because you could not get transportation?" (1 = yes, 0 = no). An index of transportation was created by summing the scores for the responses to each of these items: not having a car, not having access to a taxi, not having access to public transportation, believing transportation is a problem in his or her community, and not having others to rely on for transportation (1 = a problem on any item, 0 = no problem).

Social services utilization. Users of social services were identified by asking about service use over the past 12 months: senior centers, special transportation for the elderly, home-delivered meals, homemaker services, monitoring calls, visiting nurses, home health aide, or adult day care.[27] We summed the items so that 1 indicated no utilization and 0 indicated utilization.

Perceptions. Asking people about their concerns regarding the health care system is a direct test of the hypothesis under study. "Do you feel you have adequate medical care in your community?" (1 = not adequate, 0 = adequate). "How would you rate the quality of medical care in your community: excellent, good, fair, poor?" (1 = fair or poor, 0 = excellent or good). "Is there a shortage of physicians to choose from in your community?" (1 = yes, 0 = no). "Compared to cities in this area, would you say health care or medical care in your community is better, worse, or about the same?" (1 = worse, 0 = better or about the same).

Results

A Preliminary Look

Cross-tabulation of health status and access appear to have confirmed the "unmet needs/poor health" hypothesis. Of 170 cross-tabulations (ie, the 17 access measures by 10 health status measures), one third yielded a prevalence level of at least 10% (Table 3). Prevalence levels varied widely, however, from as high as 46% to as low as 1% of the sample, suggesting a complex relationship.

Perception of health care access (ie, adequacy of, worry about, rating of, comparison with that in other areas and physician shortages) was not strongly correlated with health status measures.

Few elderly persons reported difficulties accessing health care because of transportation, and they constituted a small share of those with any health problems.

Also, inability to access health care or obtain medication because of inability to pay were uniformly of low prevalence across all 10 measures of health status.

Distance from health care facilities showed mixed results: subjective health status, functional status, symptoms, medical condition, and use of medical aids were positively correlated with distance.

Unmet needs associated with activities of daily living were consistently high across all 10 measures of health status. This was also the case when the use of social services was considered.

Medical care utilization as a measure of access showed a complex pattern of relationships across health status variables. Elderly persons who did not see a physician tended to report more symptoms and have more uncontrolled medical conditions. Those who had not been hospitalized over the past 12 months had lower subjective health perceptions, greater worry, more problems with ADL and IADL, symptoms, and medical conditions, and used more medical aids.

Elderly persons who had not been hospitalized were more likely to report transportation problems, to live more than 15 minutes from a medical care facility, to have unmet ADL and IADL needs, to believe there was a shortage of physicians in their area, to report limited access to social services, and to worry about their health status.

A Closer Look

Although our preliminary analyses offer some support of the "unmet needs/poor health" hypothesis, a closer look at the data calls this conclusion into question.

HEALTH STATUS

Many elderly persons suffered functional limitations, but few suffered an "acute" problem on any of the 16 ADL and IADLs. Three fourths of the respondents said they suffered only "slight" difficulties. Many used medical aids, but most of these were dentures (61%) or glasses (95%).

The rural elderly report symptoms and chronic disease associated with aging, and often mobility limitations and sensory deficits. Although elderly persons have a variety of serious chronic medical conditions, only a handful reported that these health problems were not under control.

ACCESS

Although many elderly did not drive and there is little public transportation in rural northeastern Ohio, only 3% had encountered any transportation difficulties in

Table 3. Indicators of Limited Access Reported by 1000 Rural Elderly with Health Problems

Health Status Measures	Utilization			Financial			Transportation				Time	Unmet Need		Perception			Social Service
	Unable to See Physician Regularly	Did Not Visit Physician in Past Year	Spent ≥1 Night in Hospital in Last Year	Unable to Pay Physician	Unable to Pay Deductible	Unable to Pay for Medications	Difficulty Finding Transportation to Health Care Provider	Score of ≥1 on Transportation Index	Did Not Visit Physician Because of Lack of Transportation	Lives ≥ 15 Minutes from Physician's Office	Has Unmet ADL Assistance Need	Health Care Inadequate	Worried About Rural Care	Rated Care Fair or Poor	Physician Shortage Exists	Care Worse than in the City	Social Services Utilized in Past Year
In poor health (n = 352)	2.2	2.1	12.3	2.9	2.6	5.6	2.4	13.1	7.6	12.5	16.0	4.2	6.1	8.7	9.5	3.4	16.7
Medical condition present (n = 920)	10.3	12.9	21.2	4.0	3.3	7.8	52.7	29.6	12.1	29.5	24.3	10.6	12.3	16.2	23.9	7.4	46.3
Symptomatic* (n = 886)	10.0	11.2	19.5	3.7	3.1	7.8	2.9	29.7	12.4	28.8	24.6	10.6	11.9	16.0	23.1	7.3	44.1
Medical condition uncontrolled (n = 230)	2.9	3.2	6.4	1.5	1.1	2.4	1.4	9.8	4.3	9.4	10.3	3.0	3.9	4.9	6.5	2.7	12.4
Used medical aids (n = 678)	8.1	8.5	15.8	2.9	1.7	6.1	2.5	12.7	9.8	21.5	19.4	8.5	9.3	12.5	18.0	5.2	34.4
Problems with performing ADL/IADL (n = 423)	4.0	4.2	12.9	2.9	2.4	5.5	2.69	18.5	8.3	15.6	24.8	5.1	7.1	8.8	11.4	4.8	23.6
Unable to perform ADL (n = 227)	1.9	2.2	7.3	1.4	1.9	3.7	1.7	8.0	5.5	9.1	11.6	3.2	4.3	6.1	8.0	3.5	12.6
Stayed in bed sick ≥1 day (n = 209)	1.5	1.7	5.8	1.6	1.7	3.7	1.5	6.3	5.3	8.4	10.2	2.5	4.3	4.9	7.8	3.2	11.3
Worried about health (n = 458)	3.6	4.2	14.0	3.0	2.5	5.9	2.6	16.5	9.3	15.2	17.3	5.4	6.8	10.1	12.5	4.6	22.1
Depressed† (n = 117)	0.8	1.2	3.3	1.5	1.0	2.3	1.3	4.7	3.2	6.2	6.4	2.3	2.4	3.5	4.8	1.7	7.4

*Respondents were considered symptomatic if they reported experiencing one or more of 31 symptoms (eg, fits or seizures, severe pain, weight loss). †The Burnam Depression Scale was used to assess depressive symptoms. A respondent was considered to be depressed if he or she had a score of 1 or higher. NOTE: Tabular numbers are percentages of sample noted in column 1, Health Status Measures.

obtaining health care. Only 0.2% were unable to reach a health care facility because of transportation problems.

Finances posed few problems because nearly everyone was covered by insurance, including Medicare and Medicaid. Less than 1% (0.7%) could not pay for medical care because they lacked health insurance. Only one half of those who claimed they could not pay were poor; that is less than 2% of the total.

The elderly rarely used social services, perhaps because they could turn to informal help: only 1% reported having no one to rely on, whereas 77% could count on help from four or more people.

Rural elderly persons reported that they had functional deficits for which help was not available, but less than 1% of the rural elderly had an "acute" unmet need on any of the 16 ADL and IADL measures.

Worry about the rural medical care system was revealing: although many rural elderly felt that the medical care system provided inadequate, low-quality care, 90% believed that their community system was no worse than others. In other words, they implied that by moving to more urban areas they would not necessarily improve the services they receive.

HEALTH STATUS AND ACCESS

Does an identifiable group of poorly served sick people exist, or are the two problems widely scattered throughout any given community? We created single indices for health status and access for each respondent by summing occurrences of illness and lack of access across all variables. The two indices are highly correlated ($R = .50$, $R^2 = .25$, $P < .001$), suggesting that diminishing health status is associated with decreasing access to medical care. One quarter had few health problems and only minor barriers to medical care access. Some 69% had either some deficit in health or some difficulty in access, but not both. *However, only 6% had both very poor health and poor access* to health care.

Discussion

We began this study with the question: How are health and access to medical care among the rural elderly related? Do many rural elderly suffer poor health and limited access to medical care? Our study of 1000 elderly persons in rural northeast Ohio suggests that, although poor health and poor access are associated, they are not widespread. It appears that medical care is relatively accessible for the healthy and unhealthy alike. Concerns over access to health care appear to be more perceptual than real, at least in this rural elderly population. They

appear to come from those who are relatively healthy but who fear they will not be well cared for, and from those who have access and receive treatment but continue to suffer illness and disability.

We believe that our findings differ from previous studies that have investigated health status and access separately, and then assumed a causal relationship. Our findings cast doubt on this causal connection. Statistical association is not proof of causation.

These findings have important implications for primary care targeted at rural elderly. In northeastern Ohio the current system of medical care for the elderly apparently functions fairly well. The medical care needs of the rural elderly, sick or well, are generally met. Those whose needs are not met are not a clearly defined group, and must be dealt with according to individual circumstances.

For the small number of elderly persons who suffer poor access, some changes could help. First, practitioners could find ways to develop more fully the informal helping networks in rural communities. Friends, relatives, and neighbors seem to provide considerable help, but there is also a role for churches, service clubs, and social groups. Formal networks in the communities under study appear weak and ineffective.

Second, physicians should query patients about their coping strategies. Do they delay physician visits? Can they pay for medication? Do they understand how they can best care for themselves? Patients with problems can be helped by physicians to develop individualized coping strategies.

Third, there appears to be a lack of information among the rural elderly regarding established social services and medical care options. Physicians and hospitals could promote health programs more strongly and distribute information more widely in rural communities.

Several important caveats should be stated. First, we did not study emergency medical services and long-term care facilities in the region. Although primary, secondary, and tertiary care are adequate, emergency and long-term care may be lacking.

Second, dichotomous variables, constructed from ordinal- or interval-level measures, can mislead: different dichotomies could yield different interpretations of the data. We structured our analysis to avoid this problem. We were concerned with the presence or absence of illness or access to care, not with the severity of illness or degree of access. A respondent was either ill or not, and had access to care or did not. The only exceptions to this were variables related to subjective health status, where convention dictated that we collapse "excellent and good" and "fair and poor" responses into a dichotomy. We were very conservative in our definitions in favor of the conventional perception, ie, the "unmet needs/

poor health" hypothesis. In order to refute the prevailing hypothesis, our data needed to demonstrate that the prevalence of illness coupled with lack of access was low across the board, an unlikely chance association. Because we found low prevalence on a wide variety of measures, we believe that the "unmet needs/poor health" causal linkage is not well supported.

Third, some analysts may disagree about how many people it takes to constitute a problem or define an unmet need. In our study, unmet medical needs and poor health were only weakly associated in the rural elderly population studied. A robust causal relationship between the two cannot be demonstrated.

Finally, we believe that our results might be found in studies of other rural communities. However, rural communities are not homogeneous, and these findings may not apply in some rural areas with lower population densities or substantially different racial or ethnic demography. This question should be investigated at other sites.

Acknowledgment

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