

Unmet Health Care Needs and Mortality among Spanish Elderly

ABSTRACT

Objectives. This study estimates the prevalence of unmet health care needs among the elderly of Barcelona, Spain, and analyzes the association between unmet needs and mortality.

Methods. Home interviews were conducted with 1315 elderly in Barcelona. Individuals were classified as having a "health services need" if they reported being in fair, poor, or very poor health; suffering from two or more chronic conditions; or being dependent in at least one basic activity of daily living. Need was considered unmet if no visits to or from a physician in the previous 12 months were reported. Mortality was assessed from census data in August 1991.

Results. Between 10% and 25% of the elderly in need reported no use of health services. After a median of 60.3 months, those with unmet health care needs presented a higher risk of mortality, adjusted for several confounding factors: relative risk [RR] = 2.55 (95% confidence interval [CI] = 1.22, 5.32) for unmet activity of daily living dependency; RR = 1.80 (95% CI = 1.20, 2.70) for unmet comorbidity; and odds ratio = 1.10 (95% CI = 0.59, 2.05) for unmet poor self-rated health.

Conclusion. Noninstitutionalized elderly individuals with unmet health care needs are at increased risk of dying. (*Am J Public Health*. 1997;87:365-370)

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Introduction

Most Western societies achieve universal access to health care through their health systems. The notable exception is the United States, where 17% of the population under age 65 are uninsured.¹ People without insurance are less likely to have been visited by a physician or admitted to the hospital.²⁻⁴ Uninsurance is associated with lower self-rated health, lower levels of functional status, a greater number of chronic conditions, and a greater perceived need for services.^{3,5} Uninsurance is also associated with higher mortality once the effects of possible confounding variables are taken into account.⁶ Better health outcomes could likely be achieved by making effective health care services more accessible to those with health care needs.

There is vast evidence, arising from both controlled and nonexperimental studies, of the efficacy of specific treatments for specific conditions. Having reviewed some of this evidence, Bunker and colleagues⁷ reported that almost half of the increase in life expectancy in the last 25 years may be attributed to medical care. Evidence analyzed in that report was mostly based on projections of the results of clinical trials with patients with selected conditions, many of which are prevalent among the elderly. While this approach is very informative, however, it lacks a population-based perspective. It is important to estimate how many individuals who may benefit from health care are actually receiving such care, as well as to determine whether the benefits estimated under more controlled circumstances are actually achieved in practice. For instance, the benefit of health care for one

condition may not translate into a benefit for coexisting conditions. Comorbidity and many other circumstances should be taken into account, especially among the elderly, in whom the prevalence of comorbidity is higher⁸ and factors other than medical conditions may be related to mortality.

The benefit of medical care from a population-based perspective may be very difficult to assess, and the lack of indicators for this evaluation has been pointed out.⁹ A decade ago, Starfield¹⁰ showed that providing health services and increasing the population's access to them improved survival and other health outcomes in children. However, there is scarce information on the overall population benefit of the use of health services. This information is especially needed for the elderly since they constitute a group with increased health needs.

In Spain, the National Health System guarantees access to free health care to almost 98% of the population. Nevertheless, social differences in the use of health care services in relation to health status needs exist,¹¹ suggesting that some individuals may have unmet health care needs. The present study, based on a multipurpose health interview survey of

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TABLE 1—Baseline Characteristics of the Sample Studied (1986) and Vital Status after the Follow-Up Period (1991), Barcelona, Spain (n = 1315)

	Men (n = 506), %	Women (n = 809), %
Sociodemographic characteristics		
Age, y (range 65–97)		
65–74	63.6	58.5
75–84	32.2	31.6
85+	4.2	9.9
Social class		
Classes I–II (professional/intermediate occupations)	19.6	15.3
Class III (skilled nonmanual occupations)	26.1	13.6
Classes IV–V (manual occupations)	44.7	48.1
Unclassified	9.7	23.0
Education completed		
Tertiary education	16.2	5.4
Secondary education	19.2	11.7
Primary education	56.1	62.8
None completed	7.9	18.3
Not living alone	91.5	73.9
Not assessed	0.6	1.7
Living arrangements		
Living alone	8.3	26.0
Not living alone	91.5	73.9
Not assessed	0.2	0.1
Baseline health status		
Perceived health ^a		
Very good	9.7	6.9
Good	52.0	43.3
Fair	26.7	34.3
Poor/very poor	4.2	7.5
Not assessed	7.4	8.0
Chronic conditions		
None	27.7	15.8
One	27.7	24.2
Two or more	44.6	60.0
Functional capacity in ADLs ^a		
Independent in all ADLs	68.2	55.5
Independent but with difficulty in at least one ADL	25.1	34.0
Dependent in at least one ADL	4.2	6.9
Not assessed	2.6	3.6
Use of health services		
Physician visit in previous 12 mo	78.1	77.9
No physician visit in previous 12 mo	21.1	21.1
Not assessed	0.8	1.0
Vital status 5 years after^b		
Alive	72.3	80.7
Dead	24.9	16.7
Emigrated	2.0	1.5
Not traced	0.8	0.9

Note. ADL = activity of daily living.

^aOnly personal responses were allowed. Among the 14% with a proxy respondent for the rest of the questionnaire, more than half rated their health status personally.

^bMedian follow-up period 60.3 months.

those unmet needs and subsequent mortality experience.

Methods

The vital status of a cohort of Barcelona residents aged 65 or older who had participated in the 1986 Barcelona Health Interview Survey was assessed 5 years after the baseline interview (n = 1315).

Baseline Interview

Details about the Barcelona Health Interview Survey methods have been described previously.^{12–15} Briefly, a non-proportionally stratified random sample of 3062 households was drawn from the 1985 local census register. Households with individuals aged 65 or older were oversampled to get a total of 1632 individuals in this age group. Of those, 1315 (80.6%) completed the baseline study. The eligible subjects were initially interviewed at their homes between January 1986 and January 1987 by trained nonmedical interviewers using a precoded questionnaire. Fourteen percent of the interviews were answered by a “proxy” respondent, mainly because the eligible participant had difficulty responding due to health reasons.

Variables recorded during the survey included self-perceived health, assessed by the question “In general, how would you rate your health: very good, good, fair, poor or very poor?” (with no proxy response allowed for this question); the number of chronic conditions (e.g., asthma or bronchitis, diabetes, hypertension, and osteoarthritis) reported out of a list of 14; the functional capacity to perform nine basic activities of daily living (walking, grooming, sitting, bathing, using the toilet, dressing, eating, going up/down stairs, and going outside); and the number of medical visits (including visits to a physician and home visits by a physician) in the year previous to the interview. Also obtained was information on several sociodemographic variables, including social class based on an adaptation of the British Registrar General’s classification.¹⁶

Three independent criteria were used to classify individuals as being in “need of health care”: if they reported their health as fair, poor, or very poor; if they suffered from two or more chronic conditions; and if they reported being dependent in at least one of nine basic activities of daily living.

the population aged 65 years or older from the city of Barcelona (population 1.7 million), sought to evaluate the use of health services and their impact on the

noninstitutionalized elderly population. The specific objectives were to estimate the prevalence of unmet health care needs and to assess the relationship between

The need for health care was considered unmet if no visits to or from a physician in the preceding 12 months had been reported.

Vital Status Assessment

Health status as of August 1991 was assessed from the local census register through a confidential record linkage. Only the respondents completing the general baseline interview ($n = 1315$) were included in this linkage. In case of death, the date and the principal cause of death listed in the Register of Births, Deaths, and Marriages (Civil Register) of Barcelona and Catalonia were noted. This register is routinely updated and corrected when necessary by linkage with census data.¹⁷ Causes of death were coded according to the 9th revision of the *International Classification of Diseases*.

Analyses

Baseline differences in health status and other variables between the groups with "met" and "unmet" needs were tested using the t test for continuous variables and the χ^2 tests for proportions ($P < .05$).

To evaluate the association of the different baseline variables with mortality, crude relative risks (RRs) of death and Taylor series 95% confidence intervals (CIs) were calculated.¹⁸ The Kaplan-Meier method was used to estimate survival rates over the follow-up period, and the Log-Rank test was used to compare survival curves. To assess the impact of unmet health care needs on mortality for all causes, several multivariate survival models were built with the use of Cox's regression, controlling for the following baseline characteristics: age (in years), sex, education, social class, and living arrangements. Because not seeking any health care from a physician may be related to a poor health behavior, the models included smoking status, physical activity level, and alcohol consumption.^{19,20} In all the models, individuals with met needs were considered the reference category. For one multivariate model that failed the assumption of proportionality of hazards, logistic regression analysis was used.

All P values reported are two tailed.

Results

Almost 38% of the sample rated their health as fair, poor, or very poor; 54% reported suffering two or more chronic conditions; and 6% reported

TABLE 2—Prevalence of Several Health Services Needs at Baseline, and Comparison of Mortality among Met and Unmet Need Groups

	No.	% over Total	% over Those in Need	Vital Status		
				Died	Lost	
	No.	(%)	No.	(%)	No.	(%)
Perceived health^a						
No need (good/very good)	718	54.6	...	113 (15.7)	3	(0.4)
Need (fair/poor/very poor)	487	37.0	...	103 (21.1)	2	(0.4)
Met need	439	33.4	90.1	90 (20.5)	1	(0.2)
Unmet need	48	3.7	9.9	13 (27.1)	1	(2.1)
Unclassified ^b	110	8.4	...	45 (40.9)	6	(5.5)
Chronic conditions						
No need (0 or 1)	604	45.9	...	101 (16.7)	6	(1.0)
Need (2 or more)	700	53.2	...	155 (22.1)	5	(0.7)
Met need	613	46.6	87.6	124 (20.2)	3	(0.5)
Unmet need	87	6.6	12.4	31 (35.6)*	2	(2.3)
Unclassified ^b	11	0.8	...	5 (45.5)	0	(0.0)
Functional capacity based on ADLs						
No need (independent)	1196	91.0	...	208 (17.4)	3	(0.3)
Need (dependent in at least 1 ADL)	76	5.8	...	44 (57.9)	1	(1.3)
Met need	57	4.3	75.0	30 (52.6)	0	(0.0)
Unmet need	19	1.4	25.0	14 (73.7)*	1	(5.3)
Unclassified ^b	43	3.3	...	9 (20.9)	7	(16.3)

Note. ADL = activity of daily living.

^aProxy responses were not allowed for the question on perceived health.

^bUnclassified because of missing information on need or on health services use.

* $P < .05$ (significance tests calculated between met and unmet need groups).

being dependent to perform at least one basic activity of daily living.

Baseline characteristics of the sample by sex are shown in Table 1. Women reported poorer general health status, more chronic conditions, and more dependency in performing activities of daily living than men ($P < .05$). Seventy-eight percent of the sample had seen a physician at least once in the previous 12 months; on this item there were no significant differences between sexes.

The median follow-up period of the cohort was 60.3 months (range = 1 to 69 months). By the end of the follow-up period, 1019 elderly (77.5%) were still alive, 261 (19.9%) had died, 24 (1.8%) had moved away from the city and thus were considered alive to the emigration date, and 11 (0.8%) could not be traced (Table 1). Baseline characteristics of the untraced individuals were similar in age and sex to those of the rest of the cohort, but untraced individuals had a higher proportion of missing information in the baseline interview.

As presented in Table 2, of the 487 elderly individuals who had rated their

health as fair, poor, or very poor, 9.9% had not seen a physician in the previous year. Of the 53.2% who reported suffering from two or more chronic conditions, 12.4% had not received medical attention, as had not 25.0% of those dependent in at least one activity of daily living. The increased proportion of deaths observed among those with unmet needs based on chronic conditions or functional capacity was statistically significant (Table 2, fourth column).

The percentage of people with poor or very poor health status, the mean number of chronic conditions, and the percentage of those with difficulty in at least one activity of daily living were slightly higher among those individuals with their needs met than among those with their needs unmet, but differences were not statistically significant (Table 3).

Compared with those who had their needs met, the elderly who had unmet health care needs had a crude relative risk of dying of 1.35 (95% CI = 0.82, 2.21) among those who rated their health as fair, poor, or very poor; 1.79 (95% CI = 1.30, 2.47) among those who suffered from two

TABLE 3—Comparison of Baseline Health Status, Sociodemographics, and Risk Factor Characteristics According to the Level of Need Coverage

Need Group	% Reporting Poor/Very Poor Health	Mean No. of Chronic Conditions	% with Difficulty in at Least 1 ADL	% in Social Classes IV–V	% with <8 Years of Education	% Living Alone	% of Smokers	% Sedentary	% Consuming Alcohol
Poor perceived health									
Met need	17.1	2.36	52.2	64.7	78.6	21.7	26.5	63.5	32.3*
Unmet need	10.4	1.89	47.6	59.5	89.6	16.7	22.9	71.7	57.1*
2 + chronic conditions									
Met need	11.1	2.80	52.3	58.4	77.2	22.7	28.4	56.9	31.2
Unmet need	5.7	2.66	45.7	61.6	85.1	21.8	29.1	60.3	41.7
Dependency in ADLs									
Met need	28.1	2.77	...	64.0	78.9	19.3	25.5	86.4	9.1
Unmet need	10.5	2.26	...	68.8	88.9	5.3	16.7	100	0

Note. ADL = activity of daily living. Social classes IV–V = manual occupations.

* $P < .05$; all other differences between the two groups (met and unmet needs) are not statistically significant.

TABLE 4—Cox's Multiple Adjusted Relative Risks (RRs) of Mortality after Follow-Up, According to the Level of Need Coverage and Other Baseline Characteristics

Variable	Reference Category	Model 1 ^a : Poor Perceived Health, OR (95% CI)	Model 2: 2 + Chronic Conditions, RR (95% CI)	Model 3 ^b : Dependency in ADLs, RR (95% CI)
Age	Mean age in years	1.09 (1.06, 1.12)	1.08 (1.06, 1.11)	1.02 (0.97, 1.07)
Sex	Males	0.65 (0.25, 1.12)	0.74 (0.47, 1.17)	0.61 (0.22, 1.68)
Social classes IV–V	Classes I–III	0.90 (0.56, 1.45)	0.96 (0.64, 1.40)	0.90 (0.45, 1.80)
Less than 8 years of education	8 or more years	0.95 (0.57, 1.60)	0.99 (0.66, 1.51)	1.31 (0.44, 3.88)
Living with others	Living alone	1.24 (0.72, 2.15)	1.07 (0.68, 1.69)	0.54 (0.18, 1.67)
Smoker	Never smoked	1.09 (0.57, 2.09)	1.70 (1.03, 2.80)	1.40 (0.58, 3.39)
Sedentary	Active	1.75 (1.06, 2.90)	1.64 (1.11, 2.43)	...
Alcohol consumption	None	0.96 (0.51, 1.81)	0.62 (0.34, 1.13)	...
Unmet need of health services	Met need	1.10 (0.59, 2.05)	1.80 (1.20, 2.70)	2.55 (1.22, 5.32)

Note. Overall significance P -value for each separate model is $< .001$, but for model 3, $P = .005$. OR = odds ratio; ADL = activity of daily living; CI = confidence interval. Social classes IV–V = manual occupations. Classes I–III = professional/intermediate occupations and skilled nonmanual occupations.

^aLogistic regression model because of the lack of proportionality of hazards. All the other models are Cox's regression models.

^bFinal model does not include the level of physical activity and alcohol consumption. The model including these adjusting variables yielded similar RRs, but CIs could not be estimated because of lack of convergence.

or more chronic conditions; 1.48 (95% CI = 1.04, 2.09) among those who were dependent in at least one activity of daily living; and 1.64 (95% CI = 1.17, 2.30) among those with any of the above needs not met. Survival probabilities were also lower for individuals with unmet needs (all differences being statistically significant at $P < .05$, except among those with fair, poor, or very poor health).

Table 4 shows the adjusted hazard ratios (relative risks) of dying. An increased risk of mortality was found for each of the unmet health services need categories. Those who had rated their health as fair, poor, or very poor without the use of services presented an odds ratio

(OR) of 1.10 (95% CI = 0.59, 2.05); those who had reported two or more chronic conditions and no services usage showed a relative risk of 1.80 (95% CI = 1.20, 2.70); and those who were dependent in at least one activity of daily living and had not seen a physician presented the highest relative risk value (RR = 2.55; 95% CI = 1.22, 5.32). All interaction terms were not statistically significant.

To increase the match between the need for health care and the cause of mortality, we carried out a subanalysis of the elderly individuals who reported at least one cardiovascular condition. Those with cardiovascular conditions who had

not used health services presented a higher cardiovascular mortality risk; however, this association did not reach statistical significance (RR = 1.51; 95% CI = 0.86, 2.65). The number of deaths due to other causes was too small for us to perform other stratified analyses.

Discussion

We have estimated that between 10% and 25% of the community elderly of Barcelona with perceived health problems had not used the health services and were therefore considered to have unmet needs. Unmet needs were associated with

a higher probability of mortality at the end of follow-up, with excess risk ranging from 10% to 155%, depending on the need criterion used. The association between use of health care and improvement in survival among the elderly with perceived health problems suggests, from a population-based perspective, the effectiveness of using health services. This finding is consistent with work showing the important role that access to health care (as indicated by having insurance) plays in the survival of adults.⁶ Nevertheless, a number of issues of the study need to be discussed in detail.

It is important to note that our definition of unmet need for health care was based on conceptual considerations and operationalized a priori. The indicators of need included in the study have been shown to be valid measures of morbidity and independent predictors of mortality.^{14,21-24} Relating indicators of perceived health with use of services has been proposed to obtain a more accurate assessment of relative access to care²⁵ and to estimate population-based normative and comparative needs for health care.²⁶⁻²⁸ At the same time, these perceived health indicators have been shown to have limitations,^{29,30} and there is no firm evidence about the clinical relevance of the specific levels of need used in our study. Moreover, these indicators were obtained from an interview survey without a medical assessment of need. Agreement between self-reported conditions and conditions elicited after clinical examination in the elderly is acceptable but variable.^{31,32} Therefore, results should be cautiously interpreted.

It could be argued that the differences in survival observed between the two groups studied were due to more severe health problems among those not using the services. But selection bias is unlikely since, at baseline, individuals with met needs had no less chronic conditions or poor or very poor health or difficulties with activities of daily living than those with unmet needs (Table 3).

Individuals may have been misclassified in relation to their use of health services. Underestimation of recent medical visits³² and hospitalization³³ has been reported, especially when the reason for using services was not severe. Because we compared only groups with severe perceived health problems, misclassification of need and of health services usage should be small. More likely, misclassification may have caused the true mortality differences between the groups to be

underestimated, although overestimation may not be ruled out.

The most important issue to discuss about our findings is the certainty with which the increased survival may be attributed to the use of health services. Our analysis assumed that those individuals classified as being in need had one or more health conditions that could have benefited from medical intervention. However, it is possible that only a fraction of these health problems were amenable to effective medical care. Moreover, the cause of death could not be related to the need for care or the care received. Thus, to minimize the probability of the latter explanation and to increase the likelihood of our assumptions, we did a subanalysis with individuals reporting to suffer from cardiovascular conditions as the marker of need, and we examined only cardiovascular mortality. A 51% higher risk of mortality was found among individuals with unmet cardiovascular needs. Although this increase was not statistically significant because of a reduced number of observations, it suggests that the use of health services may have played a protective role.

Factors other than the use of health services could explain the increased survival among users. Socioeconomic factors are known to be associated with survival in the elderly,^{21,22,34} and it is possible that not using health services is associated with negative health behaviors, the mortality probabilities being higher independent of the use of services. Specific information about some of these factors (e.g., the characteristics of the caregiver) or about the reasons why individuals with health care needs did not receive care was not obtained. Although their influence on mortality may not have been completely taken into account because of limited information in our study, substantial and statistically significant mortality differences between individuals with met and unmet needs remained after adjustment was made for sociodemographic factors (i.e., social class, education, and living arrangements) and health-related behaviors associated with mortality (i.e., smoking status, physical activity, and alcohol consumption).

To approach a population-based evaluation of the effectiveness of health care, this study used reports of at least one medical visit in the 12 months prior to a health interview survey. The longitudinal nature of the study and the outcome considered (i.e., mortality) support the relevance of the findings. Our results are

consistent with the reported association between health insurance and increased survival in the adults described by Franks et al.⁶ They are also consistent with the reports by Bunker et al.⁷ that some of the increase in life expectancy may be attributed to medical care. On the other hand, our results are based on a small number of events. Additionally, although we controlled for major risk factors of mortality, alternative explanations (e.g., the possible unmeasured factors associated with not using and/or not reporting the use of medical services) may not be completely ruled out, and the plausibility of causal mechanisms has not been assessed. Clearly, the preliminary evidence raised in this study deserves evaluation in future work. Specifically, large enough studies with more specific indicators (e.g., indicators relating health needs to the services used, and indicators of the intensity and quality of the care received) and more information about health-related behaviors are necessary.

Although limited, our findings are important in the context of the major health care reforms being implemented or planned in the United States and in many European countries.³⁵ While there is little doubt that cost containment should be emphasized, it is necessary to guarantee that it will not negatively affect the access to and use of health services by those with perceived health problems. Results of the present study suggest that use of health services should be encouraged, rather than restricted, among the elderly with perceived health needs. □

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