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RESEARCH PAPER

Satisfaction with health care among people with hearing impairment: a survey of Medicare beneficiaries

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Abstract

Purpose: The purpose of this study was to investigate the determinants of access to and satisfaction with health care from Medicare participants with hearing impairment. **Method:** Raw data for the study was obtained from the 2004 Medicare Current Beneficiary Survey (MCBS). Satisfaction with care was assessed using 10 of the MCBS questions probing satisfaction in a number of areas related to health care. The data were analyzed using logistic regression. This analysis was conducted in three steps. The first step involved identifying potentially important predisposing and enabling variables that influenced satisfaction with care using univariate analysis. The second step involved fitting the variables retained from the first step into a multiple logistic regression equation to determine a preliminary main effects model. The final analysis included determining the odds ratio for each independent variable retained from the earlier analysis. **Results:** Individuals with hearing impairment demonstrated some level of dissatisfaction with quality of health care. Each of the MCBS satisfaction questions were significantly ($p < 0.05$) associated with at least one of the communication variables. **Conclusions:** Understanding the effects of hearing impairment on satisfaction with health care is critical to the delivery of effective and efficient services to individuals with such disabilities.

Keywords

Access to health care, communication disability, Medicare, satisfaction disability

History

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► Implications for Rehabilitation

- Presence of communication impairment, specifically hearing impairment, affects satisfaction with health care.
- Medical school training regarding methods to improve diagnosis and treatment of patients with communicative impairments could lead to improved patient–provider interactions and ultimately increased satisfaction with the provider and care given.
- Health care providers need to allow for extended appointments for patients with communication impairments. Time accommodations could prevent misunderstandings about diagnosis and treatment methods which otherwise might have detrimental results.

Communication is critical to the optimal delivery of health care. People with speech, language and hearing impairments face significant challenges in communicating the status of their health to health care professionals. It has been observed that as the health care system strives to serve individuals with disabilities, the challenge is to ensure that the services are appropriate, efficient, effective and coordinated so that the distinctive needs of the heterogeneous population with disabilities can be met [1]. This challenge becomes especially exacerbating for an individual presenting with communication impairment. About one in six Americans has a communication impairment [2] exemplified as a

speech, hearing, language and/or cognitive-communication impairment. Hearing impairment is the most common cause of communication impairment. About 35% of individuals over 65 exhibit some level of hearing loss [3]. Hearing loss is the third most common chronic health condition among the older population, after high blood pressure and arthritis [4]. Individuals with communication impairments, such as hearing loss, report less satisfaction with their health care than do those without such disorders [5]. People with disabilities in general report having more unmet health care needs and receiving fewer routine and preventive health care services than the general population [6–8]. Persons with disabilities may be the single largest group that demonstrates evidence of health disparities [6].

The 2005–2007 American Community Survey 3-Year Estimates [9] suggest that the population 65 years and over numbers 35 664 222 million with 40.9% of those reporting that they live with some form of disability. Of this estimated 35 million Americans, over 16 million of those receiving

Medicare benefits describe some level of communication impairment, with hearing impairment being the most common. Communication impairments involving either hearing or language can significantly affect one’s ability to perform typical activities of daily living. Effective communication between providers and their patients is vital for the best quality care [10]. Previous research has indicated that severe communication disability yields increased dissatisfaction with health care [3]. It has been reported that ineffective communication between providers and patients ranks among the five major qualities of care issues for persons with disabilities [1]. The results of ineffective communication have far-reaching consequences. Physicians may not obtain sufficient information allowing for an accurate diagnosis, which could lead to unnecessary testing and ineffective treatment. Conversely, patients often misunderstand medical information presented by the physician resulting in poor adherence to treatment recommendations and undesirable clinical outcomes [1]. Inaccurate communication may also lead to provider inference of patient problems that do not exist [1]. Further, research has indicated [11] that when asked to compare various aspects of a hospital experience, patients ranked communication and interpersonal factors highest. Health care professionals report that caring for individuals with communication impairments presents them with the greatest challenge [12].

Patient satisfaction has become a means for assessing the extent to which individuals achieve access to health care. Satisfaction results from a positive relationship between patient expectations for care and the actual care received during a health care visit [13]. Satisfaction with health care has been previously evaluated on the basis of the predisposing and enabling variables and their bearing on access to care in general [8,14,15]. Such variables as access to health care, patient health status and the presence of disability are typically assessed when determining satisfaction with health care. The significance of these variables

and their interaction potential has been demonstrated in numerous studies assessing access to and satisfaction with health care [5,7,8,12,15–20].

The purpose of this study was to investigate the determinants of access to and satisfaction with health care from Medicare participants with and without hearing impairment. The fact that people with disabilities may represent the largest underserved population in health care [6] and that individuals with disabilities, including communication impairments, report much more dissatisfaction with health care [3] provided the basis for this study. This study utilized the Andersen Behavioral Model of Health Services Use [21] in examining the relationship among predisposing characteristics, enabling resources, and need with specific measures of access to care and satisfaction with care (Figure 1). Specifically, gender, degree of education, race, marital status and residency served as predisposing characteristic variables. Enabling resource variables included income level and source of care, while health status and communication impairment served as the need variables. Predisposing characteristics cannot be changed by other variables and are considered to be immutable [22]. Unlike predisposing characteristics, enabling characteristics are open to change and are therefore termed mutable. While the predisposing characteristics are immutable, they can influence health care utilization through their effects on enabling characteristics such as income level and source of care [22]. The need characteristic relates to symptoms reported by patients and to perceived health status of patients, either or both of which may affect health care utilization by the individual. Predisposing, enabling and need characteristics interact with each other and influence entry to and utilization of health care services. For example, a young person with limited financial resources may not feel urgency in seeking medical care for a health need whereas the same individual at an older age with ample financial resources may consider the seeking of medical care for the same health care need important.

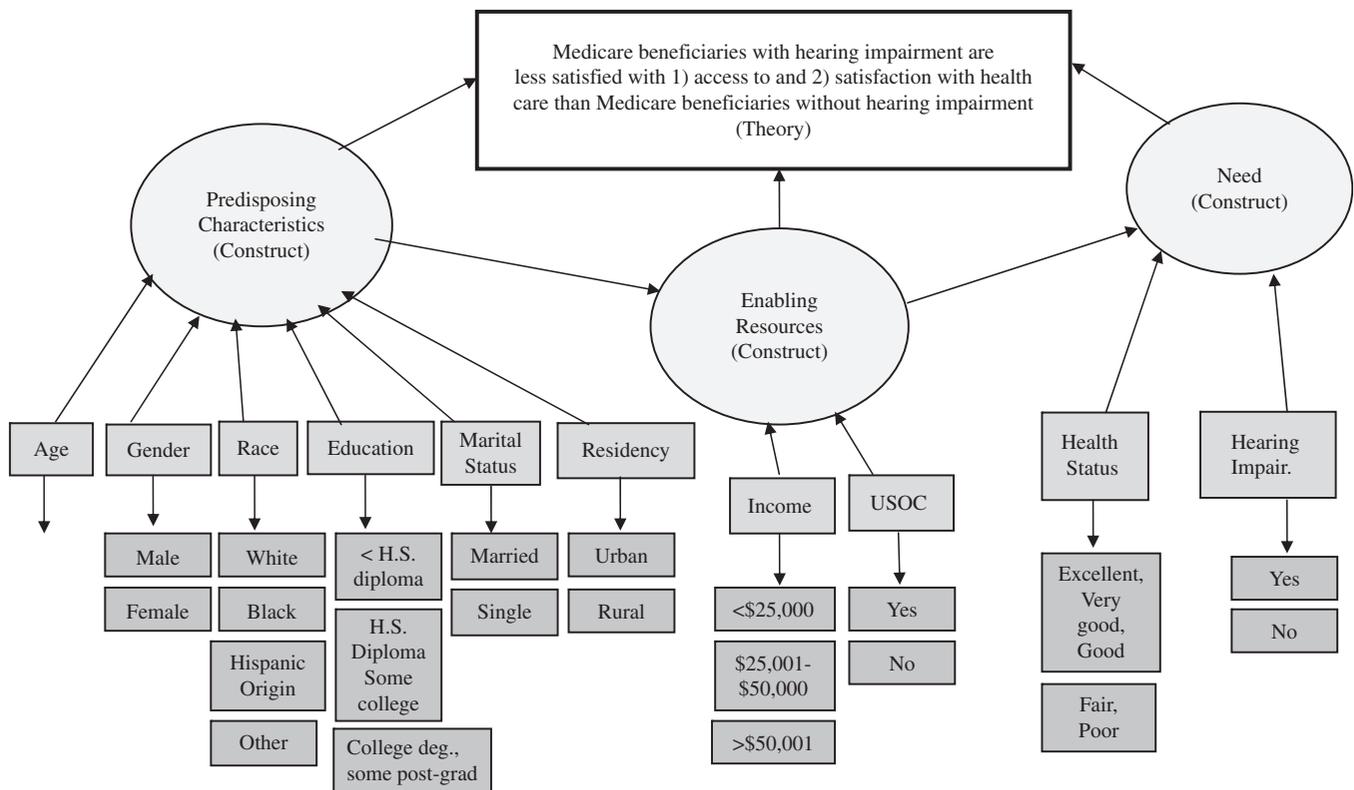


Figure 1. A list of predisposing, enabling and need variables used in the current study.

Method

The survey

Data from the fourth round of the 2004 Medicare Current Beneficiaries Survey (MCBS), a continuous, multipurpose survey of elderly, disabled and institutionalized Medicare beneficiaries [23], was employed to address the objectives of this study. Medicare is a social insurance program that provides benefits for the elderly above the age of 65 and the young who are disabled or suffering from end stage renal disease. Medicare provides benefits for inpatient hospital care, and outpatient medical care and prescription drugs. Medicare benefits are primarily funded by the U.S. Federal Government through payroll taxes [24]. According to previous reports, Medicare provided health benefits to 41.7 million individuals in 2004 [23]. Of these enrollees, 15 559 participated in the 2004 MCBS. Survey participants residing in the community included 14 500 individuals (93%); those residing in a facility or institutionalized setting numbered 1059 (7%). The community interviews were conducted in person by a trained interviewer using computer-assisted personal interviewing survey instruments installed on notebook-size portable computers. Upon completion of the interview, the interviewer transmitted the interview data by telephone to a home office computer. Interviews for participants residing in facilities or institutionalized settings involved abbreviated surveys administered to caregivers by a trained interviewer. The caregiver was usually a facility employee who had frequent interactions with the participant.

Sociodemographic characteristics

The predisposing variables included age, gender, race, educational attainment, marital status and residency. Enabling variables included income and having a usual source of care, both of which are considered factors affecting an individual's ability to seek medical care [25]. The MCBS delineates nine categories of income level, ranging from less than or equal to \$5000 to greater than \$50 001. For the purposes of this study, the data were collapsed into three categories: <\$25 000, \$25 001 to \$50 000 and >\$50,001. Based on the questions employed by the MCBS, having a usual source of care would include the questions "Is there a particular medical person or a clinic you usually go to when you are sick or for advice about your health?" (PLACEPAR) and "Is there a particular doctor you usually see at this location?" (USUALDOC). A binary yes or no served as the

response choices. Finally, the needs variable, or the most immediate cause of health care use [25], was addressed through MCBS questions related to health status and presence of communication impairment. To assess participants' views about health status, the question, "In general, compared to other people your age, would you say that your health is excellent, very good, good, fair or poor?" (GENHELTH) was utilized.

MCBS items targeting communication problems include questions that deal with making appointments over the telephone, problems expressing concerns to physicians and trouble understanding physician directives. Specifically, the following questions were selected for the current study: use of a hearing aid (HHELP), description of the study participant's (SP) hearing (HCTROUB), trouble communicating with doctors due to hearing impairment (HCCOMDOC), trouble using the telephone (PRBTELE), difficulty writing or handling objects (DIFWRITE) and trouble getting health care needs met during the previous year (HCTROUBL). HCCOMDOC, PRBTELE and HCTROUBL also served as access to care questions (Table 1).

Satisfaction with health care

The MCBS survey includes a number of items that specifically explore satisfaction across various aspects of health care such as overall quality, out-of-pocket expenses and access to care. Nominal regression run on 10 of the MCBS Satisfaction with Care questions revealed that all 10 questions were significantly correlated with each other though the magnitude of some correlations was very small (i.e. less than 0.30). The questions primarily addressed the following four satisfaction determinants: quality of services, availability of services, continuity/convenience of services and cost of services. Nominal regression on these 10 variables (i.e. questions) revealed two factors with eigenvalues of greater than 1. Factor 1 corresponded primarily to cost of services, continuity/convenience of services and overall quality of services. This factor accounted for eight questions [i.e. MCQUALITY (the overall quality of the medical services received over the past year), MCEASE (the ease and convenience of getting to a doctor from where you live), MCCOSTS (the out-of-pocket costs you paid for medical services), MCINFO (the information given to you about what was wrong with you), MCFOLUP (the follow-up care you received after an initial treatment or operation), MCCONCERN (the concern of doctors for your overall health rather than just for an isolated symptom or

Table 1. List of Medicare Current Beneficiary Survey variables related to communication.

Variable	MCBS code
How much trouble (do you/does SP) have communicating with (your/his/her) doctor or other medical personnel because [of (your/his/her) difficulty hearing/(you are/he is/she is) deaf]? Would you say (you have/he has/she has) no trouble, a little trouble or a lot of trouble? (HCCOMDOC)	1 = no trouble 2 = a little trouble 3 = a lot of trouble
Because of a health or physical problem, (do you/does SP) have <u>any</u> difficulty using the telephone? (PRBTELE)	1 = yes 2 = no 3 = doesn't do
How much difficulty, if any, (do you/does SP) have either writing or handling and grasping small objects? Would you say (you have/SP has) no difficulty at all, some difficulty, a lot of difficulty or (are/is) not able to do it? (DIFWRTE)	1 = no difficulty at all 2 = a little difficulty 3 = some difficulty 4 = a lot of difficulty
(Do you/does SP) use a hearing aid? (HHELP)	1 = yes 2 = no 3 = deaf
Which statement best describes (your/SP's) hearing (with a hearing aid) – no trouble hearing, a little trouble, a lot of trouble or deaf? (HCTROUB)	1 = no trouble hearing 2 = a little trouble hearing 3 = a lot of trouble hearing 4 = deaf
In the past year, (have you/has SP) had any trouble getting health care that (you/he/she) wanted or needed? (HCTROUBL)	1 = yes 2 = no

Table 2. List of Medicare Current Beneficiary Survey satisfaction variables.

Satisfaction variables	MCBS code	Study code
MCQUALTY The overall quality of the medical services (you have/SP has) received [over the past year/since (Prev. Suppl. Rd. Int. Date)].	1 = very satisfied 2 = satisfied 3 = dissatisfied 4 = very dissatisfied	1 = very satisfied, satisfied 2 = dissatisfied, very dissatisfied
MCEASE The ease and convenience of getting to a doctor from where (you live/SP lives).	1 = very satisfied 2 = satisfied 3 = dissatisfied 4 = very dissatisfied	1 = very satisfied, satisfied 2 = dissatisfied, very dissatisfied
MCAVAIL The availability of medical services at night and on weekends.	1 = very satisfied 2 = satisfied 3 = dissatisfied 4 = very dissatisfied	1 = very satisfied, satisfied 2 = dissatisfied, very dissatisfied
MCCOSTS The out-of-pocket costs (you/SP) paid for medical services.	1 = very satisfied 2 = satisfied 3 = dissatisfied 4 = very dissatisfied	1 = very satisfied, satisfied 2 = dissatisfied, very dissatisfied
MCINFO The information given to (you/you or SP) about what was wrong with (you/SP).	1 = very satisfied 2 = satisfied 3 = dissatisfied 4 = very dissatisfied	1 = very satisfied, satisfied 2 = dissatisfied, very dissatisfied
MCFOLUP The follow-up care (you/SP) received after an initial treatment or operation.	1 = very satisfied 2 = satisfied 3 = dissatisfied 4 = very dissatisfied	1 = very satisfied, satisfied 2 = dissatisfied, very dissatisfied
MCCONCRN The concern of doctors for (your/SP's) overall health rather than just for an isolated symptom or disease.	1 = very satisfied 2 = satisfied 3 = dissatisfied 4 = very dissatisfied	1 = very satisfied, satisfied 2 = dissatisfied, very dissatisfied
MCSAMLOC Getting all (your/SP's) medical care needs taken care of at the same location.	1 = very satisfied 2 = satisfied 3 = dissatisfied 4 = very dissatisfied	1 = very satisfied, satisfied 2 = dissatisfied, very dissatisfied
MCSPECAR The availability of care by specialists when (you feel/SP feels) (you need/he needs/she needs) it.	1 = very satisfied 2 = satisfied 3 = dissatisfied 4 = very dissatisfied	1 = very satisfied, satisfied 2 = dissatisfied, very dissatisfied
MCTELANS The ease of obtaining answers to questions over the telephone about (your/SP's) treatment or prescriptions.	1 = very satisfied 2 = satisfied 3 = dissatisfied 4 = very dissatisfied	1 = very satisfied, satisfied 2 = dissatisfied, very dissatisfied

disease), MCSAMLOC (getting all your medical care needs taken care of at the same location) and MCSPECAR (the availability of care by specialists when you feel need it)]. Factor 2 corresponded to the availability of services. Two questions, MCAVAIL (the availability of medical services at night and on weekends) and MCTELANS (the ease of obtaining answers to questions over the telephone about your treatment or prescriptions), were accounted for by factor 2 while MCSPECAR converged between the two factors. These two factors accounted for 55% of the variance. The screen plot confirmed the eigenvalues. Based on this factor analysis, the MCBS satisfaction questions were considered to provide a good measure for the satisfaction with care variable. Additionally, three of the MCBS questions specifically focused on people with communication difficulties. These items related to ease of obtaining answers (MCEASE), information given by health care providers (MCINFO) and overall quality of health care (MCQUALITY) [3]. For this study, satisfaction with health care was determined by evaluating responses to questions related to quality and availability of health care and satisfaction with information received from physicians. Respondents indicated if they were very satisfied, satisfied, dissatisfied or very dissatisfied on a scale of 4–1. A response of 4 represented very satisfied. Collapsing of responses resulted in categorizations of (1) for very satisfied and satisfied and (2) for dissatisfied and very dissatisfied (Table 2). The collapsing of data from multiple response choices to two choices was essential

because of the large number of missing cells across original MCBS response choices.

Results

The MCBS data were analyzed using logistic regression [26]. We begin with socio-demographic characteristics of Medicare beneficiaries (Table 3) followed by presentation of data on associations between predisposing, enabling and need variables. Finally, we will present odds ratios when the outcome is satisfaction and the model includes hearing impairment, age, gender, ethnicity, marital status, income, education, place of residency and perceived health as covariates.

Regression analysis

The regression analysis was conducted in three steps using SPSS [27]. The first step involved the use of univariate analysis to identify potentially important enabling and predisposing variables that influenced access to care and satisfaction. All variables attaining $p < 0.25$ were retained for subsequent analysis. This step allowed us to reduce the number of variables that were subsequently fitted into a multiple regression model. Rurality was the only predisposing variable that was not significantly associated with any of the 10 satisfaction variables. Further, satisfaction with follow-up after initial treatment (MCFOLUP) was significantly associated with only one of the predisposing

Table 3. Sociodemographic data and clinical characteristics of Medicare Current Beneficiary Survey participants.

2004 MCBS demographics	Number	Percentage
Sample size	15 559	
Community	14 500	93.2
Facility	1059	6.8
Age		
22–103 years ($X = 78.8$)		
22–64 years	2355	17.4
65–79 years	6932	51.2
80+ years	4260	31.4
ROSTSEX		
Males	6811	44.0
Females	8748	56.0
RACE		
White	13 035	83.8
African American	1543	9.9
Asian	230	1.5
Hispanic or Latino origin	1184	7.6
Other	716	4.6
MARSTA		
Married	7264	47.0
Unmarried	8274	53.0
INCOME		
>\$5000–\$25 000	9694	62.0
\$25 001–\$50 000	4198	27.0
>\$50 001	1408	9.0
DEGRCV		
No schooling or H.S. diploma	5091	33
H.S. graduate, some college	7796	50
College or post-graduate degree	2672	17
METRO		
Rural	4014	26
Urban	11545	74
Communication impairment		
Hearing aids or deafness	1652	11
Uncorrected hearing loss	444	3
Aphasia	30	1
Cerebral palsy	15	<1
Writing impairment		
Little or some difficulty	13 545	93%
Lot of difficulty or unable to do it	939	6.5
Writing impairment (community participants)		
Lot of difficulty or unable to do it	213	1.4

variables, education. The enabling variable, INCOME, was significantly associated with only three satisfaction variables, availability of medical care on nights and weekends (MCAVAIL), follow-up care after the initial visit (MCFOLUP) and quality of medical care received last year (MCQUALTY). Having a particular place to receive care (PLACEPAR) was significantly associated with all satisfaction variables while having a usual doctor at that site (USUALDOC) was significantly associated with all satisfaction variables except availability of medical care on nights and weekends (MCAVAIL).

Finally, each of the need variables with the exception of the use of a hearing aid (HCHELP) were significantly associated with all 10 satisfaction variables. The HCHELP variable was significantly associated with 7 of the 10 satisfaction variables.

Determining preliminary main effects model

The second stage of analysis involved fitting the variables retained from the first stage into a multiple logistic regression equation to determine a preliminary main effects model. For this analysis, the MCBS satisfaction questions were selected as dependent variables while each of the predisposing, enabling and need variables retained from the initial analysis served as factors. The likelihood scores, degrees of freedom and significance for each independent variable were assessed to ascertain whether the required $p < 0.05$

for the second stage of analysis had been attained. Only those factors that were significant at $p < 0.05$ were retained for final analysis. In order to make this determination, analysis of the dependent variable with all independent variables was made to obtain the model chi-square.

Determination of odds ratios

The final analysis included determining the exponential beta or odds ratio (OR) for each independent variable retained from the second stage of analysis. An OR of 1.0 occurs when there is no relationship [28], indicating that the independent variable does not affect the dependent variable [26]. For the purposes of this study, an $OR > 1.0$ implies that the survey participants were either satisfied or very satisfied. An $OR < 0.01$ indicates that the survey participants were either dissatisfied or very dissatisfied. Nominal regression in SPSS was employed to establish the ORs. One dependent variable (satisfaction question) was entered followed by the independent variables retained from the previous analysis as factors. Parameter estimates provided the $\text{Exp}(B)$, or odds ratio and 95% confidence interval for each $\text{Exp}(B)$. Statistically significant ORs are presented in Table 4. Following are the results for each of the satisfaction variables.

Satisfaction with ease of getting to the doctor from where the SP lives (MCEASE). Satisfaction with the dependent variable MCEASE was assessed through the use of nine independent variables retained from stage 2. The only predisposing variable included in the analysis was “marital status” (MARST). Whether the SP usually saw a particular doctor for care (USUALDOC) was the only enabling variable included. The majority of independent variables retained were need variables. Results indicated (Table 4) that Medicare participants who are married ($OR = 0.791$) and who report the use of hearing aids ($OR = 0.733$) as well as trouble getting their health care needs met ($OR = 0.172$) are more likely to be dissatisfied with the ease of getting to the doctor from where they live than are Medicare participants who do not report these variables. The effect of trouble getting their health care needs met (HCTROUBL) resulted in the greatest likelihood of dissatisfaction with MCEASE ($OR = 0.172$).

Satisfaction of available medical care on nights and weekends (MCAVAIL). Ten independent variables from the main effects model were retained for analysis to assess for relationships with MCAVAIL. One predisposing variable, gender, was retained. Enabling variables included income range and does participant go to a particular place for medical care. Additionally, seven need variables (i.e. HCTROUBL, GENHLTH, HCHELP, HCCOMDOC, HCTROUB, PRBTELE and DIFWRITE) were included to determine relationships. Results indicated (Table 4) that participants who experienced trouble getting needed health care ($OR = 0.193$) had difficulty using the telephone ($OR = 0.793$) and who had trouble hearing ($OR = 0.967$) were more likely to be dissatisfied with MCAVAIL.

Satisfaction with out-of-pocket costs for medical services (MCCOSTS). The second stage of analysis resulted in the retention of nine independent variables significantly related to MCCOSTS. The only predisposing variable was race. Having a particular doctor usually seen for medical care was the sole retained enabling variable. Again, the majority of variables retained were need variables (i.e. HCTROUBL, GENHLTH, HCHELP, HCCOMDOC, HCTROUB, PRBTELE and DIFWRITE). Results indicated (Table 4) that Medicare participants who have had trouble getting needed health care ($OR = 0.211$), have difficulty using the telephone ($OR = 0.472$)

Table 4. Odds ratios for dissatisfaction as compared to no disability.

		Exp(B)	95% confidence interval for Exp(B)	
			Lower bound	Upper bound
Satisfactions with ease of getting to the doctor from where SP lives (MCEASE)	HCTROUBL	0.172*	0.089	0.332
	HCHELP	0.733*	0.399	1.347
	MARSTA	0.791*	0.483	1.296
Satisfaction with availability of medical care on nights and weekends (MCAVAIL)	ROSTSEX	0.971*	0.730	1.292
	INCOME	0.811*	0.481	1.367
	HCTROUBL	0.193*	0.130	0.288
	HCTROUB	0.967*	0.658	1.423
	PRBTELE	0.793*	0.524	1.200
Satisfaction with out-of-pocket costs for medical services (MCCOSTS)	RACE	0.868*	0.512	1.470
	HCTROUBL	0.211*	0.116	0.385
	PRBTELE	0.472*	0.280	0.795
Satisfaction with medical care done in the same location (MCSAMLOC)	DEGRCV	0.723*	0.298	1.757
	HCTROUBL	0.073*	0.037	0.146
	PRBTELE	0.472*	0.202	1.102
	HCTROUB	0.654*	0.257	1.664
Satisfaction with availability of care by specialists (MCSPECAR)	DIFWRTE	0.961*	0.374	2.473
	HCTROUBL	0.087*	0.44	0.174
	HCTROUB	0.364*	0.124	1.071
	PRBTELE	0.911*	0.371	2.236
Satisfaction with quality of medical care received last year (MCQUALTY)	HCTROUBL	0.089*	0.042	0.189
	INCOME	0.582*		
	PRBTELE	0.311*	0.027	3.527
	HCTROUBL	0.167*	0.086	0.325
Satisfaction with info provided about what was wrong with you (MCINFO)	PRBTELE	0.683*	0.344	1.359
	MARSTA	0.697*	0.413	1.176
Satisfaction with the doctor's concern for overall health (MCCONCRN)	HCTROUBL	0.125*	0.064	0.244
	USUALDOC	0.970*	0.439	2.144
Ease with getting treatment/prescription answers on the phone (MCTELANS)	HCTROUBL	0.245*	0.123	0.491
	HCTROUB	0.792*	0.388	1.616
	PRBTELE	0.793*	0.402	1.565
	HCTROUBL	0.147*	0.072	0.302
Satisfaction with follow-up care after initial treatment	HCTROUB	0.638*	0.258	1.578
	HCTROUBL	0.840*	0.371	1.903
	PRBTELE			

HCTROUBL – trouble getting needed health care, HCHELP – does the SP use a hearing aid, MARSTA – marital status, ROSTSEX – gender, INCOME – income level of SP, HCTROUB – how does the SP describe his/her hearing, PRBTELE – difficulty using the telephone, RACE – race, DEGRCV – highest grade the SP completed, DIFWRTE – difficulty writing/handling objects, USUALDOC – having a particular doctor usually seen for medical care.

* $p < 0.05$

or are a member of a racial minority (OR = 0.868) were more likely to be dissatisfied with MCCOSTS.

Satisfaction with getting medical care done in the same location (MCSAMLOC). Two predisposing variables were found to be significantly related to MCSAMLOC: gender and highest grade the participant had completed. Having a particular doctor usually seen for medical care was the only enabling variable found to result in a significant relationship with MCSAMLOC. The needs variables retained were HCTROUBL, GENHLTH, HCHELP, HCCOMDOC, HCTROUB, PRBTELE and DIFWRITE).

Results indicated (Table 4) that participants having trouble getting needed health care (OR = 0.073) reported greatest dissatisfaction with obtaining medical care in the same location. In addition, participants who expressed difficulty using the telephone (OR = 0.472) expressed a lot of difficulty hearing or deafness (OR = 0.654), difficulty writing/handling objects (OR = 0.961), and participants with at least a college degree or higher (OR = 0.723) were more dissatisfied with obtaining medical care in the same location than were participants without these difficulties.

Satisfaction with availability of care by specialists (MCSPECAR). No predisposing variables were found to be significantly related to MCSPECAR. The variable, having a particular doctor usually seen for medical care was the only

enabling variable retained. Need variables found to be significantly related to MCSPECAR were HCTROUBL, PRBTELE, GENHLTH, HCCOMDOC, HCTROUB and DIFWRTE. Results indicated (Table 4) that Medicare participants who report trouble getting health care needs met (OR = 0.087) were very dissatisfied with the availability of care by specialists than those without such difficulty. Participants who expressed difficulty using the telephone (OR = 0.911) and expressed a lot of difficulty hearing or deafness (OR = 0.364) were also more dissatisfied with the availability of care by specialists than were those without such difficulties.

Satisfaction with quality of medical care received last year (MCQUALTY). Nine independent variables were retained from the second phase of analysis to assess for relationships with MCQUALTY. No predisposing variables were retained. The enabling variables retained were income range of participant and having a particular doctor usually seen for medical care. Seven need variables retained were HCTROUBL, GENHLTH, HCCOMDOC, DIFWRTE, HCHELP, HCTROUB and PRBTELE. Results indicated (Table 4) that participants who reported trouble getting health care needs met (OR = 0.089) and difficulty using the telephone (OR = 0.311) indicated dissatisfaction with MCQUALTY.

Satisfaction with information provided about what was wrong with you (MCINFO). Nine variables were retained from the

previous analysis. Predisposing variables retained included gender and highest grade the participant had completed. The variable having a particular doctor usually seen for medical care was the only enabling variable retained. The following six need variables were retained: HCTROUBL, GENHLTH, HCCOMDOC, HCHELP, HCTROUB and PRBTELE. Results indicated (Table 4) that participants who reported trouble getting their health care needs met (OR = 0.167) and expressed difficulty using the telephone (OR = 0.683) were dissatisfied with MCINFO.

Satisfaction with the doctor's concern for overall health (MCCONCRN). The only predisposing variable retained for final analysis with MCCONCRN was marital status. The enabling variable retained was having a particular doctor usually seen for medical care. The needs variables retained for analysis were HCTROUBL, GENHLTH, HCCOMDOC, HCTROUB, PRBTELE and DIFWRTE. Results indicated (Table 4) that participants who had trouble getting needed health care (OR = 0.125) and were no longer married or never married (OR = 0.697) were more likely to be dissatisfied with MCCONCRN.

Ease of getting treatment/prescription answers on the phone (MCTELANS). The prior analysis did not yield significance levels for any predisposing variables, allowing them to be retained for this stage of analysis. Having a particular doctor usually seen for medical care was the only enabling variable retained. Five needs variables (i.e. HCTROUBL, GENHLTH, HCCOMDOC, HCTROUB, PRBTELE and DIFWRTE) attained significance and were included. Results indicated (Table 4) that participants who had trouble getting needed health care (OR = 0.245), a lot of problems hearing or deafness (OR = 0.792) and difficulty using the telephone (OR = 0.793) were more dissatisfied with MCTELANS than other participants.

Satisfaction with follow-up care after initial treatment (MCFOLUP). Highest grade the SP completed was the only predisposing variable retained for the final stage of analysis. Two enabling variables retained included having a particular doctor usually seen for medical care and income level of participant. Six needs variables (HCTROUBL, GENHLTH, HCCOMDOC, HCTROUB and PRBTELE) attained significance and were included. Results indicated (Table 4) that participants who had trouble getting needed health care (OR = 0.147), describing a lot of problems hearing or deafness (OR = 0.638) and difficulty using the telephone (OR = 0.840), were dissatisfied with the follow-up care after treatment.

Discussion

The purpose of this study was to investigate the determinants of access to and satisfaction with health care from Medicare participants with and without hearing impairment. The overall results of this study indicate that Medicare beneficiaries with hearing impairment are less likely ($p < 0.05$) to be satisfied with their access to and satisfaction with care. These data are discussed in light of the theoretical model proposed [29], which states that access to care implies evidence of availability (MCAVAIL, MCSPEAR), accessibility (MCEASE, MCSAMLOC), accommodation (MCTELANS.), affordability (MCCOSTS) and acceptability (MCCONCRN, MCFOLUP and MCQUALITY). Review of the statistically significant ($p < 0.05$) ORs identified individuals with hearing impairment who were relatively more dissatisfied with the following two, MCAVAIL and MCSPEAR, than participants without hearing impairment. The findings that participants with significant hearing loss or deafness were less

satisfied with both availability of care on nights and weekends, and availability of care by specialists implies that the presence of a hearing impairment affects access to and satisfaction with care. Further evidence of the negative effects of a hearing impairment on satisfaction was observed as those having trouble using the telephone were less satisfied with availability of care by specialists. These results are supported in a study utilizing MCBS 1991 data [30]. Specifically, this study investigated levels of access and satisfaction within the Medicare population with disabilities [30]. The author reported a number of areas of care for which persons with disabilities had lower satisfaction levels, including the availability of medical care after hours. The practical implications of these results are important in that the identification of dissatisfaction with the availability aspects of care allows health care professionals and policymakers to put programs in place that can eliminate or substantially reduce difficulties faced by Medicare participants with hearing impairments as they attempt to obtain needed care.

Analysis of the accessibility aspects of access revealed decreased satisfaction with the location of health care services. Those reporting trouble getting their health care needs met were least satisfied with the ability to obtain care close to home and in the same general location. In addition, MCBS participants with significant hearing loss and those who wear hearing aids due to hearing loss were dissatisfied with the ease of accessing care. Those reporting difficulty writing, another form of communication, also expressed reduced satisfaction with both accessibility variables (MCEASE and MCSAMLOC). These findings are supported by the observation that Medicare beneficiaries with disabilities are less satisfied with the ease of getting to the doctor than are those without disability [30]. Physicians reported a number of barriers experienced by patients with disabilities while accessing care, one of which was transportation to and from the facility [12]. Those living in rural areas were found to receive fewer specialized services [31]. Another study concurred, reporting that those living in isolated areas must rely on generalists for most of their care due to geographic access problems [32]. Finally, a different study described the dissatisfaction patients express with the ease of accessing doctors' offices from their home as a "vexing challenge" [15].

Medicare beneficiaries with hearing impairments also expressed less satisfaction with the accommodation related variable, ease of obtaining answers to questions over the phone about treatment or prescriptions (MCTELANS). As expected, those reporting greater levels of hearing impairment and those reporting trouble communicating by telephone were likely to be less satisfied with the ability to use the phone to obtain answers about their treatment or prescription. These results are supported by similar findings obtained for deaf women [33]. These women reported difficulty obtaining repeat prescriptions and needing a friend to phone regarding medication questions or refills. Communication barriers have also been associated with the inability to interpret written prescriptions [34]. Researchers described such problems as resulting from a lack of alternative communicative modalities to accommodate those with sensory impairments [35].

An additional association was revealed through ORs between dissatisfaction with the affordability aspect of care and out-of-pocket costs for medical services. While the greatest dissatisfaction was expressed by those reporting trouble getting their health care needs met in general, those in racial minorities and those reporting trouble using the telephone were dissatisfied as well.

Several independent variables provided statistical significance for the MCCOSTS variable. These findings accentuate the negative effect on satisfaction with health care, when an individual has difficulty obtaining needed care due to costs.

These results were substantiated by a study conducted in the United States which indicated that the cost is the principal barrier to care [36]. The United States Centers for Disease Control and Prevention reported in 2004 that Medicare beneficiaries paid \$12 470 in out-of-pocket expenditures for medical care. In 2004, it was reported that older adults living in poverty represented 12.3% of the population [37]. This percentage is significant because those with lower income levels often do without health care due to costs and therefore have been found to express less satisfaction with both out-of-pocket costs and health care in general [36]. Medicare beneficiaries with disabilities and lower incomes also expressed reduced satisfaction with cost of care [38]. As a result of receiving less care due to the cost, these individuals tended to report more unmet needs. Similar conclusions were reached as early as 1975 when it was reported that those living below the poverty level seek medical care less often than do those with a non-poor classification for symptoms of illness [39].

Finally, beneficiaries with hearing impairment were less satisfied with acceptability of care based on associations between dissatisfaction and the concern of the doctor for their overall health rather than just for an isolated symptom or disease, the information provided to them about what was wrong, and the follow-up care received after initial treatment. Lack of satisfaction in any of these areas could easily be the result of communication breakdowns rather than, or in addition to, a true lack of concern or provision of incorrect information.

The population reporting the most trouble getting their health care needs met were again the least satisfied with the acceptability variables (MCINFO and MCFOLUP). It was found that those with hearing impairment felt a lack of warmth and friendliness shown by physicians, physician failure to consider patient concerns and expectations and physician inability to provide a precise explanation regarding diagnosis and illness etiology [40]. A study assessing community-dwelling older adults and their expectations for care found that satisfaction with providers was enhanced by feeling that providers cared for them as an individual [14]. These authors further noted that dissatisfaction, as well as a lack of trust, developed when patients did not feel their provider cared about them and their needs. While researching the possibility of an association between meeting patients' information needs and their overall satisfaction with care, investigators observed that the manner and style employed by the physician in delivering the information affected the patient's view of the physician [19]. Several quality of care issues expressed specifically by those with disabilities have been identified [1]. Among those, ineffective communication between providers and patients was suggested as having far-reaching, often negative, consequences. Communication with patients should therefore be seen as playing a crucial role in diagnoses, health management and the maintenance of a good doctor–patient relationship [41]. When patients with hearing impairment feel and observe efforts are being made to improve these areas, then satisfaction with care will also be greater.

In summary, the results of this study indicate that Medicare beneficiaries with hearing impairment are less likely ($p < 0.05$) to be satisfied with access to and satisfaction with care. These results are strongly supported by previous research findings that indicate the lack of satisfaction with access to care by Medicare beneficiaries with disabilities [5,12].

Additionally, it has been reported that Medicare beneficiaries in better health were more likely to be satisfied with their doctor's performance [42]. Conversely, those in poorer health and those with a disability exhibited lower levels of satisfaction. A study comparing the relationship between patient satisfaction and changes in health status at hospital admission and at discharge revealed that health status seems to influence satisfaction; healthier patients reported greater satisfaction with care [43].

Further, relationship between health status and satisfaction with health care among American Veterans revealed a significant positive association between health status and patient satisfaction; patients in better health were more likely to be satisfied with care received [44]. Additional support for the theory that health status influences satisfaction with care was provided in a study which reported that healthier respondents were more satisfied with their health care [45]. It has been observed that there is a tendency for patients who are healthier in general to be more satisfied with medical care rather than such satisfaction resulting due to their health improving because of medical care [18]. In the current study, the ORs revealed that those with poor general health were dissatisfied with the availability of medical services on nights and weekends (MCAVAIL), getting all medical needs taken care of at the same location (MCSAMLOC), and the ease of obtaining answers to questions over the phone about treatment or prescriptions (MCTELANS). The results of this study would support the previous results indicating an association between poor general health and lack of satisfaction with care. In summary, the results of this study support and confirm the salience of the Andersen Behavioral Model of Health Services Use in the study of access to and satisfaction with health care.

Clinical implications

The hypotheses proposed by this study were supported by statistically significant ($p < 0.05$) data, indicating that the presence of hearing impairment, affects satisfaction with health care. In addition, some of the results provided information of *practical* importance for health care professionals and policymakers. The findings supported previous research which found that 2001 MCBS respondents with communication impairments were dissatisfied with a number of health care issues, ranging from overall quality and accessibility to receipt of information [3]. The continued presence of dissatisfaction in this population suggests the need for policymakers to focus on specific issues faced by individuals with hearing impairment while accessing health care. One such issue is the availability of hearing aids and aural rehabilitation for the Medicare population. Many individuals with hearing impairment are unable to obtain hearing aids as such devices are not covered by Medicare because hearing loss is considered as a part of the aging process [46]. Current findings indicated that 14% (2096) of the Medicare beneficiaries participating in the 2004 MCBS (15 559) had some form of hearing impairment, with 3% (444) reporting an uncorrected hearing loss. These beneficiaries with hearing impairment were also found to be less satisfied with the health care they received. Such findings suggest that satisfaction with access to and satisfaction with health care could be facilitated by first, providing hearing aids and/or other amplification devices and secondly, by training health care professionals in techniques for communicating more effectively and concisely with individuals with hearing impairment.

Frustration has not only been reported by hearing impaired patients, but also by health care providers who treat patients with such communication impairments [33]; therefore, training in methods to effectively work with this population is necessary. Medical school training regarding methods to improve diagnosis and treatment of patients with hearing impairments could lead to improved patient–provider interactions and ultimately increased satisfaction with the provider and care given. This information could also be presented to practicing health care providers by speech-language pathologists and audiologists during educational seminars in health care facilities serving such patients.

Further, individuals with communication impairment report that the time spent with the health care provider is generally too

brief [47]. Individuals with communication impairments, specifically hearing impairments, stated that physicians need to spend more time with them in order for effective communication to occur [47]. Such findings indicate that health care providers need to allow for extended appointments for patients with communication impairments, such as hearing loss. Time accommodations could prevent misunderstandings about diagnosis and treatment methods which otherwise might have detrimental results.

Limitations of the study

Upon initiation of the current study, the desire was to determine how Medicare beneficiaries with a variety of communication impairments assessed their health care. Unfortunately, 2004 MCBS data concerning communication impairment was basically limited to hearing impairment. Other impairments affecting communicative ability in the elderly, such as aphasia, dysarthria or progressive neurologically based communication impairments, were only included in the facility interviews, which encompassed a very limited portion of the 2004 MCBS participants. It is felt that there is a significant population of older adults with speech-and/or language-related impairments that were not addressed due to the nature of the survey. Secondly, self-report scales were employed to obtain data for the MCBS. While this is a convenient and cost-effective means of acquiring information from large populations, the reliability of self-report scales has been called into question by some. Reuben, Siu and Kimpau suggested that the use of these scales to measure function may be insensitive to change, especially early in the course of functional decline [48]. This concern implies that respondents may either under- or over-estimate health status, thereby providing misleading responses. Further, the use of proxy respondents is also of concern. Studies that have compared self with proxy-reports are not conclusive on the direction of the potential bias (i.e. higher or lower satisfaction) introduced by proxies [5]. Despite these concerns, the use of MCBS is widely accepted and thought to provide additional information not obtained from other health measures [49].

Future directions

Finally, in preparation for the increasing number of Medicare beneficiaries, it is imperative that research designed to improve access to and satisfaction with health care be conducted. The effect of communication impairments involving speech, language and hearing should be investigated. Understanding the effects of such impairments on patient-provider interactions could reduce the likelihood of misdiagnosis, ineffective treatment and misunderstanding by the patient regarding recommendations made by the health care providers. Decreasing negative interactions could lead to much greater satisfaction with health care.

Declaration of interest

The authors report no conflicts of interest.

References

- Lawthers AG, Pransky GS, Peterson LE, Himmelstein, JH. Rethinking quality in the context of persons with disability. *Int J Qual Health Care* 2003;15:287–99.
- National Institute on Deafness and Other Communication Disorders Strategic plan, FY 2009–2011. [Internet]. Bethesda (MA): National Institute of Health; 2009 [cited 2010 May 15]; Available from: <http://www.nidcd.nih.gov/about/plans/strategic> [last accessed 1 Oct 2012].
- Hoffman JM, Yorkston KM, Ciol MA, et al. Effect of communication disability on satisfaction with health care: a survey of Medicare beneficiaries. *Am J Speech Lang Pathol* 2005;14:221–8.
- Lurie M, Dubowitz T. Health disparities and access to health. *JAMA* 2007;297:1118–21.
- Iezzoni LI, Davis RB, Soukup J, O'Day B. Quality dimensions that most concern people with physical and sensory disabilities. *Arch Intern Med* 2003;163:2085–92.
- Drum CE, Krahn G, Culley C, Hammond L. Recognizing and responding to the health disparities of people with disabilities. *Californian J Health Promot* 2005;3:29–42.
- Fouts BS, Andersen E, Hagglund K. Disability and satisfaction with access to health care. *J Epidemiol Community Health* 2000;54:770–1.
- Jha A, Patrick DL, MacLehose RF, et al. Dissatisfaction with medical services among Medicare beneficiaries with disabilities. *Arch Phys Med Rehabil* 2002;83:1335–41.
- United States Census Bureau. The statistical abstract: the national data book [Internet]. Washington, DC: U.S. Census Bureau; 2008 [cited 2010 May 15]; Available from: http://www.census.gov/compendia/statab/cats/births_deaths_marriages_divorces/life_expectancy.html [last accessed 1 Oct 2012].
- Frist WH. Overcoming disparities in U.S. health care. *Health Aff* 2005;24:445–58.
- Cohen G. Age and health status in a patient satisfaction survey. *Soc Sci Med* 1996;42:1085–93.
- Bachman SS, Vedrani M, Drainoni ML, et al. Provider perceptions of their capacity to offer accessible health care for people with disabilities. *J Disabil Policy Stud* 2006;17:130–6.
- Long CO. Dimensions of health care access and patient satisfaction for Medicare beneficiaries [dissertation]. Phoenix (AZ): Arizona State University; 1997. 212 p. Available from Dissertations and Theses database; AAT 9725312.
- Hupcey JE, Clark MB, Hutcheson CR, Thompson VL. Expectations for care: older adults' satisfaction with and trust in health care providers. *J Gerontol Nurs* 2004;30:37–45.
- Iezzoni LI, Davis RB, Soukup J, O'Day B. Satisfaction with quality and access to health care among people with disabling conditions. *Int J Qual Health Care* 2002;14:369–81.
- Diab ME, Johnston MV. Relationships between level of disability and receipt of preventative health services. *Arch Phys Med Rehabil* 2004;85:749–57.
- Jackson JL, Chamberlin J, Kroenke K. Predictors of patient satisfaction. *Soc Sci Med* 2001;52:609–20.
- Kravitz R. Patient satisfaction with health care: critical outcome or trivial pursuit? *J Gen Intern Med* 1998;13:280–2.
- Larson CO, Nelson EC, Gustafson D, Batalden PB. The relationship between meeting patients' information needs and their satisfaction with hospital care and general health status outcomes. *Int J Qual Health Care* 1996;8:447–56.
- Patrick DL, Scrivens E, Charlton JRH. Disability and patient satisfaction with medical care. *Med Care* 1983;21:1062–75.
- Gelberg L, Andersen RM, Leake BD. The behavioral model for vulnerable populations: application to medical care use and outcomes for homeless people. *Health Serv Res* 2000;34:1273–7.
- Andersen R, Aday LA. Access to medical care in the U.S.: realized and potential. *Med Care* 1978;16:533–46.
- Centers for Medicare and Medicaid Services. Overview [Internet]. Baltimore (MA): CMS; 2005 [cited 2010 May 15]; Available from: http://www.cms.hhs.gov/MCBS/01_Overview.asp [last accessed 1 Oct 2012].
- Sparer, MS. Health policy and health reform. In: Kovner AR, Knickman JR. eds. *Health care delivery in the United States*. New York: Springer Publishing; 2011:30–1.
- Himes CL, Rutrough TS. Differences in the use of health services by metropolitan and nonmetropolitan elderly. *J Rural Health* 1994;14:221–8.
- Garson GD. Logistic Regression [Internet]. Raleigh (NC): North Carolina State University; 2009; Available from: <http://www2.chass.ncsu.edu/garson/PA765/logistic.htm> [last accessed 15 March 2009].
- SPSS [Internet]. Armonk (NY): IBM; 2001; Available from: <http://www.spss.com>
- Bland JM, Altman DG. The odds ratio. *BMJ* 2009;320:1468.
- Penchansky R, Thomas J. The concept of access. *Med Care* 1981;19:127–40.
- Rosenbach ML. Access and satisfaction with the disabled Medicare population. *Health Care Financ Rev* 1995;17:147–67.

31. Lishner DM, Richardson M, Levine P, Patrick D. Access to primary health care among persons with disabilities in rural areas: a summary of the literature. *J Rural Health* 1996;12:45–53.
32. Chan L, Hart LG, Goodman DC. Geographic access to health care for rural Medicare beneficiaries. *J Rural Health* 2006;22:140–6.
33. Ubido J, Huntington J, Warburton D. Inequalities in access to healthcare faced by women who are deaf. *Health Soc Care Community* 2002;10:247–53.
34. Meador HE, Zazove P. Health care interactions with deaf culture. *J Am Board Fam Med* 2005;18:218–22.
35. Drainoni ML, Lee-Hood E, Tobias C, et al. Cross-disability experiences of barriers to health-care access. *J Disabil Policy Stud* 2006;17:101–15.
36. Lasser KE, Himmelstein DU, Woolhandler S. Access to care, health status, and health disparities in the United States and Canada: results of a cross-national population-based survey. *Am J Public Health* 2006;96:1300–7.
37. Butrica BA, Zedlewski SR. More older Americans are poor than the official measure suggests. *The Urban Institute: Older Americans' Economic Security* [Internet]. 2008 May 1 [cited 2010 May 15]; Available from: <http://www.urban.org/publications/411670.html>
38. Rosenbach ML, Adamache KW. Variations in Medicare access and satisfaction by health status. *Health Care Financ Rev* 1995;17:29–50.
39. Taylor DG, Aday LA, Andersen R. A social indicator of access to medical care. *J Health Soc Behav* 1975;16:39–49.
40. Jackson JL, Chamberlin J, Kroenke K. Predictors of patient satisfaction. *Soc Sci Med* 2001;52:1613–17.
41. Finucane C. Are we doing enough for deaf and hearing-impaired people? *Impair J Ther Rehabil* 2004;11:196.
42. Adler GS. A profile of the Medicare current beneficiary survey. *Health Care Financ Rev* 1994;15:153–63.
43. Covinsky KE, Rosenthal GE, Chren MM, et al. The relation between health status changes and patient satisfaction in older hospitalized medical patients. *J Gen Intern Med* 1998;13:223–9.
44. Ren XS, Kazis L, Lee A, et al. Health status and satisfaction with health care: a longitudinal study among patients served by the Veterans Health Administration. *Am J Med Qual* 2001;16:166–73.
45. Braunsberger K, Gates RH. Patient/enrollee satisfaction with healthcare and health plan. *J Consum Mark* 2002;19:575–90.
46. United States Department of Health and Human Services. Medicare and you [Internet]. Baltimore (MD): The Official U.S. Government Site for Medicare; 2010 [cited 2010 May 15]; Available from: <http://www.medicare.gov/Library/PDFNavigation/PDFInterim.asp?Language=English&Type=Pub&PubID=10050>
47. Iezzoni LI, O'Day BL, Killeen M, Harker H. Communicating about health care: observations from persons who are deaf or hard of hearing. *Ann Intern Med* 2004;140:356–62.
48. Reuben DB, Siu AL, Kimpau S. The predictive validity of self-report and performance-based measures of function and health. *J Gerontol* 1992;47:106–10.
49. Kaplan G, Baron-Epel O. What lies behind the subjective evaluation of health status? *Soc Sci Med* 2003;56:1669–76.

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