HEALTH LITERACY AND PERCEIVED HEALTH STATUS IN LATINOS AND AFRICAN AMERICANS

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Objective: To determine the association between functional health literacy and physical and mental health status in a sample of Latinos and African Americans.

Methods: A cross-sectional study that used a demographics questionnaire, the Short Test of Functional Health Literacy in Adults (S-TOFHLA), the physical component summary (PCS-12) and mental component summary (MCS-12) scales of the SF-12, and the Charlson Comorbidity Index in a sample of 1301 Medicaid and/or Medicare Latino and African American adult patients at four community clinics and one university-based general medicine practice in Philadelphia.

Results: When stratified by inadequate, marginal, and adequate functional health literacy levels and compared to SF-12 population norm scores of 50.0, the mean (standard deviation [SD]) PCS-12 scores were 38.8 (11.2), 38.5 (11.1), 42.7 (11.4), respectively ($P<.0001$); the mean (SD) MCS-12 scores were 43.3 (11.2), 43.5 (10.4), 44.3 (11.7), respectively ($P=.39$). After adjusting for sociodemographic confounders and Charlson Index score, functional health literacy was not significantly associated with physical or mental health status ($P>.50$ and $P=.41$, respectively).

Conclusion: Functional health literacy is not independently associated with perceived physical health status or mental health status in a sample of ethnic minorities. (*Ethn Dis*. 2007;17:305–312)

Key Words: African Americans, Comorbidity, Continental Population Groups, Ethnic Groups, Health, Health Literacy, Health Status, Hispanic Americans, Minority Groups, Quality of Life

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INTRODUCTION

Perceived health status is a reflection of both function and quality of life and has been demonstrated to be a predictor of utilization of health services, morbidity, and mortality.[1,2] Previous studies that have looked at the relationship between perceived health status and literacy have demonstrated mixed results; some supported an association,[3–6] while others were unable to demonstrate this association.[7,8]

One limitation of previous studies, however, is that these have been based on predominantly White patients. However, clear differences exist in the health perceptions and health-seeking behaviors between ethnic minorities and Whites. For example, self-perception of overweight is more common in Whites than in African Americans,[9,10] and African Americans are less likely than Whites to use hospice care at the end of life[11] and to use complementary and alternative medicine.[12] One potential explanation for these differences is that different cultural groups may interpret the construct of health in different ways.[13–15] For example, cultural or linguistic conventions of describing health and symptoms vary between ethnic groups,[16] and evidence suggests that somatization may be more common in some sociocultural groups than others.[17] A differential interpretation of health may systematically influence the responses of a cultural group on health status measures.[13–15] In fact, when a common measure of health status, the SF-12, is administered across different racial and ethnic groups, ethnic minorities consistently score lower compared to Whites and overall population norms.[18] However, whether the differences in the SF-12 scores by ethnic minorities are due to poorer health, to differences in the interpretation of the dimensions of health, or both is unclear.

This study set out to examine the generalizability of previous findings that demonstrate that health literacy, as measured by reading skills, is associated with perceived health.

Another limitation of prior studies that explored the association between health literacy and perceived health status is that most of them did not adjust for co-morbidities, which we theorize is an important confounder. Poorer self-rated health may be expected among respondents with a higher proportion of co-morbidities. Therefore, adjustment for co-morbidities becomes essential in exploring the relationship between health literacy and perceived health in any population. However, all but one of the previous studies[6] that have explored the relationship between health literacy and perceived health failed to adjust for comorbidity.

This study set out to examine the generalizability of previous findings that demonstrate that health literacy, as measured by reading skills, is associated with perceived health. We examined the association between functional health literacy and the Physical and Mental

Component Summary scores of the SF-12 in a sample of Latinos and African Americans. Our hypothesis was that, in Latinos and African Americans, inadequate functional health literacy would be associated with both poorer physical and mental health status. We also hypothesized that health literacy would be associated with sociodemographic factors and comorbidity and, thus, an association between literacy and health status would be attenuated by both of these factors.

METHODS

This cross-sectional analysis was conducted as part of a larger parent study[19] with the aim of designing and validating a version of the Consumer Assessment of Health Plans Survey 2.0H[18] for the measurement of patient satisfaction in patients with inadequate literacy. A sample of patients waiting to see their physicians at four community clinics and one university-based general medicine practice in Philadelphia were invited to participate. Patients >18 years of age who had Medicaid or Medicare were eligible to participate. Exclusion criteria were other forms of insurance or prior participation in the study. Patients were asked to complete a demographics questionnaire, the Short Test of Functional Health Literacy in Adults (STOFHLA), the SF-12, and the Charlson Comorbidity Index.

The STOFHLA[20] is a test of functional health literacy that is available in English and Spanish. The raw STOFHLA scores are classified into inadequate, marginal, and adequate functional health literacy categories. The TOFHLA scores correlate with other literacy tests, including the WRAT-R and the REALM.[21] This measure of health literacy was chosen because it is the only health literacy measure that tests both reading and comprehension and because it has been validated in both English- and Spanish-speaking, as well as in Latino and African American populations.[22]

The SF-12[23,24] is a generic health survey derived from a subset of the Medical Outcomes Study 36-item short-form survey (SF-36).[25] The SF-12 captures the multidimensionality of health-related quality of life in eight constructs, the first four (physical functioning, role limitations due to physical problems, bodily pain, general health perceptions) of which make up the physical component summary (PCS-12) and the last four (vitality, social functioning, role limitations due to emotional problems, and mental health) make up the mental component summary (MCS-12). The PCS-12 and MCS-12 are scored with norm-based methods. For both scales the US population norm scores are a mean of 50 and a standard deviation of 10; lower scores indicate poorer health status.[23] The PCS-12 and MCS-12 have test-retest correlations of .89 and .76, respectively[4] and correlations with the SF-36 of .905 and .938, respectively.[24] The SF-12 has been validated in multiple ethnic minorities, including African Americans and Caribbean Blacks and Latinos.[18,26]

The Charlson Comorbidity Index[27,28] is the most extensively studied comorbidity index.[29] It weighs the presence or absence of 19 diseases and conditions. Weights are derived from the strength of the association between the condition and mortality. The sum of assigned weights for a given patient's condition is the Charlson Comorbidity Index. A Charlson Index of 0 denotes the absence of any of the diseases or conditions in the index and a score ≥ 5 predicts especially high rates for mortality,[27,28,30,31] hospital stay, postoperative complications, readmissions, discharge to nursing home,[31,32] and cancer progression-free survival.[33] Although the Charlson Index was initially derived as a prognostic measure to study comorbidity in inpatients, it has been used to evaluate chronic disease in outpatients.[34,35] Furthermore, the Charlson Index has been previously used in African Americans[36,37] and Latinos.[38]

Reading grade levels for the instruments used in this study have been published for the STOFHLA. Nurss et al[20] reported that the reading grade levels for the two passages in the STOFHLA using the Gunning-Fog index are 4.3 and 10.4. The authors of the current study used the SMOG readability formula[39] to compare the reading grade level for the three instruments used in this study. The SMOG is one validated and frequently used readability formula specifically for printed health information. Using the SMOG, reading grade levels for the STOFHLA and SF-12 were 9th and 10th grades, respectively. Although we were able to calculate a SMOG-derived grade level of 8 for the Charlson Index, the SMOG is based on the readability of sentences and the Charlson Index consists of a list of comorbidities. Therefore, we recalculated the readability of the Charlson Index by using the Flesch-Kincaid formula and found it to be 12.0.

The battery of instruments was administered in Spanish or English, whichever was elected by the subjects, and the instruments were completed under the observation of a research assistant who was available for questions or if patients required clarification of any part of the instruments. For their participation, patients received a gift certificate in the amount of $10. This study was approved by the institutional review board at the University of Pennsylvania.

Statistical Analysis

All analyses were conducted with Statistical Analysis System (SAS), version 6.11.[40] Functional health literacy was categorized into inadequate, marginal, and adequate. Chi-square statistics were calculated to estimate the association of functional health literacy

with demographic variables. Univariate and bivariate statistics were followed by forward regressions using the PCS-12 scores and MCS-12 scores as dependent variables and sequentially by adding grouped sociodemographic variables (sex, age, education, ethnicity, provider's use of the patient's preferred language, Medicaid, Medicare), the Charlson Comorbidity Index, and the STOFHLA scores as independent variables one at a time. Variables that did not meet the threshold of .5000 for significance were not entered into the next sequential model.

RESULTS

A total of 5912 patients were approached between January 20, 2002, and July 9, 2002. Of these, 1958 (33%) agreed to participate, 3044 (52%) were ineligible, and 905 (15%) refused to participate. Of the 1958 eligible patients, 657 (34%) patients were unable to complete at least one of the study instruments because they were called for their appointment and were, therefore, excluded from further analysis. In addition, patients who refused participation because they reported they could not see (for example, because of recent eye surgery) or who did not have their glasses were excluded from the analysis (n=22). Patients who reported they could not read were assigned a STOFHLA score of 0. The final sample consisted of 1279 patients.

The sociodemographic characteristics of the sample are illustrated in Table 1. The mean (standard deviation [SD]) age of the respondents was 41.9 (15.1) years. Most participants were women (76%) and Latino (60%). Whites made up only 2% of participants. Almost three quarters of the participants (74%) had Medicaid, and 33% had Medicare. Most patients had at least some high school education; only 17% of the patients had less than an eighth-grade education.

Functional Health Literacy

Most of the sample (70%) had adequate functional health literacy, while 19% had inadequate and 11% had marginal functional health literacy. The mean (SD) STOFHLA score for the overall sample was 23.6 (10.1), and the median was 31.0 of a maximum score of 36.

As also shown in Table 1, compared with patients with adequate literacy, patients with marginal and inadequate literacy were more likely to be older (P<.0001), more likely to be male (P<.0001), more likely to be of Latino ethnicity (P=.0001), less likely to be African American (P=.0003), less likely to have Medicaid (P<.0001), more likely to have Medicare (P<.0001), more likely to have lower educational status (P<.0001), and more likely to prefer speaking Spanish with the physician (P<.0001) and at home (P<.0001).

Functional Status and Comorbidity

The distribution of the scores of the SF-12 and Charlson Index are illustrated in Table 2. The mean (SD) PCS-12 score for this sample was 41.5 (11.5), and the median was 41.6. The mean MCS-12 was 44.0 (11.5), and the median was 44.6. In comparison to the population norm of 50, these scores suggest overall poorer physical and mental health status for this sample.

Table 2 also shows the mean PCS-12 and MCS-12 scores stratified by functional health literacy levels. As predicted, differences in PCS-12 scores across the three literacy groups indicate that patients with inadequate and marginal functional health literacy have lower physical health status (P<.0001). Contrary to our hypotheses, mean (SD) MCS-12 scores were similar across the three literacy groups (P=.39).

Also shown in Table 2, the mean (SD) Charlson Index for this sample was .79 (1.62). The median of 0 is a reflection of a Charlson Index score of 0 for almost two thirds (64.7%) of the patients in this sample. Almost one fifth (18.5%) of subjects had a Charlson Index score of 1, 7.3% had an index score of 2, 3.9% had an index score of 3, 1.3% had an index score of 5, and 4.3% had an index score ≥5 (not shown in the table). The mean (SD) Charlson Index for patients with inadequate, marginal, and adequate literacy was: 1.47 (2.29), 1.14 (1.68), and .54 (1.28), (P<.0001).

Table 3 shows the results of the regression analyses. When PCS-12 was the dependent variable, sociodemographics as a group were a significant predictor (P<.0001). In particular, younger age was a strong predictor of higher physical function (P<.0001). Being a Medicaid recipient was also associated with lower PCS scores (P=.04). Notably, comorbidities were a significant negative predictor of PCS (P<.0001). As expected, health literacy did not enter the model.

The right columns for MCS-12 are similar in that the group of demographics were a significant predictor (P=.0003). Higher education was predictive of higher MSC-12 scores (P<.0001). Comorbidities had a negative impact, similar to that observed for PCS (P<.0001). Although health literacy entered the model, its impact on MCS was not significant (P=.41).

DISCUSSION

This is the first study of health literacy and perceived health focused on ethnic minorities. In this study, 30% of our sample had inadequate or marginal functional health literacy, a finding consistent with previous prevalence estimates of inadequate literacy skills in African Americans and Latinos.[19,41,42] In this sample, older age, male sex, and Latino ethnicity were characteristics associated with inadequate health literacy. These findings are also consistent with the 2003

Table 1. Sociodemographic characteristics for the overall study sample and by functional health literacy (*N*=1279)

Variable	Total *N* (%)	Inadequate Functional Health Literacy *n* (%)	Marginal Functional Health Literacy *n* (%)	Adequate Functional Health Literacy *n* (%)	*P* value*
Age (years)					<.0001
18–39	647 (51%)	52 (21%)	43 (30%)	552 (62%)	
40–49	249 (19%)	45 (18%)	24 (17%)	180 (20%)	
>50	383 (30%)	152 (61%)	74 (53%)	157 (18%)	
Mean (SD)	41.9 (15.1)	52.9 (14.9)	48.8 (16.3)	37.8 (12.9)	
Median	40.0	54.4	51.6	36.1	
Range	18–85	19–85	19–85	18–78	
Sex (*n*=1278)					<.0001
Male	302 (24%)	92 (37%)	42 (30%)	168 (19%)	
Female	976 (76%)	156 (63%)	99 (70%)	721 (81%)	
Ethnicity† (*n*=1261)					<.0001
Latino	758 (60%)	176 (72%)	86 (61%)	496 (57%)	
Non-Latino	503 (40%)	69 (28%)	54 (39%)	380 (43%)	
Race (*n*=1147)					.0003
African American	473 (41%)	66 (31%)	47 (36%)	360 (45%)	
White, non-Hispanic/Latino	24 (2%)	2 (1%)	1 (1%)	21 (3%)	
American Indian/Native Alaskan	6 (.5%)	3 (1%)	2 (2%)	1	
Asian	2 (.2%)	0	0	1	
Other (primarily Latinos)	642 (57%)	145 (67%)	79 (61%)	418 (52%)	
Medicaid (*n*=1241)					<.0001
Yes	927 (74%)	123 (52%)	75 (56%)	729 (84%)	
No	314 (26%)	114 (48%)	59 (44%)	141 (16%)	
Medicare (*n*=1189)					<.0001
Yes	390 (33%)	139 (58%)	68 (53%)	183 (22%)	
No	799 (67%)	99 (41%)	61 (47%)	639 (78%)	
Education (*n*=1277)					<.0001
8th grade or less	211 (17%)	128 (52%)	28 (20%)	55 (6%)	
Higher than 8th grade	1066 (83%)	119 (48%)	113 (80%)	843 (94%)	
Preferred language with doctor (*n*=1275)					<.0001
English	698 (55%)	85 (34%)	69 (49%)	544 (61%)	
Spanish	488 (38%)	150 (61%)	63 (45%)	275 (31%)	
Both	89 (7%)	12 (5%)	8 (6%)	69 (8%)	
Preferred language at home (*n*=1269)					<.0001
English	593 (47%)	79 (32%)	61 (44%)	453 (51%)	
Spanish	489 (39%)	147 (60%)	58 (41%)	284 (32%)	
Both	187 (15%)	19 (8%)	21 (15%)	147 (17%)	

* Based on χ^2 tests.
† Ethnicity is self-identified.

National Assessment of Adult Literacy, which shows that the elderly, men, and Latinos have lower prose and document literacy than younger persons, women, non-Latinos, respectively.[43] Additionally, Latinos were more likely to have inadequate health literacy compared to African Americans, a finding which was also demonstrated in the National Assessment of Adult Literacy. Furthermore, the rates of inadequate health literacy by spoken language were highest among Spanish speakers and lowest among bilingual (English and Spanish) speakers. These findings are not surprising given that 40.3% of US Latinos are foreign born,[44] and most received their education in Latin America and the Caribbean where, very often, the extent of education, if available, is limited. According to the 2004 US Census, among populations >25 years of age, 41.6% of Latinos in the United States have less than a high school education compared to 10.0% for non-Hispanic, White race and 17.1% for non-Hispanic, other races.[45] Together, these studies show that the burden of low literacy among culturally diverse populations disproportionately falls on Latinos and Spanish-speakers, the fastest growing minority group in the United States. The healthcare implications of these

Table 2. PCS-12, MCS-12 and Charlson Index Scores by functional health literacy

	Total (N=1279)	Inadequate Functional Health Literacy (n=249)	Marginal Functional Health Literacy (n=141)	Adequate Functional Health Literacy (n=889)	P value
PCS-12 Mean (SD)	41.5 (11.5)	38.8 (11.2)	38.5 (11.1)	42.7 (11.4)	<.0001
PCS-12 Median	41.6	38.8	38.3	43.4	
MCS-12 Mean (SD)	44.0 (11.5)	43.3 (11.2)	43.5 (10.4)	44.3 (11.7)	.39
MCS-12 Median	44.6	42.8	44.0	44.3	
Charlson Index Mean (SD)	.79 (1.62)	1.47 (2.29)	1.14 (1.68)	.54 (1.28)	<.0001
Charlson Index Median	.00	1.00	1.00	.00	

PCS-12=physical component summary; MCS-12=mental component summary.

The PCS-12 and MCS-12 scales are transformed to have a mean of 50 and a standard deviation of 10, the general population norm. Lower scores indicate poorer health status.

findings is that simply translating written materials into Spanish may continue to be of little use to the Latino population if these are not written at a level they can understand. In addition, these results imply that some research findings about health literacy and health may not be generalizable to different cultural groups.

African Americans and Latinos had PCS-12 and MCS-12 scores that are below population norms, a finding that is also consistent with previous research.[18] However, this study shows that functional health literacy is not independently associated with perceived physical or mental health status as measured by the SF-12 after adjusting for sociodemographic variables and comorbidities. Notably, physical function is most strongly associated with age and comorbidities. Mental function is related to education and comorbidities.

Since perceived health is a predictor of utilization of health services,[1,2] and, as our study demonstrates, health literacy is not associated with perceived physical or mental health, then we would not expect patients with low health literacy to seek health care at a higher rate compared to those with higher literacy. In fact, Baker et al[46] demonstrated that health literacy was not associated with the mean number of self-reported outpatient visits to or time to first physician visit during the 12 months after enrollment in Medicare managed care. Another study of the number of outpatient visits made by patients with rheumatoid arthritis found that patients with low literacy had a median of six (range 2–15) visits a year, while the high-literacy group reported a mean of two (range 2–13) visits a year; however, the study did not report any statistical analyses.[47]

The results of this study are consistent with two published studies that showed that health literacy was not associated with health status[7,8] but inconsistent with three other studies that revealed an association between health literacy and perceived health.[3–6] There are several reasons for the inconsistent findings in the literature. These include: 1) differences in the measures of functional status and literacy used; 2) whether and which comorbidities were adjusted for; and 3) potential differences in actual and perceived health between the populations studied.

In two of the previous studies,[4,5] health status was measured with a one-item global measure of perceived health status, whereas the preferred definition of health consists of a multidimensional model that includes, at a minimum, physical and mental dimensions.[48–50] Weiss et al[3] used a multidimensional health status measure, the Sickness Impact Profile. However, the 136-item Sickness Impact Profile was developed to measure the way in which illness affects daily activities and behaviors, and the objective of the SF-12 is to assess

Table 3. Results of forward regression showing sociodemographic variables and Charlson Index and their relative association with physical function score (PCS-12)

	PCS		MCS	
Variable	Standardized Beta	P	Standardized Beta	P
Grouped sociodemographic variables		<.0001		.0003
Sex	.72	.36	.71	.39
Latino ethnicity	.28	.77	1.34	.17
Age	−.23	<.0001	−.03	.29
Education	.49	.06	1.20	<.0001
Provider speaks in language patient can understand	−.09	.92	.15	.88
Medicaid	−3.20	.04	−1.51	.34
Medicare	−2.69	.07	−.39	.80
Charlson Index	−1.13	<.0001	−1.10	<.0001
S-TOHFLA	–*	–*	−.04	.41

* Health literacy did not meet the .5000 significance level for entry into the model.

PCS-12=physical component summary; MCS-12=mental component summary; S-TOFHLA=Short Test of Functional Health Literacy in Adults.

physical and mental functioning and well-being. Thus, the different instruments may be capturing different dimensions of health. Furthermore, Weiss et al measured general literacy and in this study we measured health literacy as measured by reading skills.

Our results show that comorbidity is a potential confounder in the association between health literacy and perceived health. Only one of the prior studies[6] adjusted for comorbidity. In contrast to that study, however, we used the Charlson Comobidity Index, a validated instrument heavily weighted to reflect severe comorbidities frequently encountered in an acute, inpatient setting, whereas Wolf et al[6] measured eight chronic conditions that are more frequently encountered in the outpatient setting. It may be that in the setting of chronic conditions, which rely more on patient understanding to manage these appropriately, health literacy is associated with perceived health. In contrast, severe, acute comorbidities, such as those measured by the Charlson Comorbidity Index, explain away the relationship between health literacy and perceived health, potentially because of the severity and/or the acute nature of such conditions overwhelmingly explains the way in which health is perceived.

A final explanation for the discrepant findings of the studies conducted thus far is that they have recruited subjects from diverse sociodemographic and cultural backgrounds, who may have different cultural interpretations of health. While our study raises the hypothesis of cultural differences in perceived health, it was not designed to look at differences between Whites and ethnic minorities.

Although the constructs of literacy, health literacy and functional health literacy overlap, there are important differences between them. Literacy is defined as an individual's ability to read, write, speak, compute and solve problems at proficiency levels sufficient to function on the job and in society, to achieve one's goals and develop one's knowledge and potential.[51] Health literacy is defined as the ability to read, understand and act on health information.[52,53] Functional health literacy is the ability to apply reading and numeracy skills in a health care setting. This includes such tasks as reading and comprehending consent forms, prescriptions labels, interpreting appointment slips, completing insurance forms, following instructions for diagnostic tests and understanding other essential health-related materials to adequately function as a patient.[21,53,54] From these definitions, it is clear that literacy, health literacy and functional health literacy consist of multiple constructs which include reading ability, numeracy, understanding, writing, communication and abstract reasoning. The STOFHLA assesses reading comprehension of written medical information, but we did not measure other important health literacy constructs.

This study also has other limitations. First, the instruments were self-administered. Although the SF-12 and TOFHLA are designed to be self-administered instruments and have a readability of lower than the eighth grade, the readability of the Charlson Index is higher. While assistance in completing the instruments was offered to all subjects, few accepted the offer, and thus the validity of the results for the Charlson Index for subjects with inadequate health literacy could be questioned. Second, 34% of eligible subjects were unable to complete at least one of the study instruments, usually because they were called away to their appointments. Although there is no reason to think they would be systematically different from those who waited longer, the completion rate raises the possibility of nonresponse bias.

Despite the limitations, our study has several strengths, including the large sample size, the use of multiple clinic sites, the incorporation of reliable and valid measures, and adjustment for confounders. In addition, by conducting this study in patients with Medicaid and Medicare while they waited for their medical appointments, we were able to control for other confounders such as insurance and access to health care. Furthermore, this study is unique in that it focused completely on ethnic minorities. Although our main findings differed from previous studies, our results showed that poor perceived physical health is associated with advancing age and greater comorbidity and that greater perceived mental health is associated with higher education, as has been previously shown,[24] further supporting the validity of our findings.

The growing body of literature indicates that health literacy is at least related to knowledge and understanding of illness and is associated with other important health correlates and outcomes including adherence to medication, hospitalizations, control of chronic conditions such as diabetes, HIV and depression as well as receipt of screening and preventive care.[55,56] However, the predominance of studies conducted to date to explore the relation between health literacy and health consist of cross-sectional design and, thus, it remains unclear if heath literacy is involved in the causal pathway or whether it is simply a marker of other barriers to care such as poor access to care, low socioeconomic status, low self-efficacy, or distrust in the healthcare system and providers.[57] Funding agencies and investigators have called for health literacy research based on methodologies that include prospective and intervention designs to further clarify the causal relationship of health literacy and health while addressing the many potential confounders.[57] Such designs may clarify the truth behind the currently inconsistent relationship between health literacy and perceived health. In addition, future research should also examine whether the association between health literacy and

perceived health is different between majority and minority cultural groups.

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Previous Presentation of Results: The preliminary results of this study were presented in part at the National Meeting of the Society of General Internal Medicine, April 30, 2003, Vancouver, BC.

Study Instruments: The SF-12 health survey may be viewed at the Quality Metric Incorporate website: http://www.qmetric.com. The Charlson Comorbidity Index diseases and conditions are illustrated in the Appendix. The Short Test of Functional Health Literacy in Adults was developed by faculty at Georgia State University and Emory University and is available from: Center for the Study of Adult Literacy, Georgia State University, University Plaza, Atlanta, GA 30303-3083.

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APPENDIX. Conditions Included in the Charlson Index, with assigned weights[5]

Condition	Weight
Myocardial infarction	1
Congestive heart failure	1
Peripheral vascular disease	1
Cerebrovascular disease	1
Dementia	1
Chronic pulmonary disease	1
Connective tissue disease	1
Ulcer disease	1
Mild liver disease	1
Diabetes without end-organ damage	1
Hemiplegia	2
Moderate or severe renal disease	2
Diabetes with end-organ damage	2
Any tumor (without metastasis)	2
Leukemia	2
Lymphoma	2
Moderate or severe liver disease	3
Metastatic solid tumor	3
AIDS	6