

# Self-Rated Health Status: A New Vital Sign for Primary Care?

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## ABSTRACT

Self-reported health status ratings depend on whether one references health problems or health behaviors. Pessimistic health perceptions may indicate underlying emotional distress or predict mortality. This study explores the association between a single-item health status question and self-reported health problems or behaviors among women in a Wisconsin family medicine clinic. All women who present for health maintenance complete a health history form that includes a single item health status rating. Health status ratings from 251 randomly selected records were compared with certain reported demographics, health behaviors (e.g. smoking, exercise), health concerns, depression and anxiety symptoms, vital signs and body mass index. Health status ratings of fair or poor were found to be associated with race, marital and employment status, obesity, exercise, and depressive symptoms. Smokers were 4.22 times more likely to report a less favorable health category than non-smokers. Implications for future research are discussed.

## INTRODUCTION

A frequently used health status measure consists of a single item asking respondents to rate their overall health as excellent, very good, good, fair, or poor. This question, or a similar variant, has been used in several population-based studies including the National Health Interview Survey (NHIS), the National Health and Nutrition Examination Survey (NHANES), and the Rand Health Insurance Experience (HIE). Several population factors have been found to be associated with self-reported health

status, including age, gender, ethnic background and socio-economic status. A perception of poor health functioning is correlated with lower socioeconomic status, both via and independently of disease.<sup>1</sup> A pessimistic physical health perception may serve as an indicator for underlying emotional distress<sup>2</sup> and is an independent predictor of loss of functional ability,<sup>3</sup> mortality,<sup>4,6</sup> and health care utilization.<sup>7</sup> The association with mortality is consistent regardless of gender or ethnicity and after adjustment for socioeconomic status and measures of comorbidity.<sup>8</sup>

While useful in studies of population health, the meaning of self-reported health status for individual patients is less clear. Analysis of 158 in-depth interviews demonstrated that some subjects refer to specific health problems when assessing their health status, whereas others refer to general physical functioning or health behaviors.<sup>9</sup> Responses to self-assessed health status questions differ based upon the referent being used by the subject. These data also suggested that the referents used might vary by age, education and race.

Many of the published studies investigating the predictive value of self-rated health status have focused on outcomes such as mortality and loss of function, studied outcomes following hospitalization, or limited their investigation to vulnerable populations such as the elderly. Less well studied are the associations of health status ratings with factors more important to a relatively healthy population presenting for preventive care. In these patients, mortality outcomes are distant, and health behaviors such as exercise, weight control, and smoking play important roles in maintaining future health. Problems such as depression and anxiety, which may influence health status ratings, present commonly in this setting and may serve a confounding role.

So, of what use is the self-assessed health status rating to the clinician in a primary care setting? Can a noted discrepancy between the patient's rating and the physician's impression provide a clue to otherwise undetected health problems, emotional distress, or a

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willingness to discuss health behaviors? This cross-sectional study was designed to determine if a patient's assessment of overall health via a single-item health status question is related to self-reported health problems or health behaviors among adult women in a family medicine clinic.

## METHODS

All adult women who present to the Medical College of Wisconsin Family Medicine Clinic for health maintenance visits complete an age-specific health history and systems review form. This form includes questions on health behaviors, gynecological and obstetric history, and selected health problems (review of systems). One item on all forms asks: "In general, would you say your health is: 1) Excellent, 2) Very Good, 3) Good, 4) Fair, or 5) Poor?" A random sample of 251 medical records was identified from among all visits for women born before December 31, 1979 with ICD-9 codes for health maintenance visits or PAP smears or a preventive medicine CPT code from January 1996-December 1997. Medical records were included if the health history form was present, excluding patients who were billed for a PAP smear done for diagnostic or follow-up purposes. Charts were reviewed to collect the patient health status rating along with certain demographics (e.g. age, race, marital status), reported health behaviors (e.g. smoking, exercise), reported health concerns, reported depression and anxiety symptoms, vital signs and body mass index (BMI), and recorded medical diagnoses (acute and chronic). Diagnoses were obtained from the assessment section of the recorded visit or the chronic problem list. All other data was obtained specifically from the health history form, vital sign flow sheet or billing database.

Chi-square tests were conducted to compare proportions of ratings of fair or poor with ratings of good, very good or excellent within demographic, health behavior or disease groups. T-tests were used to compare continuous variable values between the two health rating groups. In addition, stepwise ordinal logistic regression was used, with the 5 point health rating scale as the dependent variable and considering demographic, health behavior and disease categories as possible predictors. Only variables significant in univariate analyses at the  $p < 0.10$  level were considered for inclusion in the ordinal logistic model. The proportional odds assumption required for ordinal logistic regression was tested and met. The impact of the predictor variables on the outcome is shown in terms of odds ratios. Analyses were

done with the Stata10 and SAS11 statistical software packages.

## RESULTS

The average age in the study population was 35.3 years (range 16-77) (Table 1). Body mass index (BMI) was calculated from height and weight measurements, with a mean of 27.2 kg/m<sup>2</sup> (range 18.3-51.0). Mean blood pressures in this sample were 116 mmHg systolic (82-168) and 72.6 mmHg diastolic (50-100).

Twenty-two patients (9%) rated their health as fair or poor (4 or 5 on a 5-point scale) (Table 2). This is slightly lower than the national average (11%-18%). (NCHS, 1994) There is no significant difference in age between the patients in the fair/poor health group and those rating their health as good, very good or excellent. Patients in the fair/poor health group are more likely to be non-white (50% vs. 11%,  $p < 0.001$ ) and unmarried (62% vs. 46%,  $p = 0.15$ ), and less likely to be employed or a student (55% vs. 86%,  $p < 0.001$ ) or to exercise (33% vs. 57%,  $p = 0.04$ ). There is a significant difference in BMI between those in the fair/poor health group and those with higher health status ratings (mean 33.7 vs. 26.6,  $n=224$ ,  $p < 0.001$ ). The fair/poor rating group is significantly more likely to report feeling depressed (40% vs. 15%,  $p = 0.005$ ), but no more likely to report feeling anxious or having a personal or family experience of physical abuse. Patients rating their health as fair or poor are not significantly more likely to be smokers or to have a history of alcohol abuse than patients rating their health as good, very good or excellent in this screening analysis. Insurance type was considered as a proxy for socioeconomic status, a variable known to be associated with poorer health status. The predictive ability of insurance status was analyzed as a dichotomous variable: private insurance versus public or no insurance. Private insurance did not have a significant relationship with health rating.

Stepwise ordinal logistic regression was done using the 5 point health rating scale as the dependent variable and considering as possible predictors: high BMI ( $>29$ ), age (as a continuous variable), white, married, employed or a student, exercise, smoking, and depression or anxiety symptoms, current or history of any GI problems, menstrual problems, anemia, domestic abuse and private insurance. The anxiety and depression variables are strongly associated with each other ( $p < 0.005$ ), therefore several models were considered using these variables alone and in combination. The best model is shown in Table 3 ( $n=205$ ). With each unit increase (i.e.: being a smoker, having

**Table 1.** Distribution of responses to health history questionnaire items: demographics, vitals and health behaviors (n=251 unless specified otherwise)

Demographics	Percent (%)
Race: Black	10
White	85
Other	5
MS*: Married	37
Single	52
Divorced	7
Widowed	2
ES: Employed	76
Student	8
Neither	16
<b>Health behaviors</b>	
Smoking	
Smoker	26
Non-smoker	69
Former smoker	4
Exercise regularly	53
Breast self-exam (n=225)	
Never	17
Rarely/occasionally	33
Regularly/monthly	50
Use sunscreen	65
Wear seatbelt	87
<b>Reported health problems</b>	
Often feel anxious (n=242)	18
Often feel depressed (n=245)	17
You or family physically/emotionally abused (n=245)	22
Excessive menstrual flow (n=240)	15
Severe menstrual cramps (n=242)	17
Bleeding between periods (n=243)	10
Unexplained weight change (n=241)	7
Rectal bleeding (n=250)	10
Change in bowel habits (n=247)	8
Dribbling of urine (n=246)	14
2% (n=4) unknown	

high BMI, being 10 years older, etc.) there is an increase (odds ratio > 1) or decrease (odds ratio < 1) in the odds of rating health status in a higher (worse) category. For instance, smokers are 4.21 times more likely to rate their health in a higher category than are non-smokers. In addition to smoking, a BMI greater than 29 and anxiety predict a higher rating (worse perceived health) and being white, employed or a student, exercising and older all predict a lower rating (better perceived health). With this model, the probability that a 40-year-old smoker rates her health as excellent is 0.2%, while the probability for

**Table 2.** Self-reported health status (%) (n = 245)

	Current study	National white*	National non-white*
Excellent	17	32.2	24.3
Very good	37	30.3	26.2
Good	37	25.7	30.6
Fair	8	8.2	13.3
Poor	1	3	4.9

\* National Health Status, women 18-74 years of age: National Center for Health Statistics, National Health Interview Survey, 1994. The weighting used to arrive at these estimates was the final basic weight annual.

**Table 3.** Ordinal Logistic Regression Model to predict response on a 5 point Self Reported Health Status Scale (N=205).

Variable	Coefficient	Odds Ratio	P Value
Smoking	1.44	4.21	<0.0005
High BMI	1.39	4.03	< 0.0005
White	-2.55	0.08	<0.0005
Anxiety*	1.20	3.32	0.002
Employed/student	-1.25	0.29	0.004
Exercise	-0.72	0.49	0.017
Age (10 year increment)	-0.45	0.64	0.001

With each unit increase (ie: being a smoker, having high BMI, being 10 years older, etc.) there is an increase (odds ratio > 1) or decrease (odds ratio < 1) in the odds of rating health status in a higher (worse) category.  
\*This variable also strongly associated with depressive symptoms (p < 0.005)

a 40-year-old non-smoker is 5 times greater (1.0%). A 40-year-old with all “positive” characteristics (non-smoker, low BMI, white, employed or student, exercises, no anxiety/panic) would have a probability of 48% of rating her health as excellent.

## DISCUSSION

Previous population-based research has shown that self-reported health status predicts future health, including mortality. However, the significance of the perceived overall health status of an individual is less clear. This exploratory study demonstrates that self-reported health status in a primary care setting varies substantially and is associated with certain predictors of future health status, including health behaviors such as smoking. While the study suggests interesting relationships and ideas for further study, several limitations are worth mentioning. First, this is a small study involving only 251 subjects from 1 clinical site. This site does, however, include 5 different physicians and a physician’s assistant and serves a population with a varied payer mix. Factors involved in patient perception of health are complex and multiple, and include interactions among psychological factors, behavioral factors and actual

health on the day of the appointment. This cross-sectional study cannot distinguish among these factors. Particularly, this study does not correlate self-reported health status ratings with objective measures of actual health. Though only patients who presented for health maintenance were studied, we do not know whether these patients had underlying medical problems or were actually ill when they completed the questionnaire. However, if this were often the case, we would expect our average overall health ratings to be less favorable and not, as we found, better in general than in a national sample.

As any correlation of health status ratings with actual health is unknown, it is unclear whether patients make their ratings based upon current actual health problems or health behaviors. For example, do smokers in this sample truly have poorer health or do they simply recognize that smoking is a bad health habit and rate their health accordingly? Even if the latter is true, this suggests an important patient education opportunity.

In clinical studies, patient and physician assessment of health are usually in close agreement.<sup>12</sup> However, clinical experience with this question in a primary care setting suggests that when discrepancies exist between a patient's response and the physician's assessment some behavioral issue may be responsible. Apparently healthy patients may report less favorable health status ratings and justify this by saying, "I should quit smoking" or "I'd like to lose a few pounds." Since patients who are motivated to change their behavior are more likely to do so successfully,<sup>13</sup> comments such as these may signal the physician to discuss lifestyle modification. In regard to smoking, beliefs about the adverse health effects of smoking are associated with a greater likelihood of success at quitting.<sup>14</sup>

We are unable to show whether patients who smoke experience more health problems in our sample than those who do not smoke, perhaps accounting for their lower self-reported health status. Certainly smoking is a major risk factor for many of the leading causes of death and contributes to many illnesses. Smoking is also associated with depression and is more prevalent among individuals of low socioeconomic status<sup>15,16</sup> though the latter was not found to be associated with lower health status ratings in our sample. The observation that smokers report lower health status is consistent with findings from another study<sup>16</sup> that found that smokers in an urban family practice clinic reported significantly lower physical and mental health functioning as measured by the SF-36 Health Status Survey than did non-smokers.

The sample for this study differed from ours in being from an inner-city setting and reporting lower health status ratings than the general population. In contrast, ours was a relatively healthy population presenting for preventive care in a suburban practice.

Our finding that patients with poorer health status ratings were more likely to report anxiety and depression is also consistent with one other study. Olfson, et al<sup>17</sup> found that 4.4% of their population sample rated their physical health 2 or more points more impaired than it was rated by their physician. This group of physically healthy patients who perceived poor physical health (HPPPH) were significantly more likely than other patients to report prior psychiatric hospitalizations, marital difficulties, recent missed work due to mental health problems, and a range of anxiety, depressive and psychosomatic symptoms. However, these patients' emotional distress was missed by their physician; HPPPH were more likely to receive an excellent emotional health rating from their physicians than were other patients.

This study raises the intriguing prospect of using self-reported health status as a screening tool or vital sign in primary care. As mentioned, self-reported health status (SRHS) predicts mortality, health care utilization and costs, over and above other known risk factors. Furthermore, data from the MacArthur Field Study of Successful Aging<sup>18</sup> showed that the SRHS was most predictive of mortality among the healthiest cohorts. McGee and colleagues recommended self-reported health status as a simple filter question in population research.<sup>8</sup>

## CONCLUSION

Self-reported health status is associated with several health behavioral factors. If collected routinely as a vital sign this could give the physician the opportunity to identify and explore an incongruity in perceived health status with each individual patient in practice. The bases for an individual's pessimistic health status ratings and whether these actually signal opportunities for health promotion education deserve further study.

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