Correlates of Self-Diagnosis of Chronic Medical and Mental Health Conditions in Under-Served African American and Latino Populations

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Objective: This study examines the correlates of self-diagnosis of chronic medical and mental health conditions in under-served minority populations. The Behavioral Model for Vulnerable Populations was employed to compare the predisposing and enabling characteristics of two groups: the first group consisted of individuals who self-reported their medical conditions without a presumptive or definitive physician diagnosis, while the second group consisted of individuals who self-reported their medical conditions with a presumptive or definitive physician diagnosis of their condition.

Study Setting: The sample consisted of 287 African American and Latino heads of household. This sample was obtained from a geographically defined random sample of 418 households from three urban public housing communities in Los Angeles County, California.

Study Design: This study was a cross-sectional, face-to-face, semistructured interview survey.

Results: Using logistic regression techniques and controlling for demographic characteristics, the results indicate that accessibility, affordability, continuity of medical care, and financial strains were the core concepts that explain the gap between self vs physician diagnosis of medical conditions.

Conclusion: This study identifies unique characteristics of minority persons who claimed that their medical conditions had not been presented to or diagnosed by a medical provider in comparison to those who are formally diagnosed by medical providers. The study provides an entry point for further examination of correlates and sequels of self-diagnosis and its resultant effects on professional treatment-seeking in minority populations with certain medically important chronic conditions. (*Ethn Dis.* 2008;18[Suppl 2]:S2-105–S2-111)

Key Words: Medical Conditions, Health Perception, Health Care Utilization, Minority, Public Housing

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INTRODUCTION

Numerous studies point to a significant incidence of undiagnosed chronic and life-threatening medical conditions among medically under-served minority populations.[1–4] In addition, late diagnosis of life-threatening conditions, such as invasive cancer, among under-served populations is also pervasive and well documented.[4–7] These studies indicate the urgent need for an understanding of the healthcare system and population-specific determinants of delayed diagnosis and early treatment initiation among individuals affected by these conditions. This knowledge will in turn facilitate the development of interventions that are designed to more effectively address the burden of disease in minority populations. However, to date little attention has been given to understanding the factors that facilitate self-diagnosis and self-treatment in minority populations. The intent of this study is to evaluate the interactions between multifactorial influences that enable, dispose, and define individuals' perceived need for health care (Behavioral Model for Vulnerable Populations[8]) in addition to certain disease-specific factors that might be predictors of professional medical care treatment-seeking or self-diagnosis and management of chronic conditions in minority populations.

While empirical attribution to a single factor of influence is difficult, an understanding of the relationships between these factors will facilitate early interventions for chronic conditions. While an individual's report of a self-diagnosed medical condition is not an automatic indication of the existence of this condition, issues relating to disease symptoms and awareness among medically under-served individuals might be predictive of self-diagnosis and management or seeking professional care diagnosis and management preferences of these individuals. Also, the occurrence of certain medical conditions may more readily dispose individuals to access medical care when all other factors are controlled for.

Among minority populations, the incidence of health disparities is increasingly associated with the significant disparities observed for many chronic conditions.[9–10] The objective of this study is to apply the Behavioral Model for Vulnerable Populations to examine the relationship between healthcare utilization and the diagnosis of chronic conditions among publicly housed Hispanics and African Americans. This theoretical framework is particularly appropriate, as it includes domains especially relevant to understanding the health and the health-seeking behavior of vulnerable populations, defined as ethnic minorities; undocumented immigrants; children and adolescents; mentally ill, chronically ill, and disabled persons; the elderly; and financially impoverished and homeless persons. Specifically, this study compares enabling characteristics of two groups: those who self-reported their medical conditions without a physician's diagnosis and those who have had a physician's diagnosis for their condi-

tion. Studying the barriers preventing residents of public housing from presenting chronic conditions to healthcare providers for appropriate treatment is a first step to developing appropriate healthcare intervention strategies.

Conceptual Model

This study uses the Behavioral Model for Vulnerable Populations theoretical model.[8,11] This model conceptualizes healthcare utilization as the end-product of a complex pattern of interactions among predisposing, enabling, and need-for-care characteristics. The predisposing vulnerable domain includes demographic characteristics, social structural characteristics, childhood characteristics, living conditions, psychological resources, and health belief variables. The enabling vulnerable domain includes personal/family resources, insurance status and affordability of getting medical care, income, receipt of public benefits, competing needs, and availability and use of information sources. The third component is need-for-care characteristics, which involves both perceived and evaluated health status. The need-for-care characteristics are the most immediate determinant of the utilization of health services.[8,11]

METHODS

Sample

Data for this study were derived from the Services Access in Urban Public Housing study. This study was a community-based, interviewer-administered, cross-sectional survey with the objective of identifying barriers to healthcare access for residents of federally mandated and municipally administrated urban public housing developments in southern, southwestern, and eastern Los Angeles County. Details of the study design have been described previously.[12] In brief, from the sampling frame of 1394 households aggregated from the three public housing communities, a random sample of 418 (30%) households were identified as potential participants. Of these households, 27 (6.5%) were ineligible because the occupants did not speak either English or Spanish, or the selected residence was unoccupied. Of the remaining 391 eligible households, 287 (73.4%) completed the interview. The study was reviewed and approved by the institutional review board of the Charles R. Drew University of Medicine and Science.

Measures

The distribution of predisposing, enabling, and need-for-care characteristics is displayed in Table 1. There were ten predisposing characteristics measured: age, sex, education, ethnicity, family structure, employment status, family size, ability to speak English, health locus of control (three sub-scales), and perceived racial/ethnic discrimination. Multidimensional Health Locus of Control Scales were employed to assess the health locus of control beliefs.[13] This scale consists of three sub-scales, six-items each, all pertaining to the maintenance of health (internal, chance, and powerful others/externality health locus of control).[13] The perceived everyday racial/ethnic discrimination scale measures routine and relatively minor experiences of unfair treatment.[14] There were five enabling characteristics measured: 1) accessibility to medical care; 2) affordability of medical care; 3) availability of health-related information; 4) continuity and regular sources of care; and 5) financial strains. The scales used for the enabling factors variable had lower and upper scores representing better and worse enabling factors respectively. In addition, six need-for-care characteristics were measured: 1) disability status; 2) self-reported health status; 3) self-report of health condition compared to two years ago; 4) self-report of health condition compared with peers of the same age; 5) self-reported number of chronic conditions; and 6) limitation in daily activity. Finally, self-diagnosed medical conditions that had been diagnosed by a physician made up the dichotomous outcome variable. A code of zero was assigned to participants who reported no discrepancy between self-report and physician-diagnosed medical conditions, and a code of one was assigned to persons who reported any medical condition that had never been presented to, or diagnosed by, a physician.

Statistical Analysis

At the descriptive level, the distribution and frequency of all items that were used to construct independent scales and indices were examined. In the bivariate analysis, t tests and χ^2 tests were performed to document the association between the self-reported diagnosis of chronic conditions and independent variables. Multivariate analysis consisted of multiple logistic regressions. Avoiding multicollinearity between independent variables, particularly enabling characteristics, a series of multiple logistic regressions were performed. Because a large number of independent variables were involved in the data analysis, variable selection techniques were used. All enabling and need-for-care variables significant at the $\alpha = .05$ level in correlation analyses were entered into stepwise backward analyses, and findings were confirmed with stepwise forward analyses.

RESULTS

Our public housing sample is characterized by multiple predisposing variables describing vulnerable populations, including predominantly female sex (89%), single parent household (50%), less than high school education (60%), unemployed (73%), and high prevalence of non-English speakers (33%) (gross indicator of acculturation). The mean age of the heads of

Table 1. Predisposing, enabling, and need-for-care characteristics among residents of urban public housing developments in Los Angeles County (*N*=287)

Predisposing Characteristic	*n* (%)	Enabling Characteristic	*n* (%)
Age, years		**Affordability of medical care**	
<30	62 (21.6)	No medical coverage	40 (13.9)
30–44	102 (35.5)	Unable to visit doctor because of payment	85 (29.6)
45–59	58 (20.2)	Turned down for medical care (couldn't pay)	33 (11.5)
≥60	65 (22.6)	**Accessibility to medical care (extremely difficult/difficult)**	
Sex		Difficult to get medical care	72 (25.1)
Male	33 (11.5)	Difficult to get a routine physical exam	52 (18.1)
Female	254 (88.5)	Difficult to visit doctor when is needed	66 (23.0)
Ethnicity		Difficult to see doctors when want to	71 (27.9)
African American	144 (50.2)	Difficult to visit doctor during office hours	62 (21.6)
Hispanic	114 (39.7)	**Financial strain (most of the times or sometimes within**	
Other	29 (10.1)	**last 12 months)**	
Education		Unable to buy food	130 (45.5)
Less than 9th grade	89 (31.7)	Unable to buy clothes	169 (59.1)
9th–11th grade	80 (28.6)	Unable to pay rent	27 (9.4)
High school diploma	65 (23.2)	Unable to pay bills	63 (22.0)
Some college	32 (11.4)	Unable to make ends meet	116 (40.6)
College diploma	14 (5.0)	**Availability of health-related information**	
Employment status		Difficult to get health information	101 (35.3)
Full/part time	78 (27.2)	**Continuity of care**	
Unemployed	219 (72.8)	Seen at the same place	262 (91.3)
Family size		Seen by the same doctor	207 (72.1)
One person	62 (21.6)		
Two persons	70 (24.4)		
Three persons	54 (18.8)		
Four or more persons	101 (35.2)	**Need-for-Care Characteristic**	***n* (%) or Mean ± SD**
Ability to speak English			
US-born	121 (42.2)	**Self-reported health status**	
Speak very well	46 (16.0)	Excellent	18 (6.3)
Speak well	25 (8.7)	Very Good	36 (12.5)
Do not speak well	46 (16)	Good	76 (26.5)
Do not speak English at all	49 (17.1)	Fair	110 (38.3)
Family structure		Poor	47 (16.4)
No children	92 (32.1)	**Disability status**	
Single parent	143 (49.8)	Yes	62 (21.6)
Both parents	52 (18.1)	No	225 (78.4)
Health locus of control*		**Health condition compared to "two years ago"**	
Internal	44 (74.7)	Better	55 (19.2)
Chance	123 (42.9)	Same	153 (53.3)
Powerful others	66 (77.0)	Worse	79 (27.5)
Racial discrimination (every day or		**Health condition compared with "people in your age"**	
at least once a week)		Better	105 (30.6)
Being treated with less courtesy than others	41 (14.4)	Same	121 (42.2)
Being treated with less respect than others	31 (10.9)	Worse	61 (21.3)
Receiving poorer service than others	21 (7.4)	**Number of chronic condition(s)**	3.78 ± 3.1
People act as if you are not smart	34 (11.9)	**Limitation in daily activities**	5.1 ± 6.9
Others feeling they are better than you	14 (4.9)		
Others thinking you are dishonest	61 (21.4)		
Being called names or insulted	26 (9.1)		
Being threatened or harassed	21 (7.4)		

* On average, 74.7% of participants believed that they were responsible for their health and they played an active role in coping with their illness; 42.9% believed their health and sickness were a function of external forces, such as accidents, luck and chance; 77.0% believed that powerful others—physicians, nurses, and others—were responsible for their health and illness.

household in our sample was 45 years (standard deviation 16.5 years, range 18–88 years). Only 6.3% and 12.5% of sample rated their health as excellent or very good, respectively. While 26.5% reported their health as good, most participants perceived their health as fair (38.3%) or poor (16.4%).

Eighty-five percent (245) of this sample reported that they were suffering from at least one chronic condition. However, 43% of participants who

Table 2. Physician-diagnosed and self-diagnosed medical conditions among residents of urban public housing developments, Los Angeles County (*N*=287)

Medical Condition	Self- or physician-diagnosed *n* (%)	Self-diagnosed only *n* (%)
Depression	120/287 (41.8)	39/120 (32.5)
Hearing impairment	51/287 (17.8)	26/51 (51.0)
Arthritis	122/287 (42.5)	23/122 (18.9)
Dental problem	109/287 (38.0)	21/109 (19.3)
Vision condition/impairment	158/287 (55.1)	19/158 (12.0)
Blood circulation condition	82/287 (28.5)	15/82 (18.3)
Gastrointestinal condition	77/287 (26.8)	10/77 (13.0)
Kidney problem	38/287 (13.2)	7/38 (18.4)
Gynecologic/female problem	41/287 (16.1)	5/41 (12.2)
Hypertension/high blood pressure	93/287 (42.5)	5/93 (5.4)
Thyroid disease	34/287 (11.7)	4/34 (11.8)
Lung condition	29/287 (10.1)	4/29 (13.8)
Seizure disorder	10/287 (3.5)	0/10 (0)
Heart conditions	39/287 (13.6)	2/39 (5.1)
Prostate problem	5/287 (15.2)	0/5 (0)
Diabetes	45/287 (15.7)	0/45 (0)
Cancer	15/287 (5.2)	0/15 (0)
Stroke and/or its effects	16/287 (5.6)	0/16 (0)

reported suffering from any medical condition claimed that a physician had never diagnosed at least one of their illnesses. Table 2 shows the distribution of self-diagnosis versus physician diagnosis for a number of conditions. The first column shows individuals who self-reported their medical conditions with or without a presumptive or definitive physician diagnosis of their condition. The second column shows individuals who self-reported their medical conditions without a presumptive or definitive physician diagnosis. For example, 41.8% (120/287) of participants said that they are suffering from depression, but 32.5% (39/120) of those who reported suffering from depression had never presented to or been diagnosed with depression by a physician. Among common medical conditions, the most frequently self-diagnosed illnesses that had reportedly never been presented to or diagnosed by a physician were depression (32.5%), hearing impairment (51%), arthritis (18.9%), dental problems (19.3%), vision conditions/impairment (12%), blood circulation conditions (18.3%), and gastrointestinal problems (13%). Minimal discrepancies were detected with medical conditions such as diabetes, hypertension, thyroid

function, heart disease, lung illnesses, stroke, kidney disease, cancer, and seizures (Table 2).

Table 3 reports bivariate relationships between diagnoses of medical conditions and predisposing, enabling, and need-for-care characteristics among participants who reported at least one chronic condition. Three predisposing characteristics showed a significant relationship with diagnosis of medical conditions. Older participants, single parents, and those who live with a smaller family size were more likely to report physician-diagnosed, as opposed to self-diagnosed, medical conditions than their counterparts. All five enabling characteristics showed a significant relationship with diagnosis of medical conditions. Physician-based diagnosis of medical conditions were associated with a higher level of 1) accessibility to medical services, 2) affordability of medical care, 3) availability of health related information, and 4) continuity of medical care. In addition, less financial strain was associated with conditions diagnosed by a physician. None of the need-for-care characteristics showed any significant relationship with the outcome variable (Table 3).

Using stepwise logistic regression techniques, the impact of the indepen-

dent variables on the diagnosis of medical conditions was examined. Table 4 reports the condensed results of five separate logistic regression equations. After controlling for the predisposing characteristics (age, sex, education, ethnicity, family structure, ability to speak English, and size of household), accessibility to medical care is then significantly associated with diagnosis of medical conditions (odds ratio .513; *P*<.001). After controlling for the same predisposing characteristics, affordability of medical services is also associated with diagnosis of medical conditions (odds ratio .425, *P*<.001). This table shows that all of the enabling characteristics were significantly associated with diagnoses of medical conditions when predisposing characteristics were held constant (Table 4). Overall, the logistic regression models correctly predicted the association between enabling characteristics and diagnosis of medical conditions approximately 65.9%–69.1% of the time (Table 4). To explore for possible interactional effects between the number of medical conditions, enabling characteristics, and diagnosis of medical conditions, we examined the same logistic regression models adding the need-for-care variables to the equa-

Table 3. Bivariate relationship between diagnoses of medical conditions and predisposing, enabling, and need-for-care characteristics among participants who reported at least one chronic condition

Independent Variable	Categories	Physician-diagnosed	Self-diagnosed	P Value*
Predisposing Characteristics	**Age, years**			
	• < 30	58%	42%	
	• 30–44	45%	55%	.009
	• 45–59	67%	33%	
	• ≥60+	70%	30%	
	Family size, mean ± SD	2.5±1.3	3.2±1.5	<.001
	Family structure			
	• No children	69%	31%	.002
	• Single parent	54%	46%	
	• Both parents	38%	62%	
Enabling Characteristics,	**Accessibility (scale 1–5)**	4.3±.78	3.9±1.01	<.001
mean ± SD	**Affordability (scale 0–3)**	2.6±.69	2.1±1.00	<.001
	Financial strain (scale 1–5)	4.1±.78	3.6±.82	<.001
	Availability of health-related information			
	• Difficult to get health information	64%	36%	<.001
	• Somewhat difficult to get health information	49%	51%	
	• Very difficult to get health information	17%	83%	
	Continuity of medical care, mean ± SD	1.5±.71	1.2±.77	.007

* *P* values associated with results from *t* tests for continuous measures and χ^2 test for categorical measures.

DISCUSSION

Forty-three percent of this study's participants who suffered from any medical condition claimed that their condition had never been formally diagnosed by a medical provider for at least one of their illnesses. One third of individuals who believed that they were suffering from depression had never been diagnosed by a physician (16% of all participants). In addition, 50% of those who reported hearing impairments (10% of sample) also indicated that they had not been diagnosed by a physician. Twenty percent of those who reported suffering from arthritis (8% of sample), as well as 12% of those who believed that they had eye conditions or impairments (7% of sample) had never been diagnosed by a physician for these conditions. Finally, one out of five participants who reported dental problems admitted that no healthcare providers diagnosed their dental problems

(7% of sample). Responses might often refer to subjective assessment of these conditions that might not be congruent with clinical diagnostic criteria for the same conditions. To minimize this bias, efforts were made to define the medical and mental health conditions considered in this study. For example diabetes was defined as "high blood sugar levels" In addition, some proportion of respondents who report no diagnosis may have received one; either recall error, or lack of understanding during the physician visit, could contribute to this.

It was surprising to notice no association between the need-for-care characteristics and diagnosis of medical conditions. None of the factors, including limitation on daily activities, number of major chronic conditions, health status compared to two years before the interviews, health status compared to peers of the same age, self-report of health status, and disability status showed any connection with the mechanism of medical condition diagnosis. Indeed, the finding that those whose medical conditions were diagnosed by physicians and those whose medical illnesses were self-identified and never presented to a doctor reported an

identical limitation in daily activities or that they even reported similar health ratings, points to the power and influence of access to health care among this segment of our population. This finding suggests that in a similar condition (in terms of health status), those with better access to medical care are more likely to be diagnosed by physicians.

Factors related to the presence of noticeable symptoms might influence the observed relationships between self and physician diagnosis of chronic conditions. The conceptual utility of this factor in the categorization of self-diagnosis of chronic conditions is the ability to define the observations in this study into two broad self-diagnostic domains. The first represents self-diagnosed chronic conditions with noticeable symptoms. The second group represents non-self/physician-diagnosed chronic conditions with non-noticeable symptoms. Noticeable symptoms as a factor will describe somatic symptoms like pain and discomfort and in very few instances non-somatic overt symptoms like malaise and other affective symptoms. In this study we detected an increased discordance between observed self and physician diagnosis for chronic

Table 4.   Partial logistic regression odds ratios (OR) and 95% confidence intervals (CI), adjusting for predisposing characteristics

Enabling Characteristic	% of correctly predicted outcome	Nagelkerke R^2	Exp(B) (OR)	95% CI	P Value
Accessibility	66.8%	.216	.513	.36–.73	<.001
Affordability	69.1%	.248	.425	.29–.62	<.001
Financial strain	67.7%	.203	.516	.35–.76	<.010
Availability of health related information	68.5%	.198	.623	.47–.82	<.010
Continuity of care	65.9%	.159	.669	.45–.90	<.050

Each OR represents a separate model, indicating the effect of the independent variable on dichotomized outcome variable (self vs physician diagnosis). Therefore, this table provides the results of six separate logistic regression models. Each model has eight independent variables, of which seven are age, sex, education, ethnicity, size of family, single parenthood status, and speaking ability, and the ninth variable is mentioned in each line. For example, controlling for all seven variables, those who reported a lower level of accessibility to medical services were .51 times less likely to report that their medical condition had been diagnosed by a physician than their counterparts with more access to health care with similar demographic characteristics.

medical conditions with noticeable symptoms vs those with non-noticeable symptoms. While we could not determine the influence of knowledge of symptoms in explaining the observed differences, it will be important to explore further the utility of these factors in predicting self-diagnosis of chronic medical conditions and the subsequent treatment-seeking behavior in under-served minority communities who would otherwise not have readily available access to medical care. Knowledge regarding the influence of symptoms on treatment-seeking behavior in these populations might also inform better surveillance and indices of suspicion in providers of medical care to these populations.

Even though discomfort associated with depression may severely interfere with daily activities of an individual, depression as a mental illness is considered an illness that many individuals perceive as shameful and are reluctant to seek mental care for. The finding of our study, which indicates that one in three individuals who believes they are suffering from depression had never been diagnosed by a physician, strongly supports previous findings. Despite the aggressive campaign for the awareness of mental health disorders,[15] there still exists an epidemic of untreated and poorly treated mental disorders in the United States,[16] especially among vulnerable groups such as Hispanics, African Americans, and the underinsured.[17–18] Recent clinic-based screening studies document that one half of Latino and African American patients suffer from depressive symptoms indicative of psychiatric distress.[19] Yet, data from the National Ambulatory Medical Care Survey show that the rate of office-based visits in which a diagnosis of a depressive disorder was recorded, and antidepressant pharmacotherapy was prescribed, for Hispanic and African Americans was only 6.2% and 3.6%, respectively.[20] This national study documents that during 1997, the population-adjusted rates for the use of antidepressant medications for African Americans remained less than half of those observed in Whites.

Finally, our data show that those who claimed that their medical conditions had not been presented to a physician were two times more likely to use over-the-counter or alternative medicine than their counterparts. Details of the correlates of the use of alternative care among this sample have been provided elsewhere.[12] Briefly, our data provides support that financial accessibility to medical services and affordability of these services remain the core concepts that explain the use of alternative health care among our under-served, publicly-housed random sample of adult heads of household.[12] Additionally, participants' perceived health status may complicate other medically validated conditions, adversely affect the patient's confidence in medical providers, or influence adherence to medically prescribed treatment recommendations.

This study is one of the first attempts to better understand the correlates of self-reporting of diagnoses of medical conditions among under-served Hispanics and African Americans. This study documents significant disparities in the detection and treatment of medical conditions among this under-served Hispanic and African American population and strongly suggests the need for future objective investigations in similar settings nationwide. Acknowledging the established inaccuracies of self-reports, this study does not assume that all individuals who self-report "medically important chronic conditions" without having had a physician diagnosis actually do have these conditions. Additionally, participants' reported self-diagnosis of chronic conditions may be subject to respondent error, such as failure to recall or to comprehend diagnoses previously given by a medical provider or misinterpreting their symptoms resulting in reporting one condition when they may actually have another. However, this study significantly illuminates the relationship between disease symptoms and awareness among minority medically under-served individuals and the self-diagnosis and management preferences of these individuals. Additionally, the occurrence of certain medical conditions may more readily dispose individuals to access medical care when all other factors are controlled for. Moreover, the measure of undiagnosed conditions used in this study cannot capture

deficits in diagnosis of conditions that may be asymptomatic for much of their clinical course, such as hypertension, diabetes, heart disease, and cancer. Therefore the study likely underestimates the burden of undiagnosed disease in this disadvantaged population for these medical conditions.

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