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Physician Differences

Comparing United States versus International Medical School Graduate Physicians Who Serve African-American and White Elderly

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Objective. To examine the relationship that international medical school graduates (IMGs) in comparison with United States medical school graduates (USMGs) have on health care-seeking behavior and satisfaction with medical care among African-American and white elderly.

Data Sources. Secondary data analysis of the 1986–1998 Piedmont Health Survey of the Elderly, Established Populations for the Epidemiological Study of the Elderly, a racially oversampled urban and rural cohort of elders in five North Carolina counties.

Study Design. Primary focus of analyses examined the impact of the combination of elder race and physician graduate status across time using a linear model for repeated measures analyses and χ^2 tests. Separate analyses using generalized estimating equations were conducted for each measure of elder characteristic and health behavior. The analytic cohort included 341 physicians and 3,250 elders (65 years old and older) in 1986; by 1998, 211 physicians and 1,222 elders.

Data Collection/Extraction Methods. Trained personnel collected baseline measures on 4,162 elders (about 80 percent responses) through 90-minute in-home interviews.

Principal Findings. Over time, IMGs treated more African-American elders, and those who had less education, lower incomes, less insurance, were in poorer health, and who lived in rural areas. White elders with IMGs delayed care more than those with USMGs. Both races indicated being unsure about where to go for medical care. White elders with IMGs were less satisfied than those with USMGs. Both races had perceptions of IMGs that relate to issues of communication, cultural competency, ageism, and unnecessary expenses.

Conclusion. IMGs do provide necessary and needed access to medical care for underserved African Americans and rural populations. However, it is unclear whether concerns regarding cultural competency, communication and the quality of care undermine the contribution IMGs make to these populations.

Key Words. African-American elderly, international medical school graduate physicians, United States medical school graduate physicians, satisfaction with medical care, health care-seeking behavior

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The percentage of African-American physicians in the United States has remained constant over the last 30 years at 3.9 percent of all physicians, while the percentage of international medical school graduates (IMGs) providing medical care in the United States has increased dramatically over this same time-period (Mullan 1997; Association of American Medical Colleges 2000). In the early 1960s, IMGs in training and in practice entered the U.S. physician workforce at a rate of 10 percent; by 1995, IMGs consisted of approximately 25 percent of physicians in training or in practice in the U.S.

An examination of the American Medical Association Masterfile reveals that during the period between 1981 and 2001, almost 125,000 IMGs entered the U.S. medical workforce (Mullan, Politzer, and Davis 1995; AMA 1996; Lohr, Vanselow, and Detmer 1996; Mullan 1996, 1997; Cooper 2003). North Carolina has experienced a similar influx of IMGs. Although physician immigrants are affected by the same push and pull factors that motivate international migration of the general population, some special circumstances affect them more intensively. Over the past 20 years there has been an increase in the number of IMGs entering and practicing in the United States due, in part, to the failure of U.S. medical school capacity to keep pace with the expanding graduate medical education sector. In the United States, every year there are at least 5,000 more openings for first year residency trainees than there are graduates of U.S. medical schools (Barzanzky and Etzel 2005; Brotherton, Rockey, and Etzel 2005). Many of these training slots filled by IMGs are in teaching hospitals in large urban areas that have traditionally

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served large numbers of minorities, uninsured, and low-income patients (Mullan, Politzer, and Davis 1995).

Many IMGs who are foreign nationals come to the United States to obtain graduate medical education with the professed intention of returning to their home countries, and obtain J-1 Visas as a result (Mullan, Politzer, and Davis 1995; Mullan 1996). Despite the requirement that enjoins J-1 visa holders to return to their home country for at least 2 years upon completion of their education, it has been estimated that as many as 80 percent of these physicians actually stay in the United States (Mullan 1996; 2000). This is facilitated by a federally sponsored program that waives this "return" requirement for J-1 visa holders who agree to practice in designated rural or inner city physician shortage areas. Hence both the initial training location and the subsequent service locations of IMGs frequently put them in minority communities where other doctors are scarce.

In its 1992 report, the Council on Graduate Medical Education (COGME 1992) concluded that IMGs positively affect access to health care in poor and rural underserved areas, as there is some evidence that IMGs practice in rural, underserved areas. In congruence with COGME (1992) Baer, Konrad, and Miller (1999) found almost 165 of fulltime equivalency physician staff positions in their sample of community health centers (CHCs)—private, nonprofit organizations chartered to provide primary care to poor and underserved populations—would likely be unfilled without IMGs. Further, Mullan (1997) states that many inner-city hospitals in the U.S. rely almost exclusively on IMGs to provide services to America's poor.

The existing literature on IMGs, however, presents a muddled picture about IMGs in rural, underserved areas, with theories and countervailing theories, incomplete empirical evidence, and implications that "rural" and "underserved" have the same meaning. A comprehensive literature review by Mick and Pfahler (1995) and a subsequent study by Mullan, Politzer, and Davis (1995) found no conclusive work examining whether IMGs help remedy physician shortages in rural, underserved areas. Mick and Lee (1997) showed that IMGs do "fill gaps" for physician shortages, but the term "gap-filling" is difficult to define and can be interpreted numerous ways. The authors indicate that words like "under-service" and "gap-filling" have often been used loosely, based on anecdotal evidence, studied in limited ways, or linked without explanation to rural health care.

As the medical care of poor and underserved African Americans is perhaps directly impacted by IMGs working in minority and underserved communities (Mick and Lee 1997) as well as in rural underserved than in rural

nonunderserved areas (Baer et al. 1998), questions remain concerning the satisfaction with medical care and subsequent health care-seeking behavior that African Americans experience with IMGs. Patient satisfaction is an important indicator of medical outcomes (Auslander et al. 1997). Patient satisfaction has also been used to predict patient behavior patterns, because differences in satisfaction predict where patients choose to get treatment and the extent to which they comply with medical recommendations. Investigators have found that patients' satisfaction with their doctors and medical treatment have emerged as important determinants of patient commitment to and compliance with recommended treatment (Auslander et al. 1997).

Our longitudinal, observational study will examine the impact that IMGs in comparison with U.S. medical school graduates (USMGs) have on the health care-seeking behaviors and satisfaction with medical care of a racially oversampled elderly urban and rural cohort of African Americans and whites. No study has examined longitudinally the impact that IMGs have had in comparison with USMGs on the health care-seeking behavior and satisfaction with medical care of the minority populations they serve.

METHODS

Sample

The study population was drawn from the Piedmont Health Survey of the Elderly (PHSE) Established Populations for the Epidemiological Study of the Elderly (EPESE) conducted by the Duke University Center for Aging and Human Development to assess health, well-being, morbidity, and mortality in community-dwelling older populations (Blazer et al. 1995; Bernard 1997). The PHSE selected 5,226 persons to represent over 28,000 persons 65 years or older in five North Carolina counties (one urban, four rural) in 1986. African Americans represent about one-fifth of the community population, but were oversampled to allow separate analyses by race. Trained personnel collected baseline measures on 4,162 elders (about 80 percent responses) through 90-minute in-home interviews. No additional persons were added to this initial cohort, but the initial cohort was followed up with three in-person surveys at approximately 4-year intervals (1990, 1994, 1998) and contact was maintained with the sample through brief annual telephone surveys in the intermittent years. However, subjects were not followed if they moved to a community sufficiently distant from the five county study area as to preclude in-person surveys.

Only African American and white elders with identifiable physicians were included in the study. The analytic sample included 341 physicians and 3,250 elders in 1986, 320 physicians and 2,400 elders in 1990, 290 physicians and 2,034 elders in 1994, and 211 physicians and 1,222 elders in 1998. Of these, IMGs were determined by whether the physician received his medical degree from a medical school outside of the United States or Canada, irrespective of whether the physician was U.S.-born.

Measures

Independent Variables

Physician Characteristics. A usual physician identified by elders at the time of the interview was matched to data obtained from the North Carolina Health Professions Data System files and rosters of physicians employed in local settings. Sociodemographic data (race, age, and gender), professional characteristics (self-reported primary care specialty, i.e., family practice, general practice, internal medicine, or geriatrics, board certification status, medical school attended, years since medical school graduation, type of practice setting, and employment site, i.e., working in a CHC, and practice locations, i.e., address, county, ZIP code) were coded for physicians.

Elder Characteristics. Sociodemographic characteristics obtained during the interview included race, age, gender, education, marital status, employment status, annual income, Medicaid and Medi-gap insurance, self-reported health status, severity of illness index, activities of daily living (ADL) limitation, nursing home status, whether rural or urban residence, whether care received in ER, public, or private facility, and whether elders' county in which they lived and physicians' county in which they practiced was the same.

Self-reported health status, "overall, how would you rate your health?" was coded (1 = excellent/good, 2 = fair, 3 = poor; Fillenbaum et al. 1988). The presence and severity of chronic illnesses including hypertension, diabetes, heart disease, stroke, and cancer was trichotomized (1 = poor, 2 = fair, 3 = good; Bernard 1997). Functional status in several domains was measured using ADLs for a community resident population (0 = no disability; 1 = requiring assistance in at least one of seven ADLs: walking, bathing, personal grooming, dressing, eating, transferring, and using the toilet; Bernard 1997).

Inconsistent care was measured as the receipt of physician care across *some, but not all* waves of participation in the study. Consistent care was measured as the receipt of physician care across *all* waves of participation in

the study. Usual source of care was a binary variable (yes, no) defined as the care received from the same type of facility over the time the elder participated in the study. The facility in which the elder received care was determined by the question "where do you see this doctor—in a private office or clinic, in a public clinic, a VA or other hospital?"

Dependent Variables. Satisfaction with medical care was determined by the elder's response in each wave to the question, "overall, how satisfied would you say that you are with the medical care that you receive?" (very dissatisfied, dissatisfied, satisfied, or very satisfied). Our study also used questions that were adapted from items contained in the Health Opinions Questionnaire of the Medical Access Study, a national telephone survey fielded by the National Opinion Research Center (NORC) at the University of Chicago (NORC 1975). Some, but not all, of these items have also been used in the NORC's General Social Survey, which has been administered repeatedly over the last 30 years (Davis, Smith, and Marsden 2005). Investigators have varied these items to describe constructs such as "attitudes toward doctors" or "trust in doctor," but have rarely combined them into scales. In the data collected for the PHSE, the original NORC questions were altered slightly to reflect an explicit reference to older people, e.g., the original item: "Doctors always treat their patients with respect" was changed to "Doctors always treat their patients my age with respect." This data was collected for Wave 2 (1990) only.

Health care-seeking behavior was determined by the frequency of elder's neglect to seek health care and reasons for not seeking health care (Rupper et al. 2004). The elder's response to the question, "how often do you put off or neglect going to the doctor when you feel that you really should go?" (never, once in a while, and quite often) measured the elder's neglect to seek health care. While responses (yes, no) to a number of questions such as, "did you think that the problem would get better by itself," "were you concerned about the cost," and "were you unsure about where to go for help" measured reasons why some people do not seek health care when they think that they really should. These questions were asked in 1986, 1994, and 1998 only.

Analysis

The most important analyses conducted aimed to examine the impact of the combination of elder race and physician graduate status across time for each measure of elder characteristic and health behavior. A linear model analysis

using a generalized estimating equations (GEE) approach (Diggle et al. 2002) was conducted for each elder characteristic and health behavior as outcomes. In addition, χ^2 tests, including Cochran–Mantel–Haenszel tests involving effects over time were used for comparisons between African American or white elders and their USMG or IMG physicians.

For each linear model analysis using the GEE approach to repeated measures, an initial model tested associations between each elder characteristic and health behavior measure (dependent variables) and physician–elder racial dyads, time, and time by dyad interaction. Significant interaction was interpreted as possibly supporting a differential effect of physician–elder racial dyads across time. If the interaction was nonsignificant, then the interaction was removed and a reduced model was fit with the aim of assessing the main effect of physician–elder racial dyads across time.

To compare USMGs with IMGs over time (Tables 1 and 3–5), a linear model for repeated measurements using GEE was used to first determine if there was a differential affect over time (USMG/IMG by time interaction). Significant interaction was found in relatively few characteristics. When no interaction was present, the p-values in the tables indicate the statistical significance of USMG/IMG after removing the interaction term from the model (only USMG/IMG and time were left in the model). The interaction p-values are not shown in the tables. Final model results are not shown, in part, owing to space limitations.

RESULTS

Table 1 shows characteristics of USMG physicians (broken out by race in order to distinguish demographics of African American, white, and other race physicians) and IMG physicians by year of the study. USMG physicians comprised 94 percent of the number of physicians in 1986. By 1998, this percentage decreased to 91 percent for USMGs. IMGs in comparison with USMGs were significantly more likely to be middle-aged (36–64 years old) ($p<.001$), and have more years experience (years since medical school graduation) ($p=.014$). Conversely, IMGs in comparison with USMGs were less likely to be younger (35 years old and younger) ($p=.002$). No other variables were statistically significant between IMGs and USMGs. Using test of interaction, over time, the distribution of male physicians ($p=.041$), physicians over 65 years of age ($p<.001$), and physicians whose specialty was in family

Table 1: United States Medical Graduate (USMG) and International Medical School Graduate (IMG) Physician Characteristics by Year

	1986 (N= 341)				*1990 (N= 320)*				*1994 (N= 290)*				*1998 (N= 211)*				
Physician Characteristics	*African-American USMG*	*White USMG*	*Other Race USMG*	*IMG*	*African-American USMG*	*White USMG*	*Other Race USMG*	*IMG*	*African-American USMG*	*White USMG*	*Other Race USMG*	*IMG*	*African-American USMG*	*White USMG*	*Other Race USMG*	*IMG*	
N	*35*	*280*	*4*	*22*	*35*	*252*	*3*	*30*	*32*	*221*	*6*	*31*	*28*	*160*	*5*	*18*	*p-value**
Male	88.6	85.4	75.0	81.8	74.3	83.3	66.7	76.7	68.8	77.4	66.7	90.3	71.4	77.5	80.0	83.3	NA†
Age (mean)	47.4	45.8	37.3	46.2	49.8	46.2	43.3	46.6	48.2	46.9	44.7	47.7	52.4	49.7	42.6	51.8	.188
65+	20.0	9.6	0.0	0.0	22.9	12.7	33.3	6.7	15.6	10.9	16.7	3.2	14.3	11.9	0.0	0.0	NA†
36–64	60.0	59.6	25.0	86.4	62.9	61.1	0.0	86.7	71.9	73.3	50.0	93.5	85.7	81.9	80.0	100.0	<.001
35 or less	20.0	30.7	75.0	13.6	14.3	26.2	66.7	6.7	12.5	15.8	33.3	3.2	0.0	6.3	20.0	0.0	.002
Years since medical school graduation (mean)	19.0	19.3	10.3	20.9	21.8	19.6	15.0	21.9	20.1	20.2	18.0	22.9	24.1	22.6	16.4	26.8	.014
Primary specialty: FP, GP, IM, geriatrics	82.9	54.6	75.0	50.0	74.3	65.9	66.7	56.7	71.9	71.9	83.3	64.5	67.9	70.6	60.0	77.8	NA†
Board certified with primary specialty In FP, GP, IM, geriatrics	62.9	42.1	50.0	40.9	65.7	47.6	33.3	43.3	43.8	33.0	50.0	29.0	42.9	30.0	0.0	50.0	.974‡

Board certified with other primary specialty	8.6	36.8	25.0	50.0	17.1	24.2	0.0	30.0	12.5	15.4	0.0	16.1	17.9	11.3	0.0	5.6	.146‡
Provided care in public clinic/ hospital or ER	54.3	37.1	25.0	31.8	48.6	33.7	100.0	30.0	34.4	27.1	50.0	19.4	32.1	18.1	20.0	0.0	.091
Provided care in private office/ hospital only	45.7	62.9	75.0	68.2	51.4	65.9	0.0	70.0	65.6	72.9	50.0	80.6	67.9	81.3	80.0	100.0	.083

*P-value indicates differences in physician characteristics between categories of USMG and IMG and is obtained from Generalized Estimating Equations.

†P-value indicates there is a differential effect over time (significant interaction of USMG/IMG by time) in which differences in characteristics vary across time therefore no main effects model can be presented (male MD $p = 0.041$; MD age ≥ 65 $p < 0.001$; MD whose primary specialty in FP, GP, IM, geriatrics, $p = .045$).

‡P-value from Cochran–Mantel–Haenszel tests to identify the association between whether a MD has ever been board certified during the study time period and race.

FP, family practice; GP, general practice; IM, internal medicine, NA, not applicable.

practice, general practice, internal medicine, or geriatrics ($p = .045$) varied significantly among IMGs and USMGs.

Table 2 depicts the distribution over the study years of the USMGs' and IMGs' country's economy level[1] in which the medical school training occurred as well as the number of elders each physician treated. Of the 3,250 elders treated in 1986, 292 (9 percent) were treated by IMGs. By 1998, of the 1,222 elders treated, 132 (11 percent) were treated by IMGs. A majority of IMGs was trained in medical schools within countries with developing economies. Low- and middle-income economies are sometimes referred to as developing economies or third-world countries.[2] Over the study years, the percentage of IMGs trained in third-world countries ranged from 68 to 81 percent.

Table 3 reveals that IMGs were more likely to treat African-American elders than white elders across all study years ($p = .009$). In 1986, IMGs treated 157 African Americans and 135 white elders; by 1998, 87 African-American elders were treated compared with 45 white elders.

Table 4 displays the distribution of characteristics of all elders by IMG or USMG status. The number of elders treated by IMGs increased over time ($p = .008$). Elders with IMGs were more likely than elders with USMGs to be (to have) African American ($p = .006$), less education ($p = .002$), not currently working ($p = .011$), lower incomes ($p < .001$), on Medicaid ($p = .003$), without supplementary Medi-gap coverage ($p < .001$), poorer self-reported health ($p = .027$), and receiving care in private offices/hospitals ($p < .001$). Additionally, elders with IMGs were less likely than elders with USMGs to receive physician care across some, but not all waves of participation in the study (inconsistent care) ($p = .018$). Using test of interaction, over time, the distribution of elders living in rural areas ($p < .001$) and elders residing in the same county in which the physicians practiced ($p < .001$) varied significantly between IMGs and USMGs.

Table 5 shows the distribution of health care-seeking behavior and satisfaction with medical care of African American elders with IMG versus USMG physicians. There was no difference in putting off care between African-American elders with IMGs in comparison with African-American elders with USMGs. The difference between African Americans with USMGs and with IMGs decreased over time for the measure "unsure as to where to go for medical care" as their reason for putting off care as supported by the significant interaction of the time and race dyad variables ($p = .037$).

There was no difference in being satisfied with medical care between African-American elders with IMGs in comparison with African-American

Table 2: Distribution of Income Level of Physician's Country of Medical Training and Elders Treated by Year

	1986		1990		1994		1998	
*World Bank Income Group**	*Physicians (N= 341)*	*Elders (N= 3,250)*	*Physicians (N= 320)*	*Elders (N= 2,400)*	*Physicians (N= 290)*	*Elders (N= 2,034)*	*Physicians (N= 211)*	*Elders (N= 1,222)*
U.S./Canada	319	2,958	290	2,097	259	1,812	193	1,090
Low income	7	151	9	135	10	86	10	73
Lower middle income	6	28	7	47	11	62	1	1
Upper middle income	2	42	5	38	4	22	3	15
High income non-OECD	2	4	1	4	1	4	1	4
High income OECD	5	67	8	79	5	48	3	39

*The following countries are classified: low income—Burma and India; lower middle income—Sri Lanka, Cuba, Egypt/UAR, Iran, Paraguay, Philippines, South Africa, Syria and USSR; upper middle income—Lebanon and Mexico; high income non-OECD—Singapore and Taiwan; high income OECD—Australia, Austria, United Kingdom, Finland, E/W Germany, Italy, the Netherlands, and Spain. U.S. and Canada are also included in high income OECD, but for this analysis, these countries are shown separately.

OECD, Organization for Economic Cooperation and Development.

Table 3: Distribution of Income Level of Physician's Country of Medical Training and Elders Treated by Year and Race

	*IMGs and African-American Elders**								*IMGs and White Elders**								
	1986		*1990*		*1994*		*1998*		*1986*		*1990*		*1994*		*1998*		*p-value*
World Bank Income Group†	*Physicians N= 17*	*Elders N= 157*	*Physicians N= 19*	*Elders N= 174*	*Physicians N= 22*	*Elders N= 145*	*Physicians N= 15*	*Elders N= 87*	*Physicians N= 16*	*Elders N= 135*	*Physicians N= 21*	*Elders N= 129*	*Physicians N= 19*	*Elders N= 77*	*Physicians N= 10*	*Elders N= 45*	*.009*‡ *.370*§
Low income	4	97	7	81	7	46	9	46	6	54	7	54	6	40	5	27	.626¶
Lower middle income	4	10	4	31	8	46	1	1	5	18	4	16	6	16	0	0	
Upper middle income	2	23	3	21	2	13	3	8	1	19	3	17	4	9	2	7	
High income non-OECD	2	2	0	0	1	1	0	0	1	2	1	4	1	3	1	4	
High income OECD	5	25	5	41	4	39	2	32	3	42	6	38	2	9	2	7	

*Double counting of physicians across racial dyads is possible due to a physician treating both African-American and white elders in their practice.

†The following countries are classified: low income—Burma and India; lower middle income—Sri Lanka, Cuba, Egypt/UAR, Iran, Paraguay, Philippines, South Africa, Syria and USSR; upper middle income—Lebanon and Mexico; high income non-OECD—Singapore and Taiwan; high income OECD—Australia, Austria, United Kingdom, Finland, E/W Germany, Italy, the Netherlands, and Spain. U.S. and Canada are also included in high income OECD.

‡*P*-value from Mantel–Hansel χ^2 to indicate whether there is a significant difference in the proportion of African-American elders versus white elders who see IMGs over time.

§*P*-value from Mantel–Hansel χ^2 to indicate whether there is a significant difference in the proportion of IMGs trained in developing countries (low income, lower middle income, and upper middle income categories) that treat African-American elders over time.

¶*P*-value from Mantel–Hansel χ^2 to indicate whether there is a significant difference in the proportion of IMGs trained in developing countries (low income, lower middle income, and upper middle income categories) that treat white elders over time.

OECD, Organization for Economic Cooperation and Development; IMGs, international medical school graduates.

Table 4: Distribution of Elder Characteristics by International Medical School Graduate (IMG) Physicians versus United States Medical School Graduate (USMG) Physicians

	Elders with IMGs				*Elders with USMGs*				*p-value**
Elder Characteristics	*1986*	*1990*	*1994*	*1998*	*1986*	*1990*	*1994*	*1998*	
N	292	303	222	132	2,958	2,097	1,812	1,090	.008‡
White	46.2	42.6	34.7	34.1	50.0	52.2	49.5	49.8	.006
African American	53.8	57.4	65.3	65.9	50.0	47.8	50.5	50.2	
Male	34.6	34.0	37.8	40.2	31.7	29.8	29.9	29.1	.117
Age	73.8	76.2	78.6	81.9	73.7	76.2	78.7	81.9	.704
Mean years of education	8.3	8.1	8.4	8.3	8.9	9.0	9.0	9.3	.002
Married	36.6	35.0	32.9	31.1	39.0	35.7	33.8	31.3	.892
Currently working	8.6	6.3	8.6	6.8	11.9	10.2	7.4	5.7	.011
Income:									
$0–$3,999	24.3	15.5	6.3	6.8	16.9	10.7	5.4	2.6	<.001
$5,000–$6,999	29.5	37.3	35.1	27.3	28.1	32.0	29.7	25.0	
$7,000–$14,999	17.8	23.4	26.1	31.1	19.0	22.6	27.2	27.2	
≥ $15,000	8.9	11.2	19.4	18.2	16.8	21.3	22.0	25.4	
Medicaid insurance	11.0	14.2	25.7	36.4	7.3	13.3	19.9	24.9	.003
Medi-gap insurance	45.5	47.2	40.1	34.1	55.4	56.8	52.3	50.8	<.001
Self-reported health									
Excellent or good	43.2	46.5	52.3	42.4	51.0	51.7	51.9	48.9	.027
Fair	34.9	32.3	30.6	30.3	30.9	30.4	28.0	27.6	
Poor	18.2	11.6	8.1	6.1	13.6	10.0	8.4	9.2	
Severity of illness									
Good	21.6	24.4	18.0	17.4	22.2	22.7	18.5	18.4	.290
Fair	55.8	44.6	49.1	50.0	51.6	47.4	44.7	42.2	
Poor	22.6	28.4	31.1	31.1	25.6	28.5	35.4	37.4	
One or more ADL limitation	12.7	19.1	22.1	31.8	12.0	19.9	21.4	35.0	.839
Ever in a nursing home?	2.4	5.0	7.7	15.9	1.9	4.9	10.4	15.5	.734
Lives in a rural area?	80.8	81.2	87.4	97.7	53.9	54.4	53.1	53.2	NA†
Lives in the same county as MD practices?	89.7	81.5	49.5	65.2	81.4	80.3	82.4	78.0	NA†
Received care in ER or public clinic/hospital	7.9	11.2	16.2	0.0	15.1	13.3	15.4	10.3	<.001
Received care in private office/hospital§	92.1	88.8	83.8	100.0	84.9	86.4	84.5	89.5	
Received consistent care	100.0	93.4	84.2	78.0	100.0	91.6	76.2	73.4	.203
Received inconsistent care		6.6	15.8	22.0		8.4	23.8	26.6	.018
Has usual source of care		79.5	69.4	62.9		83.1	70.4	62.6	.915

**P*-value indicates differences in physician characteristics between categories of USMG and IMG and is obtained from generalized estimating equations.

†*P*-value indicates there is a differential effect over time (significant interaction of USMG/IMG by time) in which differences in characteristics vary across time therefore no main effects model can be presented (lives in rural area, $p<.001$; elder resides in same county as MD, $p<.001$).

‡*P*-value indicates differences in number of elders treated by IMGs and USMGs over time as obtained from generalized estimating equations.

§The statistic for private office/hospital is the same as for public clinic/hospital or ER as these variables are the inverse of each other.

ADL, activities of daily living; NA, not applicable.

Table 5: Distribution of Satisfaction with Medical Care and Health Care-Seeking Behavior of African-American Elders by United States Medical Graduate (USMG) Physicians versus International Medical School Graduate (IMG) Physicians

	African-American Elders with USMG				*African-American Elders with IMG*				
Elder Responses	*1986 (N= 1,478)*	*1990 (N= 1,003)*	*1994 (N= 915)*	*1998 (N= 547)*	*1986 (N= 157)*	*1990 (N= 174)*	*1994 (N= 145)*	*1998 (N= 87)*	*p-value*[*,†]
Put off care quite often	154 (10.4)	66 (6.6)	35 (3.8)	16 (2.9)	14 (8.9)	17 (9.8)	5 (3.4)	2 (2.3)	.703
Reasons for putting off care									
Get better by itself	348 (23.5)		111 (12.1)	74 (13.5)	33 (21.0)		15 (10.3)	11 (12.6)	.391
Concern with cost	301 (20.4)		73 (8.0)	30 (5.5)	35 (22.3)		11 (7.6)	7 (8.0)	.185
Unsure where to go	68 (4.6)		20 (2.2)	12 (2.2)	1 (0.6)		3 (2.1)	2 (2.3)	NA[‡]
Would do no good	109 (7.4)		57 (6.2)	34 (6.2)	14 (8.9)		5 (3.4)	5 (5.7)	.801
Distance or no transportation	155 (10.5)		50 (5.5)	29 (5.3)	12 (7.6)		9 (6.2)	4 (4.6)	.668
Any other reason for not going to MD	157 (10.6)		33 (3.6)	25 (4.6)	14 (8.9)		6 (4.1)	5 (5.7)	.924
Satisfaction with medical care	1,286 (87.0)	858 (85.5)	737 (80.5)	432 (79.0)	131 (83.4)	146 (83.9)	129 (89.0)	60 (69.0)	.331
Perceptions of doctors									
Doctors always do their best to keep patients as old as I am from worrying		836 (83.3)				146 (83.9)			.855
Doctors always treat their patients my age with respect		896 (89.3)				152 (87.4)			.441
Sometimes doctors make patients my age feel foolish		134 (13.4)				32 (18.4)			.078
When treating people about my age doctors always avoid unnecessary patient expenses		545 (54.3)				89 (51.1)			.436

Doctors often cause patients my age to worry a lot, because they do not explain things well	245 (24.4)	53 (30.5)	.091
When treating people about my age doctors respect their patients' feelings	880 (87.7)	146 (83.9)	.163
Doctors never recommend an operation for people my age, unless there is no other way to solve the problem	712 (71.0)	100 (57.5)	<.001
Doctors do not pay enough attention to the health problems that people my age have	233 (23.2)	42 (24.1)	.794
Most of these younger doctors really understand how people my age feel	514 (51.2)	97 (55.7)	.273
Sometimes doctors think that just getting old is a disease that cannot be cured	400 (39.9)	77 (44.3)	.278

*P-values from differences in African-American elder characteristics between categories of USMG and IMG, are obtained from Generalized Estimating Equations

†P-values for satisfaction with care variables in Wave 2 are from χ^2 tests for difference in proportions.

‡P-value indicates there is a differential effect over time (significant interaction of USMG/IMG by time) in which differences in characteristics vary across time, therefore no main effects model can be presented (unsure where to go $p = .037$)

NA, not applicable.

elders with USMGs. The differences in proportions and χ^2 tests indicate that African Americans with IMGs were less likely to indicate that "doctors never recommend an operation for people my age, unless there is no other way to solve the problem" ($p<.001$), which speaks to the perception that they are not getting all the medical care from which they could benefit due to ageism. Other marginally significant rationales ($p<.10$) are that African Americans with IMGs felt that "sometimes doctors make patients my age feel foolish" and that "doctors often cause patients my age to worry a lot, because they do not explain things well."

Table 6 reveals the distribution of health care-seeking behavior and satisfaction with medical care of white elders with IMG versus USMG physicians. White elders with IMGs were more "unsure about where to go for medical care" as a reason for putting off care (OR = 1.84, 95 percent CI [1.03, 3.29]; $p = .040$). The difference between whites with USMGs and with IMGs increases over time for the measure elders who put off care quite often as supported by the significant interaction of the time and race dyad variables (OR = 1.09, 95 percent CI [1.002, 1.1196]; $p = .045$) varied significantly between IMGs and USMGs.

White elders with IMGs in comparison with white elders with USMGs were less likely to be satisfied with their medical care (OR = 0.61, 95 percent CI [0.42, 0.89]; $p = .011$). The differences in proportions and χ^2 tests indicate that whites with IMGs were less likely to feel that "when treating people about my age, doctors always avoid unnecessary patient expenses," which speaks to the perception that doctors will choose a cheaper treatment over a more expensive one ($p = .024$).

DISCUSSION

The goal of this study was to examine the impact that international medical school graduate (IMG) physicians in comparison with USMG physicians have on the satisfaction with medical care and health care-seeking behaviors of an oversampled racial cohort of urban and rural elders. This study used longitudinal data (1986–1998) from the PHSE EPESE (Blazer et al. 1995; Bernard 1997). No study has longitudinally examined the impact that IMGs in comparison with USMGs have on the satisfaction with medical care and health care-seeking behavior of the minority populations they serve.

Results of our study indicated that over time the percentage of elders being treated by IMG physicians increased for those with available data. It is

Table 6: Distribution of Satisfaction with Medical Care and Health Care-Seeking Behavior of White Elders by United States Medical Graduate (USMG) Physicians versus International Medical School Graduate (IMG) Physicians

	White Elders with USMG				*White Elders with IMG*				
Elder Responses	*1986 (N= 1,480)*	*1990 (N= 1,094)*	*1994 (N= 897)*	*1998 (N= 543)*	*1986 (N= 135)*	*1990 (N= 129)*	*1994 (N= 77)*	*1998 (N= 45)*	*p-value*[*,†]
Put off care quite often	182 (12.3)	91 (8.3)	44 (4.9)	17 (3.1)	16 (11.9)	16 (12.4)	7 (9.1)	5 (11.1)	NA[‡]
Reasons for putting off care									
Get better by itself	446 (30.1)		125 (13.9)	76 (14.0)	41 (30.4)		22 (28.6)	7 (15.6)	.165
Concern with cost	275 (18.6)		62 (6.9)	26 (4.8)	27 (20.0)		12 (15.6)	5 (11.1)	.129
Unsure where to go	57 (3.9)		16 (1.8)	9 (1.7)	7 (5.2)		3 (3.9)	4 (8.9)	.040
Would do no good	202 (13.6)		62 (6.9)	44 (8.1)	16 (11.9)		8 (10.4)	3 (6.7)	.380
Distance or no transportation	93 (6.3)		25 (2.8)	24 (4.4)	12 (8.9)		4(5.2)	2 (4.4)	.310
Any other reason for not going to MD	150 (10.1)		38 (4.2)	25 (4.6)	13 (9.6)		5 (6.5)	4 (8.9)	.902
Satisfaction with medical care	1,302 (88.0)	959 (87.7)	773 (86.2)	446 (82.1)	112 (83.0)	104 (80.6)	67 (87.0)	34 (75.6)	.011
Perceptions of doctors									
Doctors always do their best to keep patients as old as I am from worrying		899 (82.2)				104 (80.6)			.664
Doctors always treat their patients my age with respect		977 (89.3)				111 (86.0)			.264
Sometimes doctors make patients my age feel foolish		133 (12.2)				13 (10.1)			.491

continued

Table 6: *Continued*

Elder Responses	*White Elders with USMG*				*White Elders with IMG*				*p-value**,†
	1986 (N= 1,480)	*1990 (N= 1,094)*	*1994 (N= 897)*	*1998 (N= 543)*	*1986 (N= 135)*	*1990 (N= 129)*	*1994 (N= 77)*	*1998 (N= 45)*	
When treating people about my age doctors always avoid unnecessary patient expenses		556 (50.8)				52 (40.3)			.024
Doctors often cause patients my age to worry a lot, because they do not explain things well		232 (21.2)				25 (19.4)			.630
When treating people about my age doctors respect their patients' feelings		970 (88.7)				109 (84.5)			.165
Doctors never recommend an operation for people my age, unless there is no other way to solve the problem		781 (71.4)				88 (68.2)			.452
Doctors do not pay enough attention to the health problems that people my age have		200 (18.3)				28 (21.7)			.345
Most of these younger doctors really understand how people my age feel		485 (44.3)				65 (50.4)			.191
Sometimes doctors think that just getting old is a disease that cannot be cured		346 (31.6)				49 (38.0)			.144

**P*-values from differences in white elder characteristics between categories of USMG and IMG are obtained from Generalized Estimating Equations

†*P*-values for satisfaction with care variables in Wave 2 are from χ^2 tests for difference in proportions.

‡*P*-value indicates there is a differential effect over time (significant interaction of USMG/IMG by time) in which differences in characteristics vary across time, therefore no main effects model can be presented (put off care $p = .045$)

NA, not applicable.

possible that loss to follow-up contributed to this increase. Further, IMGs were more apt to treat African Americans than whites, as well as those in rural areas. IMGs also had a propensity to treat a population that had less education, lower incomes, less supplemental insurance, and poorer health—one that is typically characterized as underserved and more difficult to provide care for. These results support the findings that IMGs do "fill gaps" for physician area shortages by providing primary care to poor, rural, and underserved populations (AMA 1996; Mick and Lee 1997; Baer, Konrad, and Miller 1999).

Other study results indicate that whites with IMGs were less likely to be satisfied with their medical care in comparison with their counterparts with USMGs. Although the reasons given for this lack of satisfaction are only available from a cross-sectional analysis from 1990, they are suggestive. Lack of satisfaction with IMGs among white elders stems from feeling that "doctors do not always avoid unnecessary patient expenses," which speaks to the perception that doctors will not choose a cheaper treatment over a more expensive one. Cost of care is a strong determinant of satisfaction among white elders. Even though a statistical difference does not exist among African Americans and medical graduate status, African-American elders have negative perceptions of IMGs that stem from multiple reasons such as feeling that: "doctors recommend an operation for people my age unless there is no other way to solve the problem," which speaks to the perception that they are not getting all the medical care from which they could benefit due to ageism, or that "doctors make patients my age feel foolish," or that "doctors often cause patients my age to worry a lot, because they do not explain things well." For African Americans, perception of IMGs is directly related to issues of cultural competency, communication, and ageism.

Research in this area indicates that one type of interpersonal communication that is strongly linked with satisfaction is exemplified by clear, comprehensive explanations and actions that demonstrate an interest in the patient (Auslander et al. 1997). Satisfaction is increased when physicians are attentive, give patients the chance to relay information in their own way, provide more information, and share control of the termination of the medical interaction (Anderson et al. 1990; Auslander et al. 1997). In general, practitioners who use a more companionable communicative style characterized by warmth, empathy, genuineness, and a nonjudgmental attitude rather than a controlling, authoritative style receive more favorable evaluations by patients.

According to Auslander et al. (1997), ineffective communication can be caused by a lack of sensitivity to the cultural values, norms, and environmental contexts of patients of races or ethnicities other than those of the provider.

In their study, the greater the cultural distance between the mother of their adolescent patient and the provider, the poorer the communication and the more likely the mothers were dissatisfied with medical care. The same holds true in our study as cultural distance, defined here as an IMG of a race identified as other, denotes less satisfaction with medical care.

Our study results suggest that the differences in health care-seeking behavior among elders differed for elders with IMGs versus USMGs. White elders with IMGs were more likely to put off obtaining medical care than those with USMGs. Of interest, is that both African Americans and whites with IMGs expressed concern regarding being unsure about where to go for medical care. It may be that these elders were not well-informed regarding the locality of the IMGs owing to the IMGs' relatively recent entry into the geographic service provision area. The intricacy of this relationship and how it impacts quality of care requires more research.

Research suggests that there are consequences from the lack of cultural competency that undermine the doctor–patient relationship as well as health care-seeking behaviors. Blanchard and Lurie (2004) found that members of minority groups, as well as nonnative English speakers, were significantly more likely to report being treated with disrespect or being looked down upon and receiving unfair treatment because of race or language and more likely to feel they would have received better care had they belonged to another race. These patients were also more likely to put off needed care, less likely to follow doctors' advice, less likely to return for follow-up care, and less likely to receive optimal care for chronic diseases like diabetes, hypertension, or heart disease.

Several lines of research suggest that the consistency and stability of the doctor–patient relationship is an important determinant of patient satisfaction and access to care (Smedley, Stith, and Nelson 2003). According to LaVeist, Nickerson, and Bowie (2000), having a consistent relationship with a primary care provider may help to address minority patient mistrust of health care systems and providers—particularly if the relationship is with a provider who is able to bridge cultural and linguistic gaps. Cooper (2003) examined patient–physician communication in race-concordant and race-discordant relationships and found that race-concordant visits were longer and had higher ratings of patient positive affect than race-discordant visits. Patients in race-concordant visits were also more satisfied, and rated their physicians as more participatory, regardless of the communication that occurred during the visit. The author concluded that because the association between race concordance and higher patient ratings of care are independent of patient-centered communication, other factors such as patient and physician attitudes may medicate the

relationship. Our study indicated no difference in access to care or consistency of care among elders with USMG versus IMG physicians. The sociological principle of homophily asserts that contact between similar people occurs at a higher rate than among dissimilar people. A long-standing finding from community studies is that communication is more effective when source and receiver are homophonous, i.e., are congruent or similar in certain attributes, such as demographic variables, beliefs, and values (Lazarsfeld and Merton 1954). When two individuals such as a doctor and patient share common meanings, beliefs, and mutual understandings, communication between them is more likely to be effective (Rogers and Bhowmik 1971). Further, such relationships are likely to be sustained over time, because the individuals involved enjoy the comfort of interacting with others who are similar. On the other hand, talking with those who are markedly different from us requires more effort and may cause cognitive dissonance because an individual is exposed to messages that are inconsistent with existing beliefs, resulting in an uncomfortable psychological state. This is one possible explanation that might underlie difficult relationships between patients like those in our study and physicians whose national origins are outside the United States.

Cultural contrasts underscore the concern regarding care received by African Americans from IMGs. According to Baer, Konrad, and Miller (1999), CHC administrators frequently reported that they prefer National Health Services Corps (NHSC) physicians to IMGs as IMGs reportedly have fewer acceptances by patients than do USMGs or NHSC physicians. The authors indicate that one administrator explained: "I think that IMGs are being done an injustice during training in this country, when cultural diversity and competency is not included as a part of their American experience. As providers in medically underserved areas, IMGs must have an appreciation of the cultural beliefs and mores of the people they serve. If this is not achieved, health care delivery is impeded."

Finally, although the quality of care provided by IMGs is beyond the scope of this paper, it is of import as patient satisfaction is used as an indicator of provider performance (Auslander et al. 1997). Results from surveys of patient satisfaction have been used by managed care companies to determine how well primary care providers deliver medical services. Studies have suggested that poor performance by physicians in primary care domains may lead to racial disparities in preventive care, evaluation of symptoms, treatment, and outcome (Blumenthal et al. 1995; Ayanian et al. 2002; Lurie and Buntin 2002; Van Ryn 2002; Shi et al. 2003). Further, Bach et al. (2004) suggests that the poorer quality of care experienced by African-American patients may, in part,

result from the fact that their physicians are less well trained than those who mostly treat white patients. The authors found that Medicare physician visits by African-American patients were highly concentrated among a small subgroup of primary care physicians, were more often with physicians who were not board certified in their primary specialty, and were more often with physicians who reported facing obstacles in gaining access to high-quality services for their patients.

The literature is sparse in the evaluation of the effectiveness or qualifications of IMGs as physicians in comparison with USMGs. There is no conclusive evidence in the literature that IMGs are any less or more competent than USMGs (Mick and Pfahler 1995; Mick and Comfort 1997). Our study indicates that IMGs, on average, are just as likely to be board-certified as other physicians. Considering the relationship of satisfaction with medical care with IMG status in our study, this begs the question as to whether board certification is an appropriate measure of quality of care. A review of 13 studies on physician specialization and quality indicated that board certification does not accurately predict which physicians will provide high-quality care and which will not (Office of Technology Assessment 1988). With respect to African Americans specifically, is board certification of the physician more important than the cultural competency of the physician? These relationships require more research.

Our study indicates that a majority of IMGs was trained in medical schools of third-world economy countries. It is unclear how the economic level of these countries may impact the quality of training received by their medical school graduates. However, Bundred and Levitt (2000) indicate a need to support less-developed countries in the modernization of their medical education systems, while Kavalier (1998) describes the curriculum in these medical schools as being in urgent need of reform. Considering the persistent migration of physicians from less-developed countries to more-developed countries (Bundred and Levitt 2000) there also appears to be a need for these medical schools to provide additional training regarding the provision of culturally competent medical care to individuals of other cultures.

Graduates of foreign medical schools must be certified by the Educational Commission for Foreign Medical Graduates (ECFMG) to be eligible to enter accredited programs of graduate medical education (World Health Organization [WHO] 1995–1996). ECFMG certification is also a prerequisite for licensure to practice medicine in most states and is one of the eligibility requirements to taking the U.S. Medical Licensing Examination. As such, the recommendation by Institute of Medicine (2002) regarding the integration

of cross-cultural education into the training of all current and future health professional enhancement of cultural competency training for physicians—must be expanded to the ECFMG as well as to the eligibility requirements for taking the U.S. Medical Licensing Examination.

Limitations

The findings of this study should be interpreted with the understanding that there are limitations in analyzing repeated measures data. The NC EPESE Survey was designed to capture information about this study population at four consecutive time points over 12 years. This means that data between waves are not available; hence, assumptions must be made about IMGs, satisfaction with medical care, and health care-seeking behavior for periods when survey measurements are not collected. Further, as our sample reflects the experience of a mostly rural cohort in one Southern state with IMGs, it may not be possible to generalize our results on a greater scope.

There was a large attrition rate over the 12 years of the NC EPESE Survey. However, the end-of-study sample size allowed for useful and important information to be extracted from the data. Attrition and missing data introduce bias in estimation and inference, particularly if they happen nonrandomly. However, statistical methods for addressing attrition in data that was not missing at random in repeated measures studies are very complex and beyond the scope of this paper. Descriptive analyses indicate that there are nondifferential rates of attrition and missing data across most key variables of interest. Therefore, for these analyses, it is expected that any bias in estimation and inference is nearly the same across levels of key variables and thus results can be considered comparable.

Implications

Attempts to address widespread and persistent health disparities between African Americans and whites have led to advocacy for increasing the number of African-American physicians in the health care workforce in order to improve health outcomes in African-American communities and among the poor and disadvantaged (Howard et al. 2001; Cohen, Gabriel, and Terrell 2002; Smedley, Stith, and Nelson 2003; Powe and Cooper 2004). Rationales exist that: (a) African-American physicians will increase the availability of physicians to African-American communities based on historical patterns of geographic distributions and service provision, thus increasing access and improving outcomes (Howard et al. 2001; Smedley, Stith, and Nelson 2003) and (b)

African-American physicians understand better the cultural and social context of illness in the African-American community and can more effectively communicate with this population (Howard et al. 2001; Smedley, Stith, and Nelson 2003).

If this is true, then a reexamination of health care workforce policy that is inclusive of African Americans is paramount (Cohen, Gabriel, and Terrell 2002; Powe and Cooper 2004). Additionally, cultural competency training should be incorporated into the education of heath professionals, including IMGs (Cohen, Gabriel, and Terrell 2002; Powe and Cooper 2004). Although IMGs do provide necessary and needed access to medical care for underserved African American and rural populations, concerns regarding lack of communication and cultural competency brought to light in this study, which directly impact satisfaction with medical care, may undermine the contribution IMGs make to these poor and underserved populations.

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NOTES

1 Economies are divided among income groups according to 2002 gross national income (GNI) per capita, calculated using the World Bank Atlas method. Income group economies are divided according to 2003 GNI per capita, calculated using the World Bank Atlas method. The groups are: *low income*, $765 or less (Burma and India); *lower middle income*, $766–$3,035 (Sri Lanka, Cuba, Egypt/UAR, Iran, Paraguay, Philippines, South Africa, Syria and USSR); *upper middle income*, $3,036–$9,385 (Lebanon and Mexico); and *high income*, $9,386 or more (non-OECD: Singapore and Taiwan; OECD: Australia, Austria, United Kingdom, Finland, E/W Germany, Italy, the Netherlands, Spain. U.S. and Canada are also included in OECD). OECD is the Organization for Economic Cooperation and Development. For more information see http://www.worldbank.org/data/countryclass/countryclass.html. Classification by income does not necessarily reflect development status.

2 The use of the term third-world country is for convenience; it is not intended to imply that all economies indicated are experiencing similar development or that other economies have reached a preferred or final stage of development.

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